Basic Dermatology Training Participant Manual

Ministry of Health-Ethiopia

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APROVAL STATEMENT

FORWARD

ACKNOWLEDGMENT

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ACRONYMS

ACD	Allergic Contact Dermatiits
AD	Atopic Dermatitis
AGEP	Acute generalized exathmatous pustulosis
ALERT	All African Leprosy Rehabilitation and Training Center.
BP	Bullous Pemphigoid
CADR	Cutaneous adverse drug reaction
CL	Cutaneous Leishmaniasis
CBC	Complete blood count
CTb	Cutaneous Tuberclosis
DCL	Diffuse Cutaneous Leishmaniasis
DH	Dermatits Herpetiformis
DLE	Discoid Lupus Erythematosus
DDx	Differential Diagnosis
DRESS	Drug Reaction with Esonophilia and systemic symptoms
EHF	Eye, Hand ,Feet
EN	Erythema Nodusum
ETR	Erythematotelagectatic rosacea
FMOH	Federal Ministry Of Health
GI	Gastro intestinal
HHV	Human Herpes Virus
HPV	Human Papilloma Virus
HQ	Hydro Quionone
LFT	Liver function test

LE	Lupus Erythematosus
LP	Lichen Planus
LV	Lupus Vulgaris
MC	Mollescum Contagiosum
MCL	Mucocutaneous Leishmaniasis
MB	Multi Bacillary
MDT	Multiple Drug Therapy
OFT	Organ function test
PKDL	Post Kalazar Dermal Leishmaniasis
P. Acne	Propionibacterium acne
PB	Paucibacillary
POD	Periorifical Dermatitis
PPR	Papulopustular rosacea
PUVA	Psoralin + ultraviolet A
SJS	Steven Johnson Syndrome
SLE	Systemic Lupus Erythematosus
S/S	Sodium sulfacetamide/sulfur
ST	Sensory Testing
TEN	Toxic epidermal necrolysis
Tb	Tuberclosis
UVB	Ultraviolet B
VMT	Voluntary Muscle Testing

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Introduction to the manual

Dermatology is the study of both normal and abnormal strcture of the skin,hair,nail,oral and genital mucus memebrane.

Dermatology is the mirror of internal meidicine diseases meaning it reflects systemic internal illness,endocrine disorders and it is one of the main gate ways in diagnosing HIV/AIDS.

Globally dermatologic problems are very common affecting one third of the world population at any time.

Dermatologic diseases represent one of the most common causes of morbidity in developing countries such as Ethiopia. Few reports indicate the true burden of cutaneous diseases in Ethiopia , according to some studies, up to 80% of the population have one or more skin diseases in their life time. Skin disease is one of the most common cause of morbidity in Ethiopia and it represent the sixth most frequent cause of outpatient visits to health care facilities nationwide.

The prevalence of Dermatologic diseases in developing countries are very high particularly infections and infestations account the majority of cases which is attributed to environmental factors,poor hygiene,over crowding and lack of acess to dermatologic care.

Nowdays inaddition to communicable skin disesases other skin conditions such as eczema,inflammatory skin disorders ,pigmentary disorders ,connective tissue disorders and skin tumors are increasing in number .

The history of modern dermatology care in Ethiopia began with the establishment of a leprosy hospital in 1922, which expanded to become the major dermatology hospital in the country in 1965. During this time, there were very few dermatologists in the country. Physicians practicing dermatology were those who trained primarily in Western countries until 2006 when postgraduate training in dermatology was initiated in the Addis Ababa Medical facility in collaboration with the All African Leprosy Rehabilitation and Training Center (ALERT Hospital).

ALERT Hospital is the first and leading referral center for dermatology in the country and currently there are only 96 dermatovenereologists for a total of 110 million population in Ethiopia and more than 50% of them are working in the capital city which indicate that dermatology service is not accessible to rural populations which accounts 85% of the total population of ethiopia.2342 skin lesions were biopsied at the ALERT pathology laboratory from January 2007 through December 2010 and the study indicated a wide range of inflammatory, infectious, and neoplastic skin diseases.

The major challenges of dermatology service in Ethiopia is is lack of basic dermatology training among health professional at all levels,as a result the Ministry of Health, Ethiopia has planned to develop a standard training guide for General practitioners on basic dermatology services that can be delivered at primary or general hospital level in the absence of dermatologist.

Purpose of the basic Dermatology Training: The main goal of this initiative is to reduce burden of health problem related to dermatology and to secure access to basic dermatology service in an equitable manner (vulnerable groups and underserved communities) by providing a continuum of high-quality, comprehensive, integrated basic dermatology care.

Core competency

Core competencies that the trainees are expected to attain after this training include:

- Identification problems of the skin and diagnosis preoperly
- Manage treatment according to diagnosis
- Practice appropriate and timly referral linkage of skin problems that can't be managed at the primary hospital

Course Syllabus

Course description: This training is designed for General practitioners and Helath officers working at primary health facilities. These workers are often the first professional point of contact for patients with dermatology diseases. The course builds on their existing professional expertise and experience as health workers or trainees. In addition to extending the general skills gained by the participants during their basic health training, the course aims to impart the specific skills required for everyday interventions in patients with dermatology diseases at the primary care level and impove timly referral mechnisms.

Empirical evidence shows that adults learn best by tackling situations, problems or tasks which participants accept as interesting and worthwhile. The course is therefore primarily structured as a series of problem-based tasks for small groups.

Course goal: The goal of the training is to strengthen the ability of primary-level health workers to successfully manage patients with dermatology cases presenting at primary health care facilities.

Learning objectives: By the end of this training, the participant will be able to:

- Describe and differenciate the basic skin problem
- Examination, Diagnosis and treat basic skin problems and refer those above capacity
- Provide health education on basic skin care and

Training/learning methods

- Illustrated lectures and group discussions
- Individual and group exercises
- Individual reading and reflection
- Teach back sessions
- Case studies
- Guided practice activities
- Practical clinical sessions

Training materials/aids

- Basic Dermatology training Participant manual
- Basic Dermatology training facilitators guide
- Basic Dermatology training PPT slides
- LCD projector, flip charts, markers, laptop computers

Participant selection criteria

Participants for this course should be GP:At least 0-2 years of relevant work experience in the primary hospital clinical services.

Method of evaluation

- Participant evaluation
  - Formative
    - Pre-test
    - Group exercises
    - Evaluation of participant developed activities and materials
  - Summative
    - Knowledge assessment (40 %): Post-course questionnaire
    - Practical assessment, Ethics and Professionalism (60%): Participant's activity during practical attachement, attendance, behavior and participation throughout the course
- Trainer evaluation
- Course evaluation
  - During session participant reaction
  - Daily Evaluation
  - Daily trainers feedback meeting
  - End of Course Evaluation

- **Certification criteria**
  - Participants will be certified when they score more than 80% in the summative assessment and attended no less than 90% of the course sessions.

Trainers' selection criteria

- Dermatologists participated on this manual development or Dermatologist with minimum of 2 years service
- Having TOT certificate for this course& involved in at least one basic training as Co-trainer

Course Venue

- Accredited In-Service training centers venue having functional service for the course(video conferences facilities, internet, movable chairs, space for break out, toilet facility …) and practical session facilities.

Course Duration

- The basic training will cover 15 days

- The duration of any teaching course is a trade-off between achieving various objectives and the length of time a professionally active participant can be removed from his or her duties. The period of 15 days required for this course allows for comfortable session lengths with adequate breaks. An additional day should be set aside before it starts to allow for induction of the facilitators who will assist the master trainer.

General design of training

The task-based learning approach requires a comprehensive task to be subdivided into essential component tasks. In order for it to have a cumulative learning effect the sequence of sub-tasks ought to mirror the order in which issues relating to the main task would normally be tackled. At appropriate junctures, brief tasks that consolidate or synthesize newly acquired knowledge are added. The sequence for most sessions is as follows:

- Skill-based learning through clinical practical sessions based on course protocols
- A walk through each clinical algorithm
- Use of case studies to illustrate the practical use of the algorithms

In addition to the theortical sessions participants gain first-hand experience with actual patients through a clinic visit followed by a debriefing session.

Course Composition

- 20 – 25 participants
- 6 - 8 trainers

Clinical attachement

Half-day/full-day clinic visits are designed to provide participants with relevant practical exercises and the invaluable experience of managing actual patients in a real-life situation.

The ratio of participant to instructor should be not more than 3:1 during the practical training. The clinical attachement sit should have minimum capacity of holding each team with out any confinement to the patient & training team. The attachment sit should have out patient flow of more than 100per day and should also have In-patient admitted dermatology areas.

Monitoring and evaluation

Monitoring and evaluation activities are fully integrated into the course programme. Both pre- and postcourse questionnaires are used to assess new knowledge and skill levels gained by

participants in the course. Pre-course evaluation takes place on the starting day of the course. Post-course evaluation is scheduled for the final afternoon: this should leave enough time for evaluation and feedback.

Trainees are required to fill daily evaluation checklists over the days of the course in order to ensure that the overall training session is to their satisfaction and an end of course evaluation will be filled on the end of the overall training period to assess the course. Both the dialy & end of course evaluation should be used for the improvement of the training during and after its completion.

Trainer evaluation should also be filled by participants to assess trainer's ability in managing the training courses. Which the result of the trainers assessment should be used for future

Course schedule

Date	Topic	Presenter	Time	Teaching Methodology
Day 1	Registration ,opening speech and pretest		8:30-10:00A.M	
	Introduction to Dermatology	Dr.belainsh	10: 30—12:30A.M.	Lecture
Day 2	Bacterial Skin Infection	Dr. Shime	8:30-10:00A.M	Lecture
Day 3	Fungal Skin Infection	Dr. elias	8:30-10:00A.M	Lecture
Day 4	Viral Skin Infection	Dr.alemts	8:30-10:00A.M	Lecture
Day 5	Psoriasis and Lichen Planus	Dr.tesf	8:30-10:00A.M	Lecture
	WEEK ENDS			
Day 6	Eczema	Dr.elia	8:30-10:00A.M	Lecture
Day 7	Leprosy	Dr//shim	8:30-10:00A.M 2:00- 4:00 P.M.	Lecture
Day 8	Acne Vulgaris Rosacea and Periorifical Dermatitis	Dr.feisel Dr/fere	8:30-10:00A.M 2:00- 4:00 P.M.	Lecture
Day 9	Leishmaniasis	Dr.alemt	8:30-10:00A.M	Lecture
Day 10	Bullous disorders Autoimmune connective tissue disorders	Dr. Tesf Dr.belainesh	8:30-10:00A.M 2:00- 4:00 P.M.	Lecture Lecture
	Week Ends			
Day 11	Lymphoedema,scabies and Onchocerciasis Case Studies	Dr/alemtsh	8::30-10:00A.M 2:00- 4:00 P.M.	Seminar Group Discussion
Day 12	Mucocutaneous Manifestation of HIV Case Studies	Dr.tesfaye	8::30-10:00A.M 2:00- 4:00 P.M.	Seminar Group Discussion
Day 13	Benign and Malignant Skin Conditions Case Studies	Dr. feisel	8::30-10:00A.M 2:00- 4:00 P.M	Seminar Group Discussion

Day 14	Drug Reaction Case Studies	Dr.shim	8::30-10:00A.M 2:00- 4:00 P.M	Seminar
Day 15	Vitiligo and Melasma Case Studies , post test exam, course evaluation	Dr/ belain	8::30-10:00A.M 2:00- 4:00 P.M	Seminar Group Discussion

Chapter 1: Basic Structure and Function of the Skin

Chapter Description: this chapter includes basic skin structure and function, types of skin morphology,how to take dermatology history and physical examination and summary.

Learning objective

- Discuss basic skin structure and function
- Discuss primary and secondary skin lesions
- Discuss key points about history taking and examination of skin

Outline:

- Basic Structure of the Skin
- Functions of the Skin
- Morphology of Skin lesions
- Summary

SKIN - Basic STRUCTURE

- Skin is the largest organ of the human body.
- Accounts for 16-20% of body
- The skin is composed of two basic layers (regions)
    - Epidermis – outermost layer
    - Dermis –underlying connective tissue
    - Subcutaneous fat(Hypodermis), inspite of its close anatomic relationship and tendency to respond jointly to pathologic processes, is not a part of skin basic structure

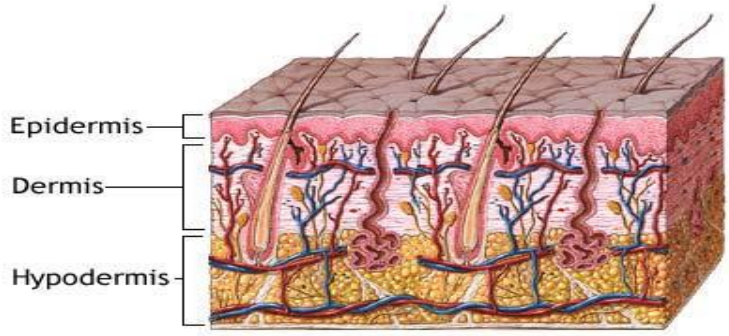


Figure 1.1 layers of the skin

SKIN APPENDAGES

- HAIR
- NAILS
- GLANDS

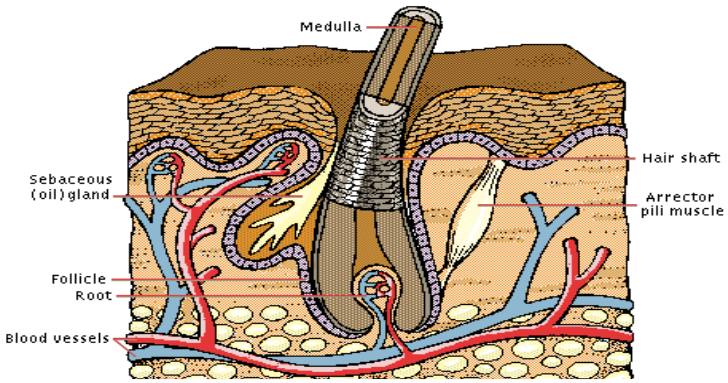


Figure 1.2 skin appendages

Functions of skin

❖ **Protection**

- Skin protects underlying tissue from mechanical, chemical, and thermal injury
- Skin provides the first line of defense against bacteria and other pathogens

❖ **Sensory Reception**

- Dermis contains sense receptors for heat, cold, pain, touch, and pressure Receptors clustered around hair follicles can detect if the hair moves

❖ **Temperature Regulation**

Skin regulates body temperature in 2 ways:

1. Sweat glands
2. Dilation and constriction of blood vessels in the dermis

❖ **Synthesis of Vitamin D**

- Skin cells contain a precursor molecule that is converted to vitamin D when exposed to UV light
- Vitamin D is essential for bone mineralization

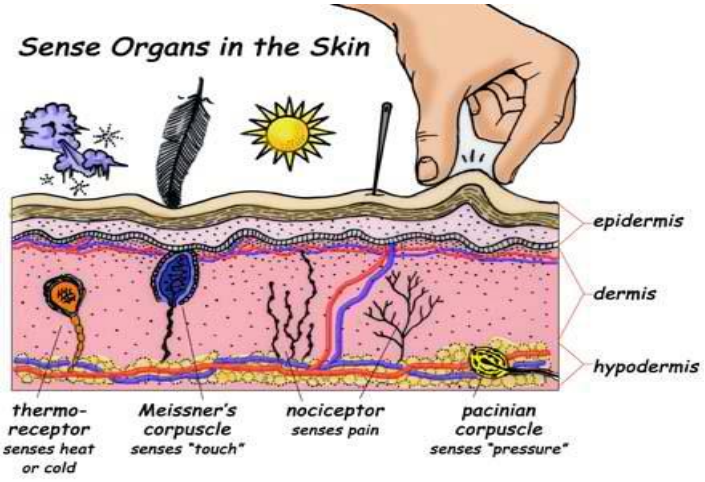


Figure 1.3 sensation receptors in the skin

Morphology of skin lesion

- Used to describe the form and structure of skin lesions
- The morphologic characteristics of skin lesions are key elements in establishing the diagnosis and communicating skin findings
- There are two steps in establishing the morphology of any given skin condition:
    1. Careful visual and tactile inspection
    2. Application of correct descriptors

Types of Lesions

1) Primary lesion
2) Secondary lesion

1) Primary Lesions: lesion occurring on non pathological skin which have not been altered by trauma, manipulation (scratching, scrubbing), or natural regression over time.

- Macule: Flat, circumscribed skin discoloration that lacks surface elevation or depression, less than 1 cm in diameter

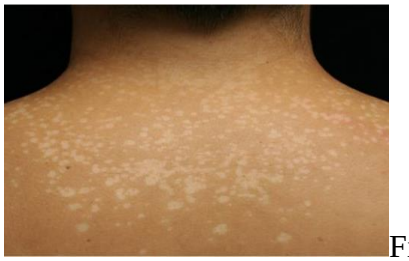


Figure 1.4hypopigmented macules

- Patches are flat but larger than macules. It's flat and larger than 1 cm

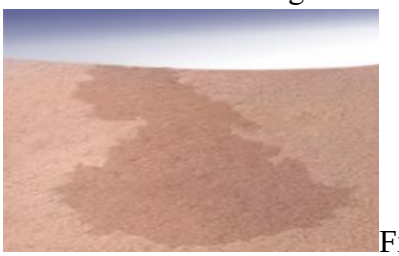


Figure 1.5 patch

- Papules : raised lesions less than 1 cm

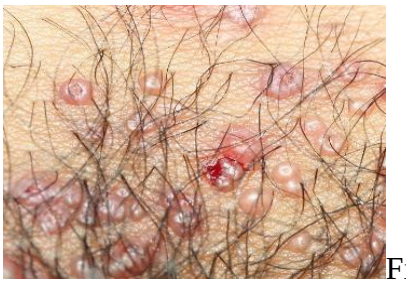


Figure 1.6 papule

- Plaques : raised lesions greater than 1cm

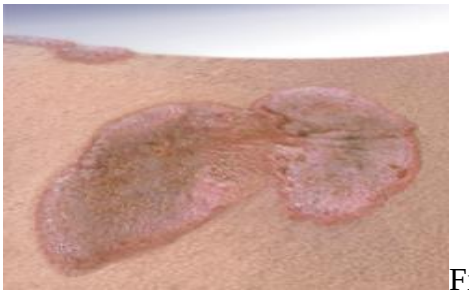


Figure 1.7 plaque

- Nodule: proliferation of cells into the mid-deep dermis

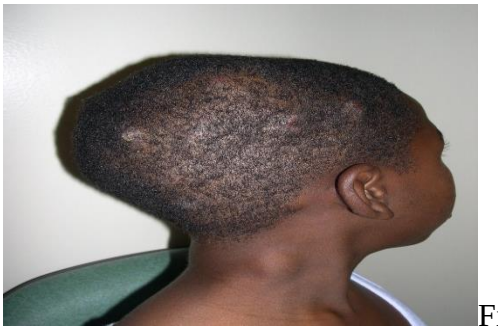


Figure 1.8 nodule

- Vesicle/bullae elevated lesion which contains clear fluid
  - < 0.5 cm diameter = VESICLE
  - > 0.5 cm diameter = BULLA

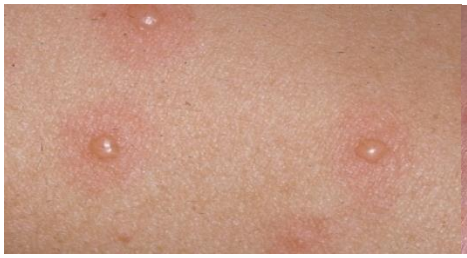


Figure 1.9 Vesicle

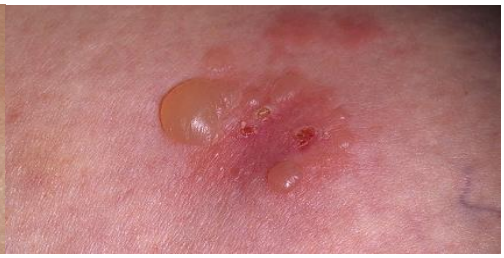


Figure 1.10 Bullae

2) Secondary Lesions:the primary lesions continue to full development or may be modified by regression, trauma of other extraneous factors, producing secondary lesion which are as follows:

- Scales: abnormal shedding or accumulation of the stratum corneum.
- Lichenification: Clinically triad of accentuation of skin markings ,thickening of epidermis and Hyperpigmentation

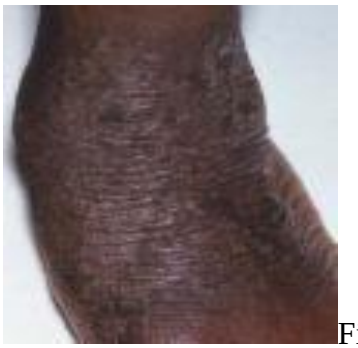


Figure 1.11 lichenification

- Crusts: a collection of cellular debris ,dried serum, pus or blood and sometimes bacterial debris

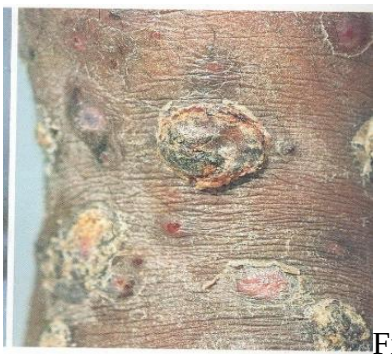


Figure 1.12 crust

- Excoriations and abrasions: Punctate or linear abrasion produced by mechanical means
- Fissures: Linear cleft in the skin through the epidermis and part of dermis


Figure 1.13 fissure

- Erosions: are loss of part or all of the epidermis

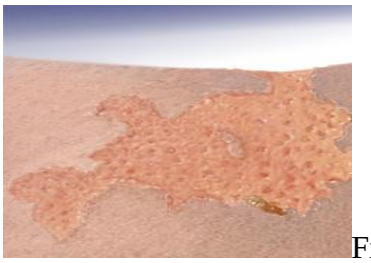


Figure 1.14 erosion

- Ulcers: are complete loss of the epidermis in addition to part of the dermis

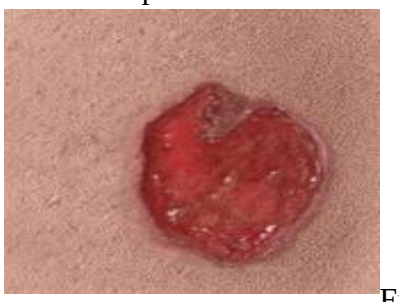


Figure 1.15 ulcer

- Scar: is a collection of new connective tissue, that replaces lost substances in the dermis or deep dermal tissues

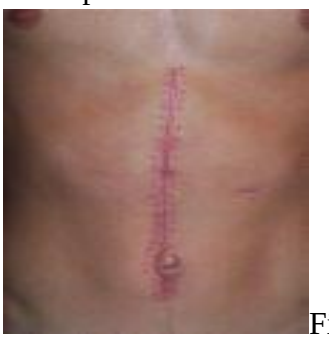


Figure 1.16 scar

- Atrophy: reduction in the components of a tissue, Organ or part of body
- Telangiectasia: Small, dilated ,superficial blood vessels that disappear with pressure

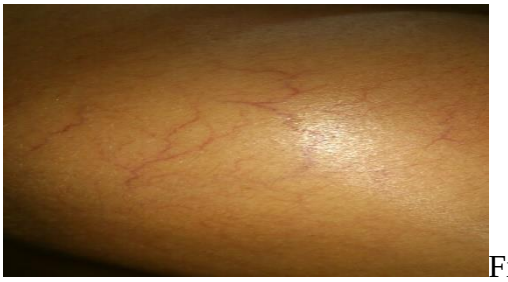
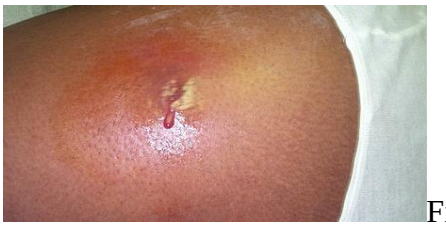
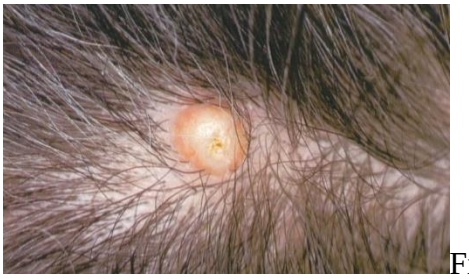


Figure 1.17 telangiectasia

- Abscess
  - Elevated lesion Collection of pus under skin
  - Lack well-defined lining Surrounding skin changes

 Figure 1.18 abscess

- Cyst:Sac containing liquid/ semisolid material

 Figure 1.19 cyst

Taking a dermatological history and physical examination

- ✓ Chief complaint
- ✓ History of present illness (HPI)
  - When did it start?
  - Does it itch, burn, or hurt?
  - Associated symptoms
  - Is this the first episode?
  - Where on the body did it start?- Location
  - How has it spread (pattern of spread)?
  - How have individual lesions changed (evolution)?
  - Provoking/Alleviating/aggravating exacerbating factors?
  - Previous treatments and response?
  - Timing of Attacks
  - Occupation
  - Topical agents
  - Drug history
  - Season of year
  - Environment

- ✓ Past medical history (PMH)-previous problems and systemic disease, Medications, Allergies
- ✓ Family history-skin cancer, psoriasis, allergy, infestations and infections
- ✓ Psychosocial-personal habits, exposures, Health-related behaviors
- ✓ Social history-
- ✓ Review of systems-

Physical examination

- The Total Body Skin Exam (TBSE) includes inspection of the entire skin surface, including: the scalp, hair, and nail the mucous membranes of the mouth, eyes, anus, and genitals.

Examination

- ❑ **Inspection**
- Color
- Uniformity
- Thickness
- Lesions
- ❑ **Palpation**
- Moisture
- Temperature
- Texture
- Mobility

➢ Three categories of observation :

1. Anatomic distribution of the lesion **means location on the body**
2. Configuration of groups of lesions **means how the lesions are arranged or relate to each other**
3. The morphology of the individual lesions

Figure 1.21 Morphology of the individual lesions

1	Macule	7	Bulla	13	Ecchymosis
2	Papule	8	Postule	14	Hemotoma
3	Plaque	9	Wheal	15	Poikiloderma
4	Nodule	10	Telangictasia	16	Erythema
5	Papilloma	11	Petechiae	17	Burrow
6	Vesicle	12	Purpura	18	Comedo

Figure 1.22 primary skin lesions

Summary

- Skin is the largest organ of the human body.
- The skin is composed of two basic layers (regions)
    - Epidermis – outermost layer
    - Dermis –underlying connective tissue

Functions of skin

- Protection
- Sensory Reception
- Temperature regulation

- Synthesis of Vitamin D

Types of Lesions

1. Primary lesion
2. Secondary lesion

Chapter 2: Bacterial skin Infections(pyodermas)

Chapter description: this chapter deals with the clinical presentation and management of impetigo,folliculitis,ecthyma,furuncle,carbuncle,eryspella,cellulitis,necrotizing fasciitis,erytherasma and pitted keratolysis.

Chapter objective:

- Identify the causative agents of common bacterial skin infection
- Explain the pathogenesis of bacterial skin infections
- Classify and describe common bacterial skin infections .
- Discuss the various treatment options.
- Discuss the complications of bacterial skin infections.

Outline:

- Introduction
- Epidmology
- Pathogensisis
- Clinical Presentation
- Treatment
- Summary

Introduction

Bacterial skin infection is one of the commonly encountered problem in the tropics and 20% of outpatient dermatology visits are for bacterial skin infections.Normal intact skin is always resistant to bacterial skin infection.

Various systemic diseases and immuno deficiency states predispose patients to specific bacterial skin infections that can be severe and refractory to treatment.

Etiology

Most of the bacterial skin infections are caused principally by two organisms

These are

- Staphylococcus aureus
- Group A streptococcus

Methicillin –resistant staphylococcus aureus (MRSA) which is resistant to the most commonly used antiboitics is now the most common cause in developed countries**.**

PATHOGENESIS

Bacterial skin infection doesn't occur on normal intact skin and in the presence of natural Defence mechanism of the skin against bacterial skin infection.

Natural Defence mechanism against bacterial skin infections

- Temperature less than 37°C
- Dryness of the skin:usual infection sites are wet areas: skin folds, axilla, groin
- Keratin
- Skin sloughing
- Sebum: low pH, high lipid content
- Sweat:- low pH, high salt, Lysozyme & toxic lipids
- Resident microflora (mainly Gram positives)

In the presence of trauma or other predisponsing factors bacterias get access into the skin and establish infections.

Predisposition to bacterial skin infection

- Chronic S. aureus carrier state in 30% of normal individuals around the nares, axillae, perineum and vagina.
- Warm weather/climate, high humidity
- The presence of skin disease, especially atopic dermatitis, scabies, herpes simplex infection.
- Poor hygiene, crowded living conditions and neglected minor trauma.

- The presence of underlying Chronic disease: obesity, diabetes mellitus, HIV/AIDS, especially MRSA infection and solid organ transplant immunosuppression.
- Immunodeficiency such as cancer chemotherapy.

The development and evolution of bacterial infection involve three major factors:

(1) The portal of entry,

(2) The host defenses and inflammatory response to microbial invasion, and

(3) The pathogenic properties of the organism.

Portal of Entry

Intact and functioning epidermis resist direct bacterial invasion .

- High prevalence of septicemia in low-birthweight, premature infants who lack an effective epidermal barrier.

Clinical Presentation of Bacterial Skin Infection

Bacterial skin infections clinically present as primary or secondary bacterial skin infections.

1. **Primary Infections**

Primary bacterial skin infections occur without the presence of diseased skin.

Impetigo, folliculitis, and boils are common types.

The most common primary skin pathogens are Saureus, β-hemolytic streptococci, and coryneform bacteria.

Organisms usually enter through a break in the skin.

2. **Secondary Infections**

Secondary infections occur in skin that is already diseased.

Because of the underlying disease, the clinical picture and course of these infections vary

Eg. Impetiginization of dermatoses such as atopic dermatitis, herpes simplex (superinfection) and scabies.

Bacterial skin infections can be classified based on the layer of the skin structures

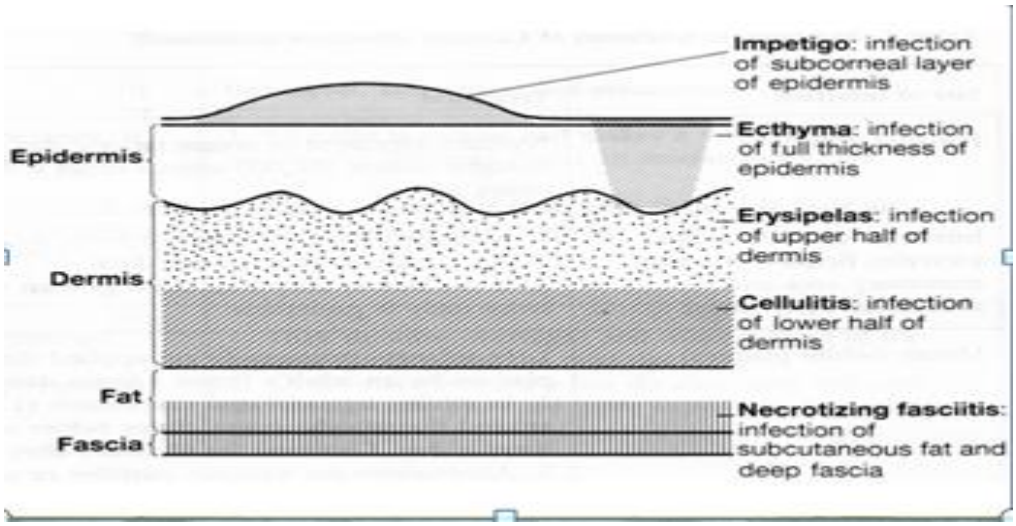


Figure 2.1 occurance of bacterial skin infection at different layers of the skin

Impetigo

Imptigo is a contagious that afftects the most superficial layer of the skin(st.cornium) infection of the skin.

It can either present primarly on normal intact skin or secondary on diseased skin.

S.aureus and, to a lesser degree, Streptococcus pyogenes are the major causes of impetigo.

Impetigo is highly contagious, superficial skin infection that primarily affects children.
It has Worldwide occurrence, spreading rapidly via direct person to-person contact.
Biting insects and small non-biting flies can contribute to the spread of the streptococcal infection.

Bacteria skin Infections are common in tropical and subtropical regions.

Impetigo occurs in all age groups.

Preschool and young school-age children are most often affected.

Adults can acquire impetigo through close contact with infected children.

There are two clinical patterns of bacterial skin infections which are Non-bullous impetigo and Bullous impetigo.

Non-bullous impetigo

It accounts for more than 70 % of impetigo.

It occurs in children of all ages as well as in adults.

It is caused by group A beta streptococcus and in some geographical areas it is caused by staph.aureus or by both organisms.

Clinical presentations of non bullousimpetigo

Infection occurs at minor sites of trauma .Trauma exposes cutaneous proteins which allow the bacteria to adhere, invade and establish infection.Lesions commonly arise on the skin of the face (especially around the nares) or extremities after trauma.Nasal carriers of S. aureus can present with a very localized type of impetigo confined to the anterior nares and the adjacent lip area.

The initial lesion is a transient vesicle or pustule on an erythematous base that quickly evolves into a honey-colored crusted plaque. The crusts are thicker and 'dirtier' in case of streptococcus compared to staphylococcal skin infection.

Constitutional symptoms are absent but in severe cases there may be fever and other constitutional symptoms.
Regional lymphadenopathy can occur in up to 90% with prolonged and untreated infection.If Lesions usually occur on exposed part of the body such the face,scalp, arms or legs.
Untreated, the lesions may slowly enlarge and involve new sites over several weeks and in others, the lesions extend deeper to form an ulcer which is called Ecthyma.

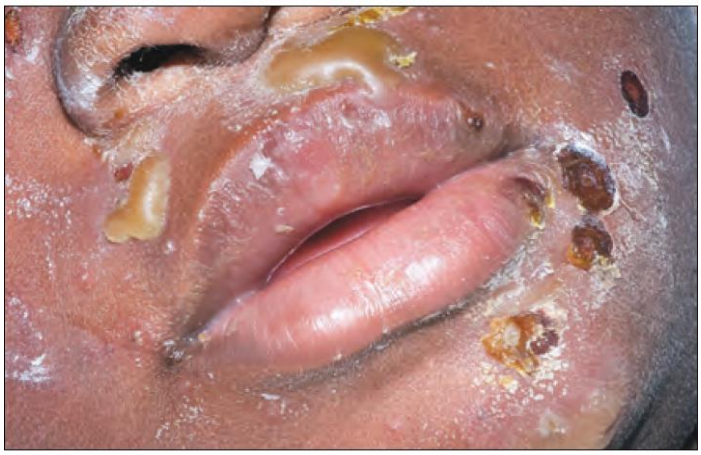


Figure 2.2 non bullous imptigo

Bullous impetigo

It is less common than non-bullous impetigo.
It is caused by S.aureus and usually it is sporadic.
Bullous impetigo often occurs in children less than 3 years old.
It is due to cutaneous responses to toxin producing staph. auerus organisms which produce exfoliative toxins types A and B.
Exfoliative toxin A acts as a serine protease and cleave desmoglein 1 to form blister .
Bullous impetigo is considered as localized form of SSSS (Staphylococcal scalded skin syndrome).

Clinical presentation of bullous impetigo
Bullous impetigo occurs more commonly in the newborn and in older infants.
It affects the face, trunk, buttocks, perineum or extremities.

It is characterized by the rapid progression of vesicles into flaccid blisters.
Regional lymphadenitis is rare.
In immunodeficient states, exfoliative toxin may disseminate hematogenously and cause SSSS.
The localization of the epidermal splitting in bullous impetigo probably related to local production of the toxin whereas in SSSS the toxin is disseminated haematogenously.

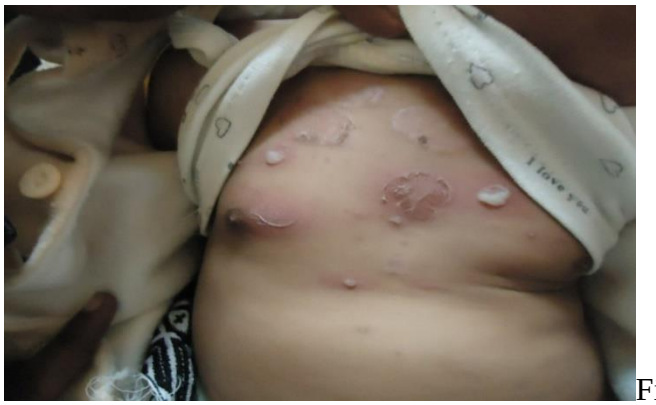


Figure 2.3bullous imptigo

Treatment

In localized and mild infection, a topical antibiotic such as fuicidic acid cream or gentian violet 0.5% apply BID .
If the infection is widespread or severe, or is accompanied by lymphadenopathy systemic treatment is mandatory.

Table 2.1 Treatments of Impetigo

	Topical		**Systemic**	
First line	Mupirocin	bid	Dicloxacilline	250-500 mg PO qid for 5-7 days
	Fusidic acid (not avialble in United States)	bid	Amoxicillin plus clavulanic acid; cephalexin	25 mg/kg tid; 250-500 mg qid
Second line (penicillin allergy)			Azithromycin	500 mg × 1, then 250 mg daily for 4 days
			Clindamycin	15 mg/kg/day tid
			Erythromycin	250-500 mg PO qid for 5-7 days

PROGNOSIS AND CLINICAL COURSE

Untreated, invasive bacterial skin infection can complicate with

Cellulitis Lymphangitis

Bacteremia Osteomyelitis

Septic arthritis Pneumonitis

Septicemia

Exfoliatin production can lead to SSSS in infants and in adults who are immuno compromised or have impaired renal function.

Post streptococcal state (1-3 weeks later) can produce – acute GN, rheumatic fever, rheumatism, erythema nodosum, psoriasis.

In 5% of cases, non-bullous impetigo caused by S. pyogenes (serotypes 1,4, 12 25 and 49) can result in Acute Post Streptococcal glomerulonephritis.

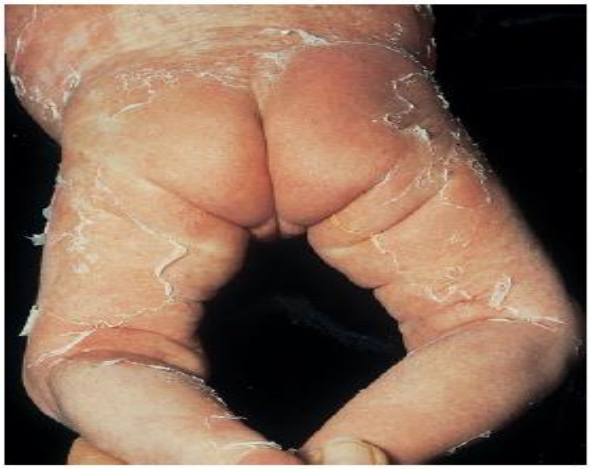


Figure 2.4stapylococal scalded skin syndrome

Management of Staphylococcal scalded skin syndrome

Severe cases

Should be admitted

- IV antibiotics must be given

Cloxacillin

- New born(2kg):12.5-25mg/kg iv q 6 hrly
- Older children: 25-50 mg/kg iv q 6 hrly
- adults: 250-500 mg q 6 hrly
- Given until improvement is noted followed by oral cloxacillin

Ecthyma

It is usually a consequence of neglected impetigo.

Untreated staphylococcal or streptococcal impetigo can extend more deeply, penetrating the epidermis, producing a shallow crusted ulcer.

The lesions are slow to heal, requiring several weeks of antibiotic treatment

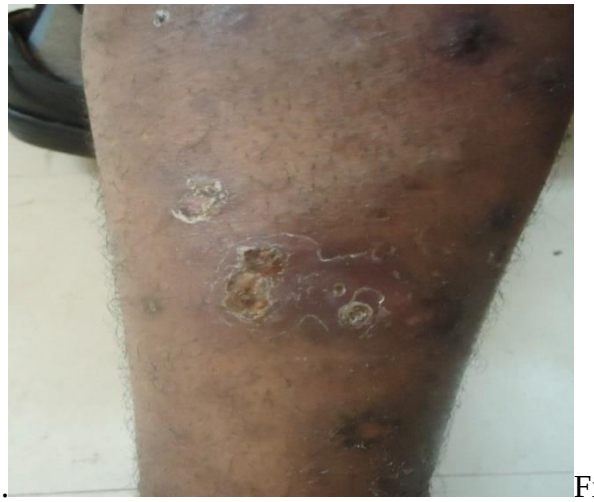


Figure 2.5 Ectyma

Treatment

Management of ecthyma is the same as for impetigo but the treatment should be for longer duration which is usually more than 2 weeks.

Bacterial Folliculitis

Folliculitis is an infection of the hair follicle and it occurs on hair bearing sites of the body.
Staphylococcus Aureus is the most common cause of folliculitis and folliculitis can also be caused by virus and fungus.
It is classified in to Superficial and deep folliculitis.

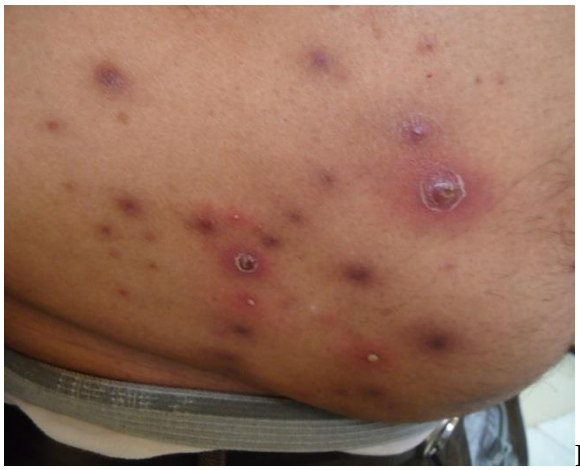


Figure 2.6 folliculitis

Superficial folliculitis

It is a pustule that occurs at the hair follicle.

It occurs often on the scalps of children and in the beard area , axillae, extremities, and buttocks of adult.

It is itchy but not painful.

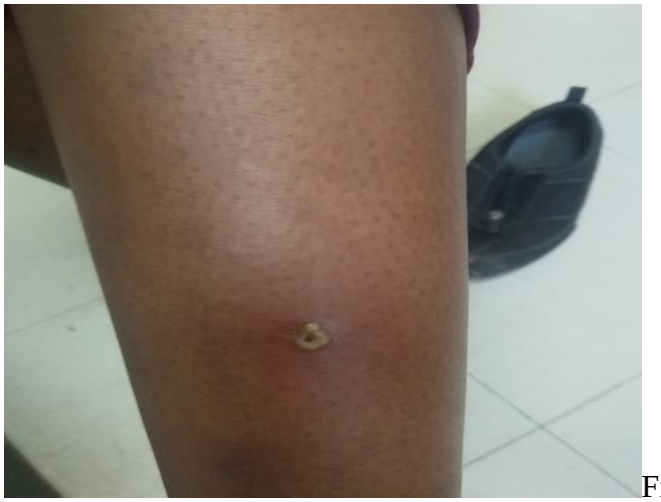


Figure 2.7 superifical folliculitis

Deep folliculitis

Sycosis barbaeis a deep folliculitis with perifollicular inflammation occurring in the beard areas of the face and upper lip.
If untreated, the lesions may become more deeply seated and chronic.

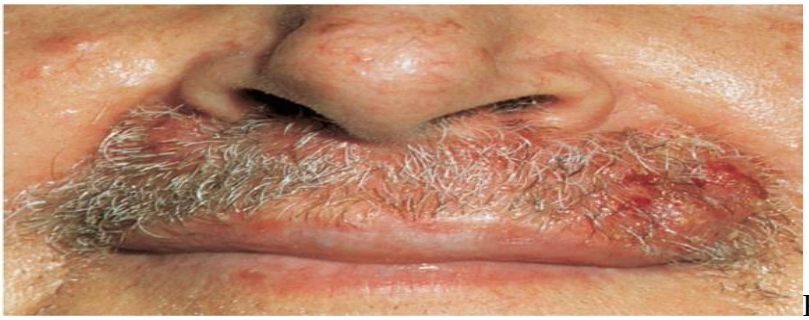


Figure 2.8 sycosis barbae

Treatment
Antibacterial washes that contain chlorhexidine .
Antibacterial ointments mupirocin 2% ,gentian violet 0.5% may also be used for 7-10 days for localized lesions.
When bacterial folliculitis is widespread or recurrent, cloxacilline, or cephalaxine or appropriate β-lactam antibiotics, macrolides and lincosamides (e.g. clindamycin) can be prescribed.
Chronic S. aureus carriage can be treated with mupirocin 2% ointment applied twice daily to the nares, axillae/groin and/or submammary area for 5 days monthly for 3-6 months.

Furuncle (Boil)

It is a deep-seated inflammatory nodule which is tender and eryhmatous that develops in the hair follicle.
It usually arises from superficial folliculitis.
It arise in hair-bearing sites, particularly in regions subject to friction or occlusion.

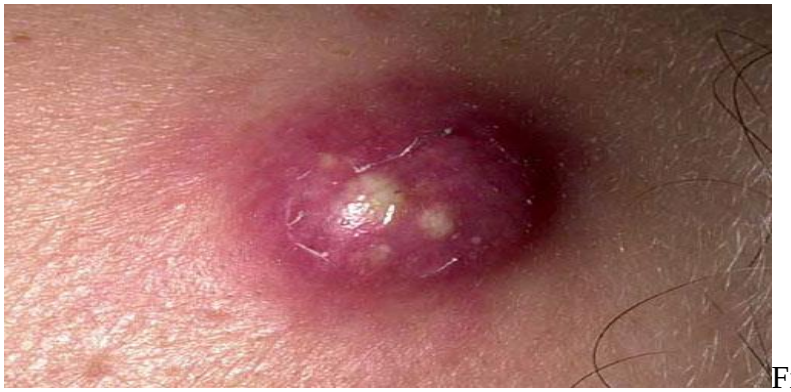


Figure 2.9furuncle

Carbuncle

Is formed when two or more furuncles join each other.
Systemic symptoms are often present such as fever .
Furuncle and Carbuncle are common in obese,diabetic and immunosuppressive condition.
Treatment is systemic antibiotics (Cloxacilline ,cefalexin or Augmnetine) + incision and drainage.

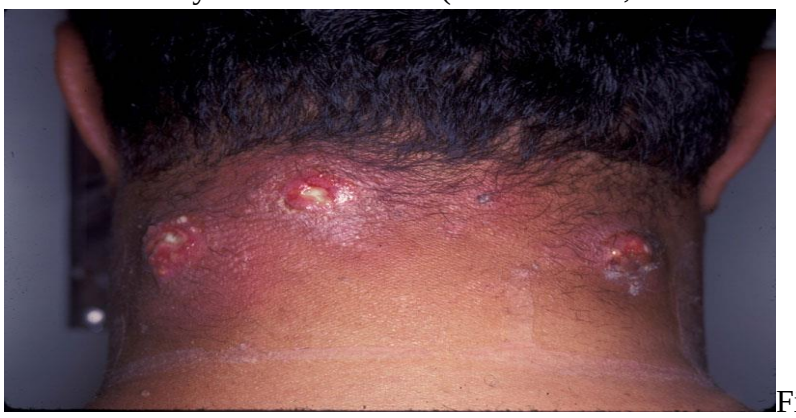


Figure 2.10 carbuncle

Erysipela

Erysipelas is a bacterial infection of the dermis and upper part of the subcutaneous caused it is caused by group A beta-hemolytic streptococcus..
In New borns erysipelas is caused by Group B Streptococcus.
It is characterized by erythema,,warm,pain and tender swelling with well demarcated edge.
It occurs on the face or extremities.

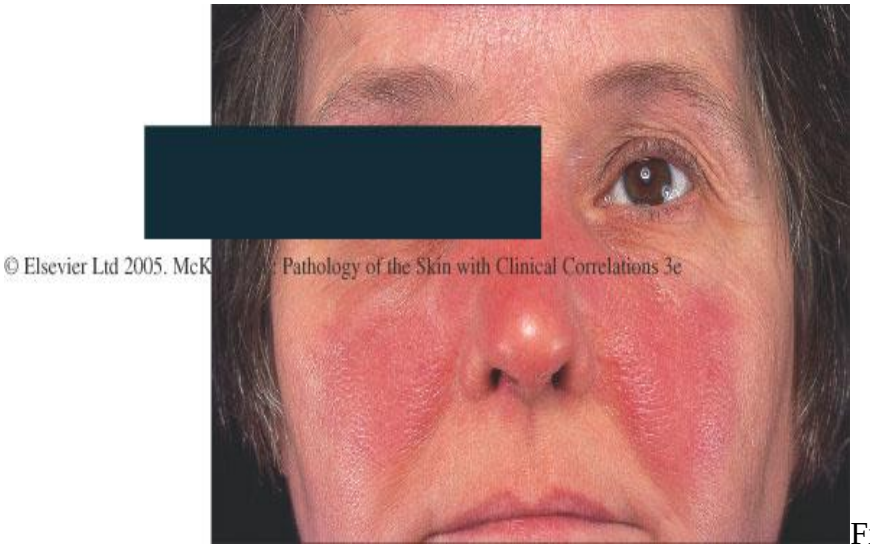


Figure 2.11eryspella

Cellulitis

Is a bacterial infection and inflammation of the dermis and sub cutaneous tissue.
Group A streptococci are the most common etiologic agents.
Occasionally hemophiliusinfulenza type B can be considered in young children especially of face involvement(facial cellulitis).
Gm- ve can be the cause in immunocompromised individuals.
Leg is the most common site for cellulitis.
It is characterized by skin erythema, pain and tenderness with diffuse swelling.
Bullae formation on the swelling is seen in severe cases.
Lymphadenopathy and lymphangitis is common.
A skin break or wound, trauma or interdigital tinea pedis may be portal of entry.
It not treated the major complications are lymphedema,cellulitis and sepsis.

Treatment is crystalline peniclline or cloxacilin for 10 to 14 days.


Figure2.12Cellulitis

NecrotizingFasciitis

It is a bacterial infection that results in necrosis of subcutaneous tissue and other deeper structures including the fascia.
It is caused by a mixture of aerobic & anaerobic organisms .
Necrotizing fasciitis most commonly affects the extremities ,perineum and affected tissues become red, hot, and swollen, resembling severe cellulitis.

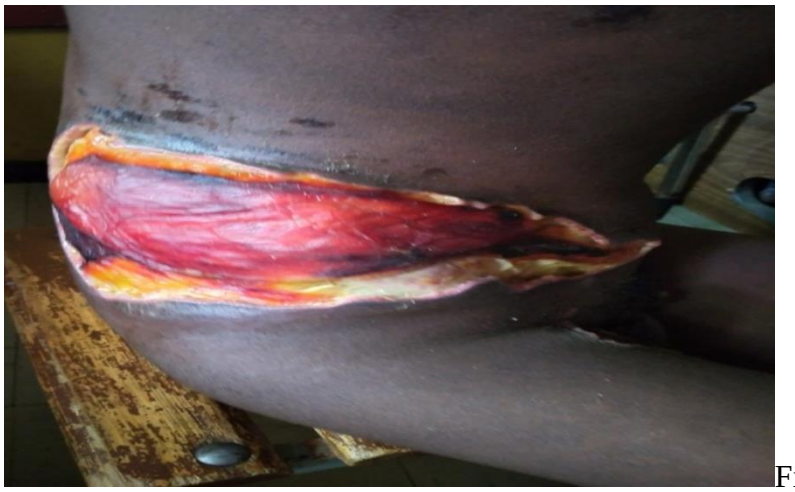


Figure 2.13necrotizing fascitis

Without timely treatment, the area becomes gangrenous.

Diagnosis is clinical.

Treatment involves: broad spectrum antibiotics, surgical debridement and amputation if necessary.

Prognosis is poor without early aggressive treatment.

Erythrasma

Erythrasma is a chronic infection of the intertriginous areas of the skin.

The predisposing factors are warm temperature,humid enviroment,obesity and diabetes.

It is commonly seen in adults.

It is characterized by well-defined but irregular reddish brown patches, occurring in the intertriginous areas such as groin,axilla,sub mammary area, inter gluteal or between the toes.

Fissuring and white maceration in the toe clefts is the common site of involvement.

It is caused by Corynebacterium minutissimum which is a normal flora.

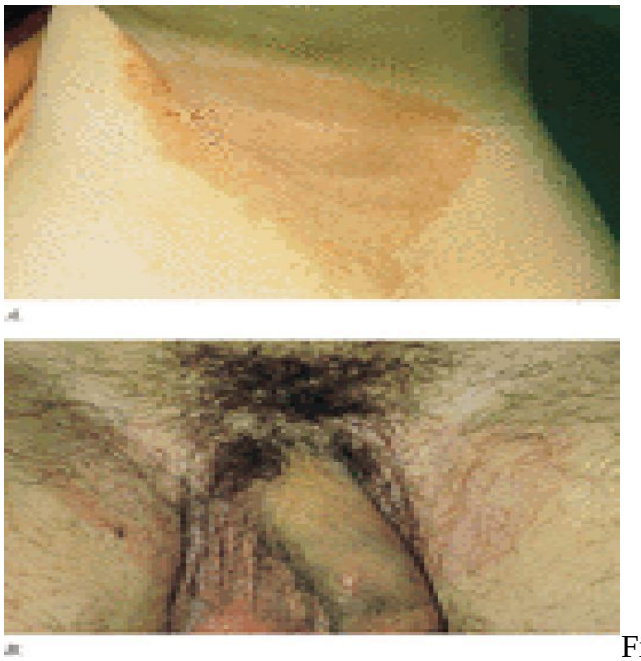


Figure 2.14 erythrasma

Wood lamp examination of erythrasma reveals a coral-red fluorescence caused by coproporphyrin III.

Erythrasma responds well to topical antifungals such as clotrimazole,miconazole or ketoconazole cream.

Oral erythromycin can also be used and relapse can occur in some individuals.

Pitted Keratolysis

It affects the stratum corneum of the web spaces and plantar surface.

It is caused by Micrococcus Sedentarius.

Clinically it presented as pitted lesions and malodorous feet.

The treatment is topical clotrimazole or clindamycin cream and if no response it can treated with erythromycin 250 mg PO qid for 14 days.

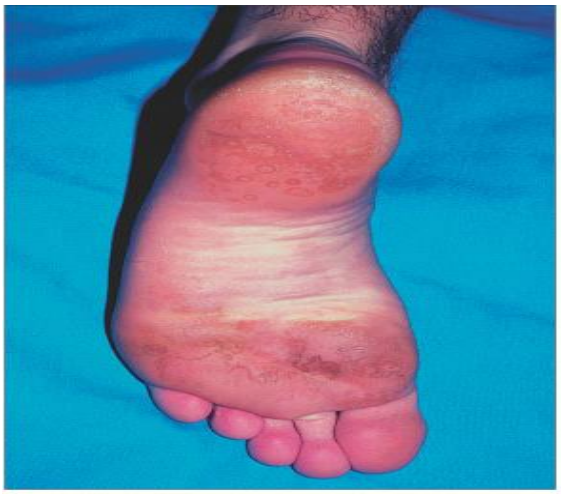


Figure 2.15 Pitted keratolysis

Summary

Bacterial skin infections are one of the commonest skin infections and it is the most common dermatologic complaint at clinic visit.

Most of the common bacterial skin infections are caused principally by two organisms.

These are Staphylococcus aureus and Group A streptococcus.

Bacterial skin infections does not occur in a normal intact skin.

Bacterial skin infections are classified into primary and secondary bacterial skin infections.

Primary bacterial skin infections occur without the presence of underlying skin disease where as secondary infection occurs in the presence of diseased skin such as scabies,eczema, Tinea Capitis,herpes simplex infection …

In the presence of underlying systemic disease or immunosuppression bacterial skin infections tends to be extensive and needs longer duration of treatment.

The commonest primary bacterial skin infections are impetigo,folliculitis and furuncle.

Complications of bacterial skin infections are osteomyelitis,septic arthritis, poststreptococcal glomerulonephritis....

Treatment involves broad spectrum antibotics such as amoxacillin with clavunic acid,cephalexin,clindamycine or azithromycin.

Chapter 3: Superficial fungal Infection of the Skin

Chapter description: this chapter includes introduction, etiologic agents, naming, pathogenesis, clinical presentation, diagnostic modalities, management and summary of dermatophyte infection and Pityriasis versicolor

Learning objective

- Discuss clinical manifestion of superficial fungal infection
- Discuss the diagnostic modalities of superficial fungal infection
- Discuss treatment options for superficial fungal infection

Outline:

- Introduction
- Epidmology
- Pathogenesis
- Clinical presentation
- Treatment
- Summary

Introduction

Dermatophytes

- Fungal organisms that are able to exist within the keratinous elements of living skin.
- Require keratin for growth & therefore infect hair, nails, & superficial skin.

ETIOLOGIC AGENTS

- Three fungal genera cause tinea infections:

1. *Microsporum,*
2. *Trichophyton*, &
3. *Epidermophyton* .

- Species may be grouped by their source of human infection

1-Anthropophilic: from human

2- Zoophilic: from animals, especially dogs, cat.

3- Geophilic: from soil.

Infections named depending on location of infection.

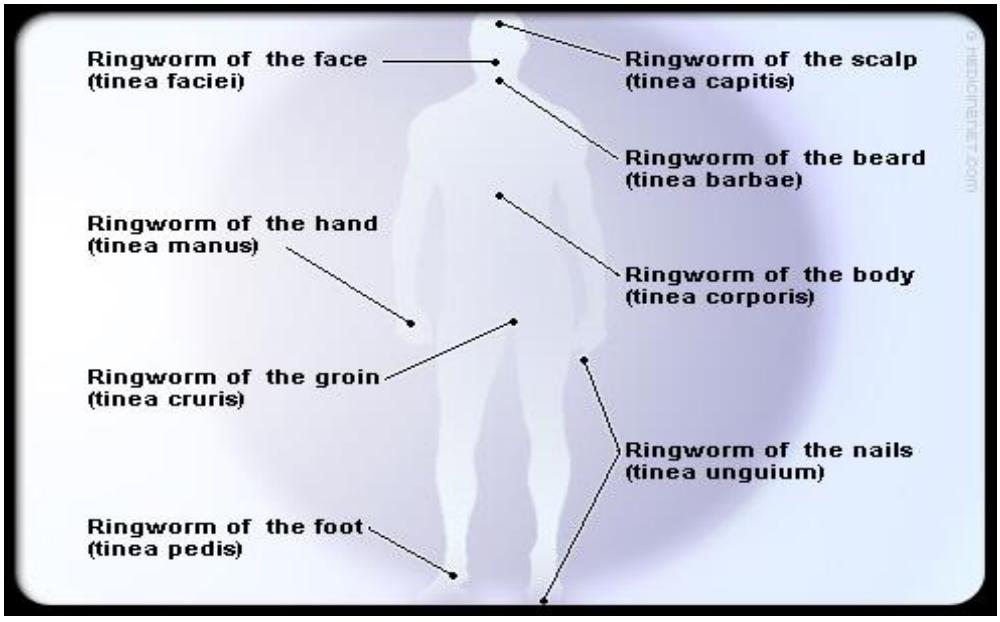
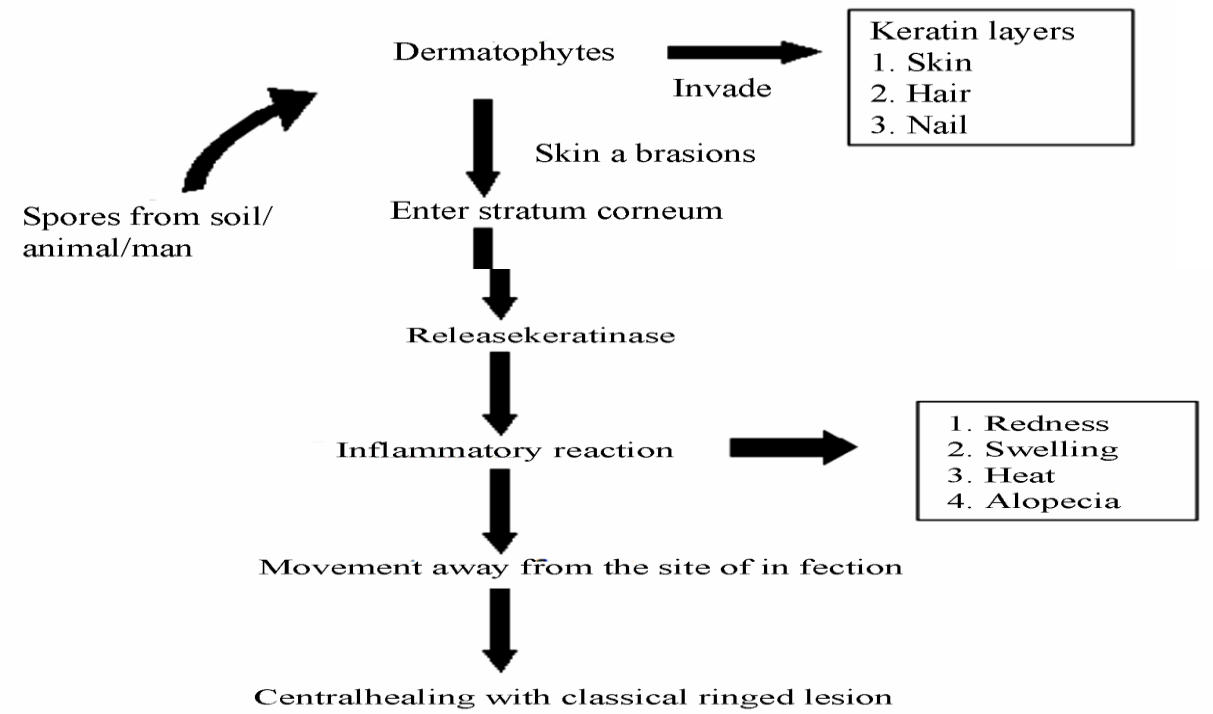


Fig3.1 types of ring worm infection at different body site



Tinea capitis

- a dermatophytosis of the scalp & associated hair
- Spread through direct contact with animals, humans & fomites
- Fomite transmission is via shared hair brushes, combs, caps, helmets, & pillows

ClinicalPresentation
Tinea capitis

- may be inflammatory or non-inflammatory or a combination of both
- Broken hairs are a prominent feature
- Often presents with post auricular, posterior cervical, or occipital lymphadenopathy

Types:

1. Non inflammatory-gray patch, black dot & seborrheic type

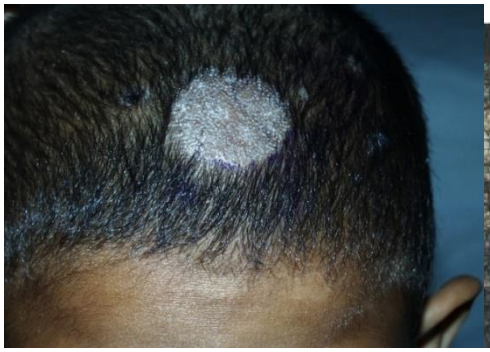


Figure 3.2 Gray patch type

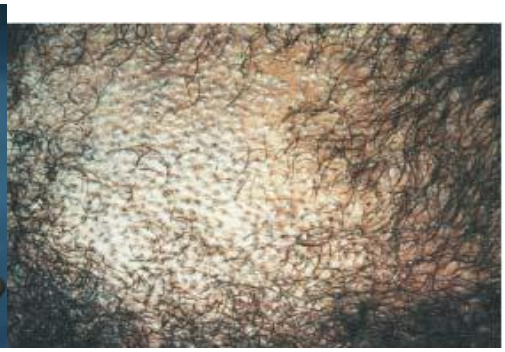


Figure 3.3 Black dot type

2. Inflammatory-Diffuse pustular, kerion & favus

- A kerion is a painful inflammatory, boggy mass with broken hair follicles
- A significant percentage of untreated tinea capitis will progress to a kerion
- Kerion carries a higher risk of scarring than other forms of tinea capitis

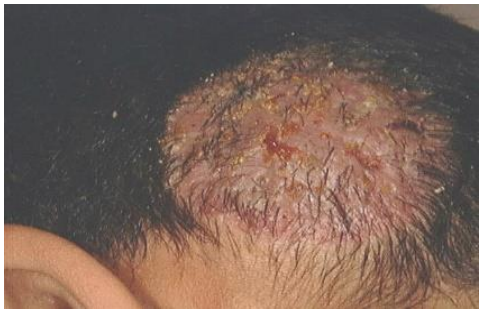


Figure 3.4 Keroin

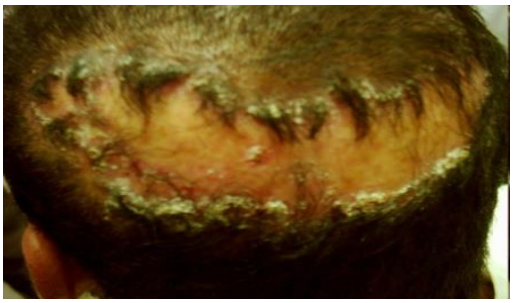


Figure 3.5 Favus

KOH Exam

Take sample by doing Scrape from the skin lesion

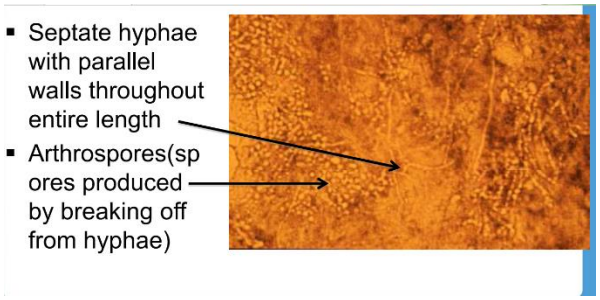


Fig3.7 septated hyphae seen under microspe examination

Tinea Capitis Treatment

- Topical treatment is not effective
- Systemic treatment is mandatory

- **Griseofulvin for children ;**

➢ **20 -25mg/kg/day**

Average of 6-8 weeks of treatment

- Terbinafine(Lamisil):3 to 6mg/kg /d for 2 to 4 weeks.
- Fluconazole: 6mg/kg/day once daily for 6weeks
- Itraconazole: 5mg/kg/day,once daily or divided into two doses, for 2 to 4 weeks

Tinea Corporis -body ringworm

- A superficial dermatophyte infection of the glabrous skin, excluding the scalp, beard, face, hands, feet, & groin.
- Infection of the skin of the trunk, legs & arms with a dermatophyte.
- Infection frequently contracted from a household pet.
- May follow infection of another body site.
- Person to person transmission may occur in contact sports.
- M. canis from cats & dogs most frequent.

Tinea corporis - Skin lesion pink-red, scaly, annular patch with expanding border (active border).

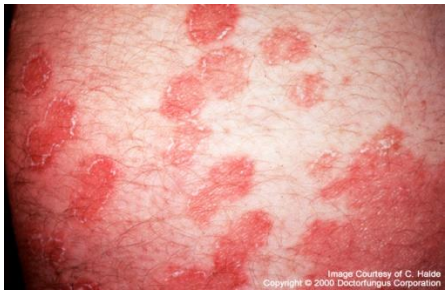


Figure 3.8 tinea corporis

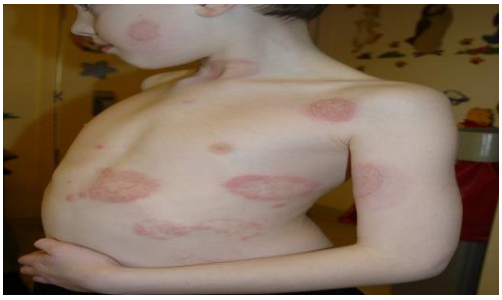


Figure 3.9 tinea corporis

Tinea Cruris

- It is a dermatophyte infection of the genitalia, pubic area, perineal skin & perianal skin.
- The infection is more common in men than in women.
- It is often transferred from another infected body site and it its highly contagious via contaminated towels, floors, etc.

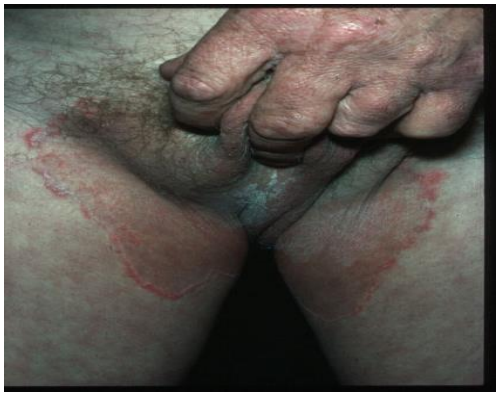


Figure 3.10 tinea cruris

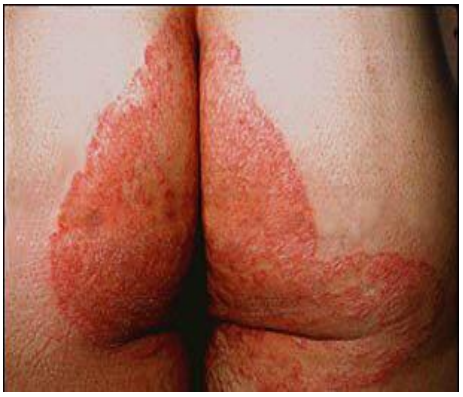


Figure 3.11tinea cruris

Tinea manuum

- Is a dermatophyte infection of the Hand

- It is characterized by diffusely dry, scaly, & erythematous patch on the palm.

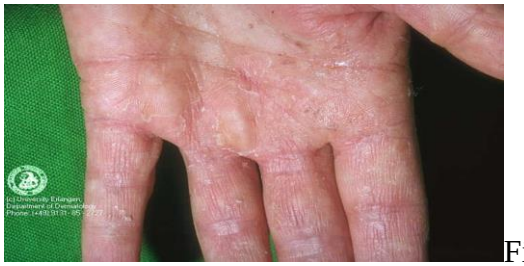


Figure 3.12 tinea manuum

Onychomycosis

- Is a fungal infection of the nails .
- In addition to the dermatophytes, Candida species and there are also a group of filamentous moulds that can invade nail tissue.
- No specific clinical features; the nail becomes lustreless & thickened.

Clinical features of onychomycosis:

- Typically onychomycosis begins at distal nail corner
- Thickening & opacification of the nail plate
- Nail bed become hyperkeratosis
- Onycholysis which means separation of the nail plate from the nail bed
- Discoloration:the nail plate becomes white, yellow, brown
- Edge of the nail itself becomes severely eroded**.**

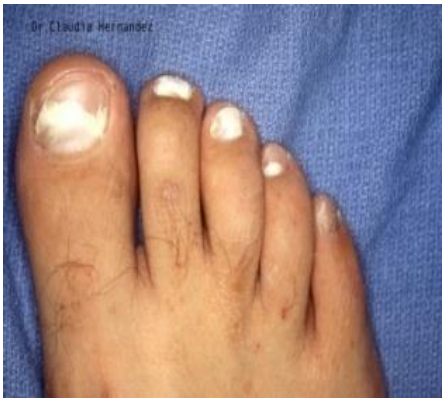


Figure 3.13 whitish superficial onychomycosis

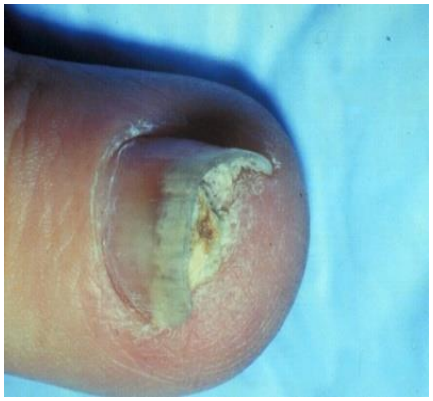


Figure 3.14 distolateral subungual onychomycosis

<u>Clinical Types of onychomycosis :</u>

1. Distolateral Subungal
2. White superficial
3. Proximal Subungal
4. Total dystrophic

5. Endonyx

Table 3.1

Type	**Clinical features**
Distal lateral subungal (DLSO)	Onycholysis subungal hyperkeratosis
Superficial; white (SWO)	White chalky patches on the surface of the nail
Procimal subungal (PSO)	Leukonychia onycholysis starts at the proximal nail fold
Endonyx (EO, rare)	Invasion via skin with direct invasion of the nail plate
Mixed types (MO)	DLSO + SWO DLSO + PSO
Total dystrophic (TDO)	End result of all types of onychomycosis

Diagnostic Tests

1) KOH -Look for hyphae

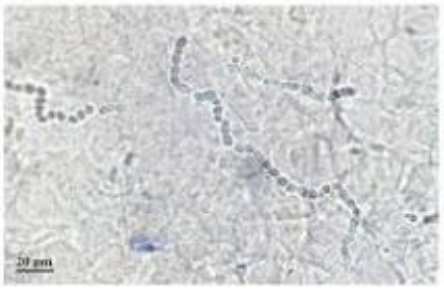


Figure 3.15 fungal filament seen under microscope

2. Fungal Cultures

- DTM (Dermatophyte Test Medium)
- Sabouraud's agar Media

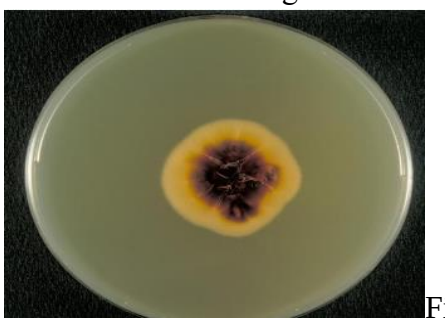


Figure 3.16 fungal culture

3) Skin or nail biopsies

Tinea unguium

- *It is a dermatophyte infection of nail.*
- *It is characterized by* thickened,discolored ,broken nail plate or nail plate may separate from nail bed.

Treatment

- Topical treatment is not effective in case of tinea unguium.
- It should be treated with systemic therapy
- Terbinfine 250mg Po/d for 6 weeks is given for finger nail infection and 250 mg po/d for 12 weeks is given for toe nails in adult cases.
- Itraconazole
    - Pulse dosing fingernails - (200 mg bid 1 week per month) for 2months.
    - Pulse dosing toe nails - (200 mg bid 1 week per month) for 3months.

Tinea pedis

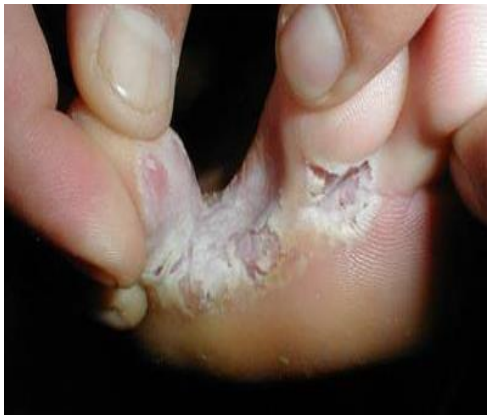
- It is a fungal infection that primarily affects the interdigital spaces & the plantar surface of the foot.
- Approximately 70% of the population will be affected by tinea pedis at some point in their life.
- The prevalence is highest among people aged 31 – 60 years, & it is more common in males than in females.
- Tinea pedis can be caused by a number of different dermatophyte fungi
- The dermatophytes that cause tinea pedis grow best in a moist, damp environment.
- The fungal spores can survive for extended Periods (months or even years) in bathrooms, changing rooms & around swimming pools.

People who are more at risk of tinea pedis

- who are immunocompromised,
- who sweat excessively
- who have poor peripheral circulation or diabetes.

Signs & symptoms

- Vary according to the type of tinea pedis
- Patients with tinea pedis typically present with itching, erythema & small blisters on one or both feet.
- More specific signs & symptoms depend on the subtype of tinea pedis.



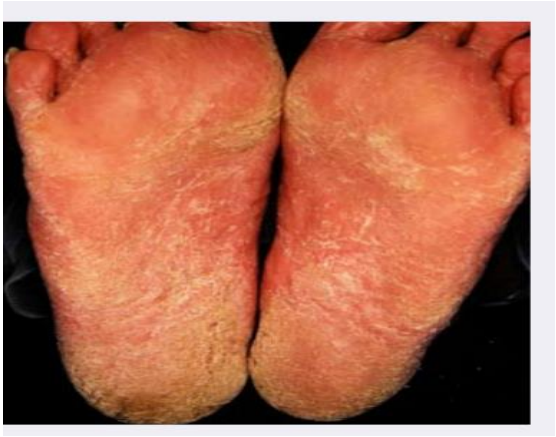


Fig 3.18interdigitate tinea pedis Fig 3.19 muccasin (hyperkeratotic) Tinea pedis

Treatment of tinea pedis

- In general, patients with interdigital tinea pedis can be treated with a topical antifungal.
- Moccasin, vesicular or ulcerative tinea pedis, or persistent tinea pedis may require oral antifungal treatment.

Topical antifungals treatments

- Topical miconazole, clotrimazole & terbinafine are used for the treatment of tinea pedis.

Practical advice

- Wearing less occlusive shoes and
- changing shoes & socks on a daily basis,
- if they become wet thoroughly drying feet after showering or swimming
- Not sharing towels ,wearing shoes in communal showers & changing room

Tinea Pedis:

Treatment

- **Dry Feet**
  - Alternate shoes, Absorbent powders, Change socks
- **Topicals and/or Systemics.**
  - Topical: terbinafine & azoles.
  - Systemic treatment are allyamines or azoles which are indicated if topical treatment fails.

Pityriasis versicolor

- It is a fungal infection caused by Malassezia furfur.
- Malassezia furfur is a normal flora of skin and there are 7 species of malassezia have been identified out of which M.furfur is the commonest.

- Malassezia furufur is a lipophilic fungus found in areas of body rich in sebaceous glands.

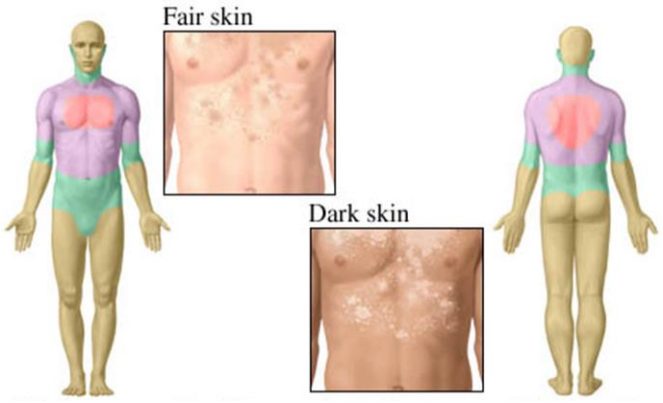


Fig 3.20 pitryiasis versicolour body site prediliction

Clinical manifestation

- Numerous, well-marginated, oval-to-round macules with a fine white scale when scraped.
- Pigmentary alteration is uniform in each individual and it can be Red,Hypo pigmented or Hyperpigmented.
- The skin lesions are scattered over the trunk and neck.
- It seldom affects the face and usually pitryiasis versicolour is asymptomatic.

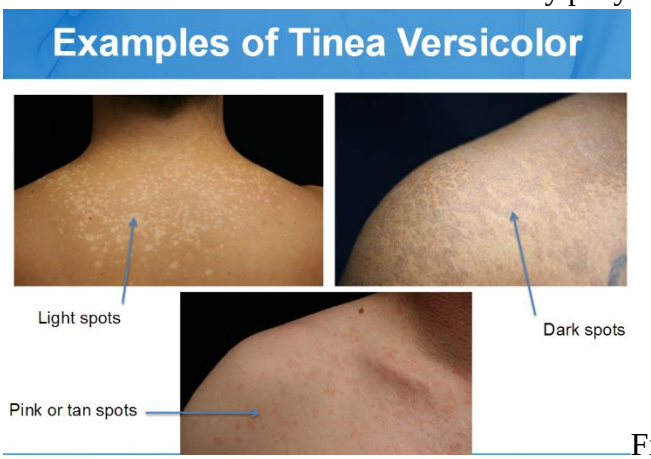


Figure 3.21

Tinea Vesicolor – Woods Light

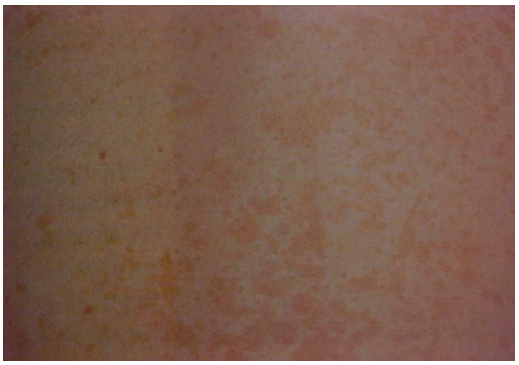


Fig 3.22 tinea versicolour
(wood light examination)

Fig 3.23 flourscence of tinea versicolour

Diagnosis:

- Scrape lightly from the skin lesion which has fine white scale then do
- KOH which shows short hyphae & spores (Spaghetti & meatball appearance)

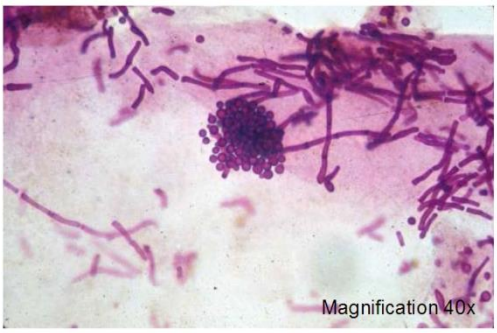


Figure 3.24 Spaghetti and meat ball apperance

Treatment

- Topical treatment is the first-line treatment

1.Shampoos:

- selenium sulfide 2% , ketoconazole
- Apply daily to affected areas then keep it for 10 minutes, then later on rinse repeat daily for 1-4 weeks as effective as oral therapy

2. Imidazole creams: ketoconazole, clotrimazole

- Apply daily or bid for 1-4 weeks
- Imidazole creams are very effective for limited areas

3. Oral medication may be used
    - Systemic therapy is indicated when pitryiasis versicolour is extensive or resistant to topical therapy and the most commonly used systemic antifungals are Fluconazole or Itraconazole.

Note that after treatment of pitryiasis versicolour hypopigmentation resolves slowly.

CANDIDIASIS

It is superficial infection of the skin and mucous membrane caused by the yeast like fungus Candida albicans and a few other Candida species .
Cutaneous candidiasis occurs in moist, occluded cutaneous sites.
It manifests with erythema, pruritus, tenderness, and pain.
It includes intertrigo,diaper dermatitis,oropharyngeal candidiasis , genital candidiasis and candida balinitis.

- **Intertrigo** :presents as initial pustules on an erythematous base, which becomes eroded and confluent followed by fairly sharp, demarcated polycyclic, erythematous eroded patches with small pustular lesions at the periphery

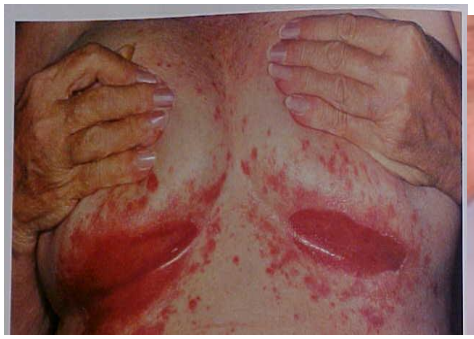


Fig 3.25 intertrigo at submamary area

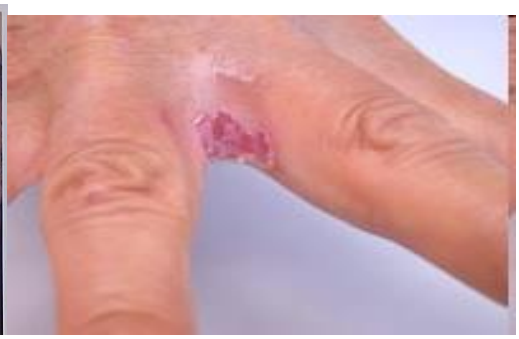


Fig 3.26intertrigo at finger webspace

- **Diaper dermatitis** :presents as erythema, edema with papular and pustular lesions, erosions, oozing, and collarettelike scaling at the margins of lesions in the perigenital and perianal skin and inner aspects of thighs and buttocks.
- **Oropharyngeal Candidiasis:** presents with minor variations of host factors such as use of antibiotic therapy, use of glucocorticoid therapy, in younger and older age groups, and in those with significant immunocompromise.

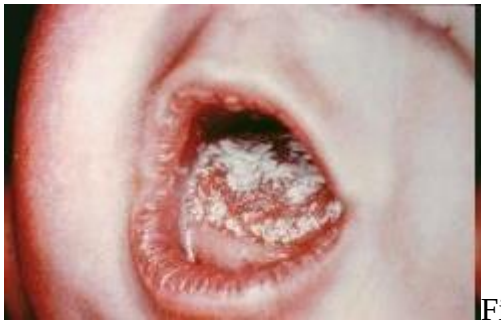


Figure 3.27 oral candidiasis

- **Genital Candidiasis**: presents on nonkeratinized genital mucosa such as vulva, vagina,and preputial sac of the penis and usually represents overgrowth of endogenous colonizing Candida sp rather than from an exogenous source. Greater than 20% of normal women have vaginal colonization with Candida species, and

Candida albicans accounts for 80% to 90% of genital isolates. Risk factors include diabetes and human immunodeficiency virus/acquired immune deficiency syndrome, and pregnancy in women.Clinical manifestations include vulvitis and vulvovaginitis. Onset is abrupt, usually the week before menstruation, and symptoms include pruritis, vaginal discharge, vaginal soreness, vulvar burning, and dyspareunia.

- **Candida Balanitis:**The uncircumcised penis provides a warm, moist environment for yeast infections.It can occur after intercourse with an infected female and is more common in those who had vaginal intercourse within 3 months.Tender, pinpoint, red papules and pustules appear on the glans and shaft of penis. The presence of pustules

is very suggestive of candidiasis and white exudate similar to that seen in Candida vaginal infections can be present.

Management of candidiasis

It includes the use of topical and oral antifungal agents.

Summary

Superficial fungal skin infections are mainly caused by dermatophytes and yeast (malasseezia furfur and candida albicans).

Dermatophytes are known as ring worm or tinea and it affects the skin ,hair and nails.

Clinical classification of dermatophytes :

- Tinea Capitis (ring worm infection of the scalp)
- Tinea corporis (ring worm infection of the trunk)
- Tinea pedis (ring worm infection of the foot)
- Tinea ungium (ring worm infection of the nail)
- Tinea mannum(ring worm infection of the hand)
- Tinea barbae (ring worm infection of the beard)

Diagnosis is based on clinical sign and symptoms ,fluroscence with woods light examination , KOH exam (direct microscopic examination) or fungal culture.

Treatment is mainly systemic therapy for tinea capitis .

Topical antifungals for tinea corporis,tinea pedis,tinea cruruis or tinea barbae but for extensive or resistance cases ,oral grisofulvin,azole derivatives or allylamines is given for 3 weeks.

Pityriasis Versicolor is caused by lipophilic yeast malassezia furfur which is the pathogenic form of pityrosporum orbiculare for which treatment is topical imidazoles and for extensive or recurrent cases,it should be treated with systemic antifungal such as fluconazole or itraconazole .

Cutaneous candidiasis is classified into candidia intertrigo(it is common at the finger web spaces,at the angle of the mouth,groin,axilla and submamary area) and chronic paronychia.

There is also mucosal candidiasis (oral thrush)

Treatment of candiaisis is topical or systemic imidazole derivatives.
Grisofulvin is fungistatic and it is effective against dermatophytes.
Azoles are broad spectrum antifungals such as ketoconazole ,fluconazole or itraconazole.
Ketoconazole has hepatotoxicity effect but fluconazole and itraconzaole have less side effects and allylamines such as terbinafine are effective only against dermatophytes.

Chapter 4: Viral Skin Infections

Chapter description- this chapter describes the clinical presentation and magement of common viral skin infections so that the clinician is able to diagnose and treat different viral infections such as herpes simplex, varicella zoster, herpes zoster, warts, pitryiais rosea, and measeles

Chapter Objective

- To be able to discuss viral infections in general
- Describe the clinical features of different viral infections
- Discuss treatment of viral infections

Chapter Outline

- Introduction
- Epidemiology
- Pathogenesis
- Clinical Presentation
- Treatment
- Summary

Introduction

Viral skin infection causes a significant proportion of morbidity. The common types of viral skin infection are measles, herpes simplex, varicella zoster,human papilloma virus, mollescum contagiosum and pitryiais rosea which have differerent pathogenic mechanisms to casue skin infections.

Epidemiology

Viral skin infection ranked 50thcase among the common diseases in the world and it affected 245,000 population worldwide in 2010.

Pathogenesis of viral infections in the skin

There are three general patterns of viral infection. The most typical is that of acute infection followed by viral clearance, usually by immune mechanisms. This pattern occurs frequently with viruses that produce exanthemas, such as measles. Another pattern is that of acute infection followed by latent infection, which may then be followed by viral reactivation. In viruses with cutaneous manifestations, this pattern occurs often with HSV, varicella-zoster virus (VZV), and papilloma virus. A third pattern is that of chronic infection, as in HIV with initial viral replication in trachea and bronchial epithelial cells, after 2 to 4 days local lymphatic tissue becomes infected followed by viremia before appearance of RASH. Essential lesions are found in the skin, mucous membrane of naso-pharynx, bronchi, intestinal tract and conjunctiva.

Measles or Rubeola

Measles is a highly contagious disease with worldwide distribution. It remains a leading cause of vaccine-preventable deaths in children. The risk of mortality is highest in developing countries, with most deaths due to complications of the disease. It is a highly contagious acute viral disease marked by: Prodromal fever, cough, coryza and conjunctivitis, Pathognomonic enanthem – 'koplik spot', and erythematous maculo – papular rash. Infection confers life-long immunity. The causative agent – *measles virus* is an RNA virus, in the genus - morbilli-virus and Paramyxoviridae family.

Epidemiology

Approximately 30 million cases reported worldwide annually. It causes one million deaths, and 15,000-60,000 blindness per year with most cases in developing countries. The mortality

is most often due to respiratory and neurologic complications. Susceptibility and complications are higher in infants and school-age children.

Risk factors for infection:

- Unimmunized children
- Immunodeficiency states (HIV/AIDS, leukemia, steroid therapy, etc), regardless of immunization status
- Loss of passive (maternal) antibodies prior to age of routine vaccination

Risk factors for severe measles and its complication are malnutrition, immunodeficiency states, pregnancy, and vitamin A deficiency.

Transmission is by respiratory route, via droplet spray. Infected children are infectious 1 week before and 5 days after onset of rash. Infants are protected by passive immunity in the first 4 – 6 months.

Clinical presentations

Prodromal stage follows an incubation period of 10-12 days and lasts 3-5 days. It is characterized by: fever, cough, coryza, conjunctivitis, malaise, myalgia, photo-phobia and peri-orbital edema. Koplik's spots appear within 2-3 days. Koplik's spots are the pathognomonic enanthem of measles, begin as small, bright red macules that have a 1- to 2-mm blue-white speck within them. They are typically seen on the buccal mucosa near the second molars 1 to 2 days before and lasting 2 days after the onset of the rash (see figure below).

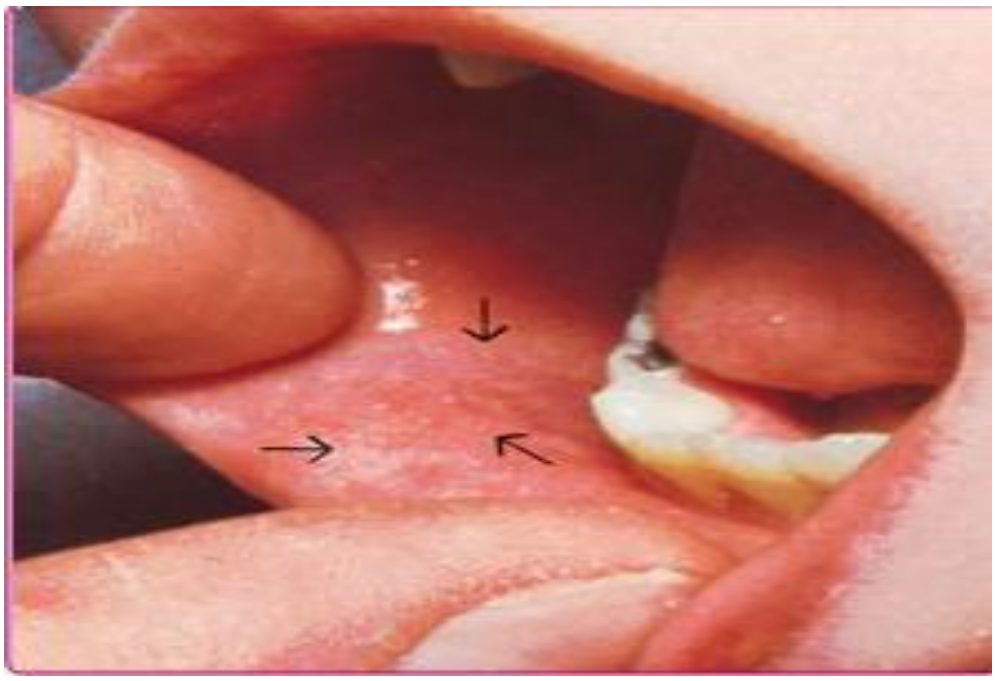
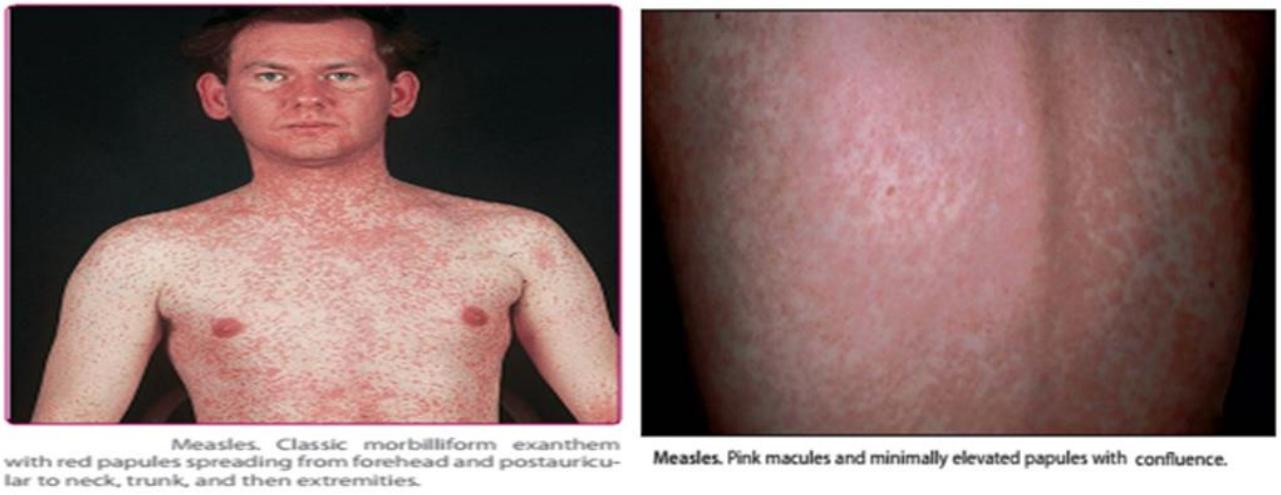


Figure 4.1koplick spot

Maculo–papular stage is characterized by high grade fever and an exanthem. The exanthem is characterized by erythematous, non-pruritic, macules and papules that begin at the hair line on the forehead and behind the ears. The rash quickly progresses to involve the neck, trunk, and extremities. Lesions may coalesce on the face and neck. The rash usually peaks within 3 days and begins to disappear in 4 to 5 days after the order of its appearance. Desquamation may occur as the rash resolves. Complete recovery occurs usually within 7-10 days from the onset of rash.



Measles. Classic morbilliform exanthem with red papules spreading from forehead and postauricular to neck, trunk, and then extremities.

Measles. Pink macules and minimally elevated papules with confluence.

Figure 4.2 Maculopapular exanthematous rash

Complications

Infectious complications include broncho-pneumonia, otitis media, laryngo-tracheo-bronchitis (croup), diarrhea, reactivation of TB. Other complications such as blindness (corneal ulceration), hepatitis, encephalitis, sub-acute sclerosing pan encephalitis (SSPE), myocarditis, peri carditis and thrombocytopenia could also occur.

Differential diagnosis of measeals

- Drug hypersensitivity reaction
- Rubella
- Other viral infection (parvovirus, enterovirus, adenovirus, human herpesvirus-6, Epstein-Barr virus)

Management

The management includes hydration, antipyretics, antibiotics (for secondary bacterial infection), Vitamin A (therapeutic dose), admission for those with severe complications.

Prevention

prevention of measles by vaccination is the most effective way to reduce measles morbidity and mortality. The current recommended measles immunization strategy is for an initial dose of vaccine at 9–15 months of age, with a second dose at 4–6 years of age. But in our set up we are giving at 9 months and at 15 months of age.

Herpes simplex infection

Introduction

Herpes simplex infection, caused by the herpes simplex virus (HSV) or *herpesvirus hominis, is one of the commonest infections* of human beings throughout the world. The herpes virus group consists of relatively large, enveloped DNA viruses that replicate within the nucleus and produce typical intranuclear inclusion bodies detectable in stained preparations.

HSV belong to the ubiquitous herpes viridae family, cause contagious infection with a large reservoir in the general population. Herpesviruses are able to establish lifelong persistent incurable infections in their hosts and undergo periodic reactivation. HSV has a potential for significant complications in the immunocompromised host.

More than 80 herpes viruses have been identified, 8 of which are known human pathogens. The 8 human herpes viruses(HHV) are:

- Herpes simplex type 1 and 2
- Varicela-zoster virus(VZV)
- Epstein-Barr virus(EBV)
- Cytomegalovirus(CMV)
- Human herpes virus type-6(HHV-6)
- Human herpes virus type-7(HHV-7)
- Human herpes virus type-8(HHV-8)

HSV-1 is normally associated with orofacial infections and encephalitis. HSV-2 usually causes genital infections and can be transmitted from infected mothers to neonates. Both

viruses establish latent infections in sensory neurons and, upon reactivation, cause lesions at or near point of entry into the body.

Epidemiology

HSV-associated diseases are among the most wide-spread infections affecting nearly 60-95% of human adults and it causes primary, latent and recurrent infections. No animal reservoirs or vectors are known. Highest incidence of HSV-1 infection occurs among children 6 months to 3 years of age, thus 70–90% of persons acquire type 1 antibodies by adulthood. Primary infection by HSV-2 is more common in young adults.

Transmission

Transmission of HSV can occur during both asymptomatic and symptomatic periods. Transmission of both HSV types is by direct contact with virus-containing secretions or with lesions on mucosal or cutaneous surfaces. HSV-1 is spread by contact, usually by infected saliva. HSV-2 is transmitted sexually or from a maternal genital infection to a newborn.

Pathogenesis

Close contact is required for HSV infection which must involve mucus membrane or abraded skin. After an incubation period of 2-20 days, the primary attack will occur which is asymptomatic in 90% of cases. It causes cytolytic infections and pathologic changes are due to necrosis of infected cells together with the inflammatory response.

In the sensory ganglion, the virus replicates and sequestered from the host immune surveillance and persists in a dormant state for life. The trigeminal and sacral ganglia are the most common location for HSV1 and HSV2 latency respectively.

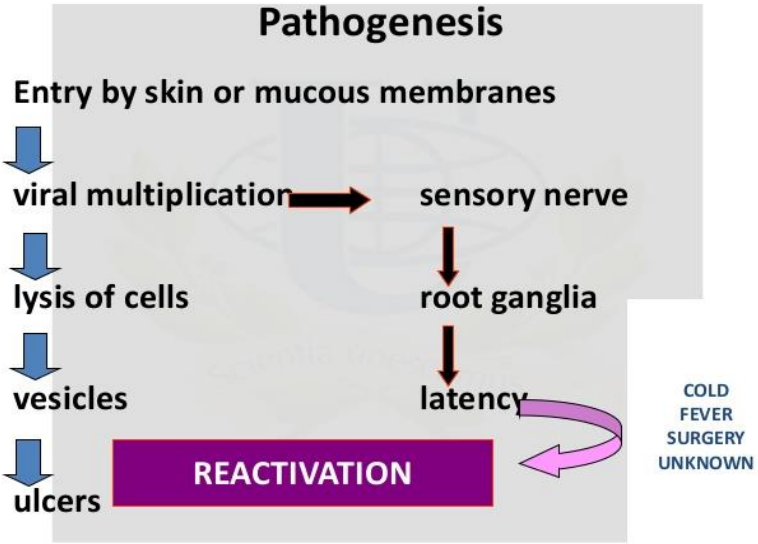
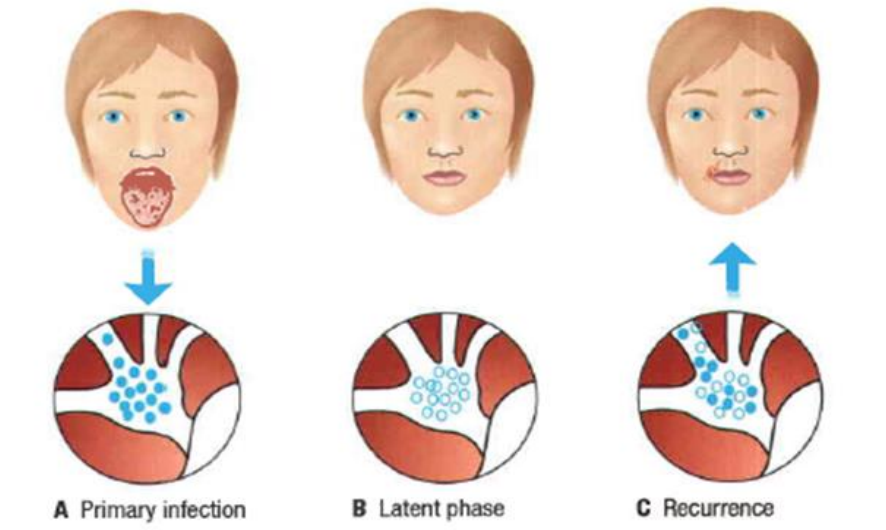


Figure 4.3 *Mechanism of reactivation of herpex simplex virus infection.*

Reactivation

Reactivation could be spontaneous or triggered, and influenced by both viral & host factors. The viral factors arequantity of latent viral DNA in the gangliatype-specific sequences within the HSV genome. The host factors include physical stress, poor emotional coping style, persistent stressors for greater than 1 week, anxiety, fever or febrile illness or Other infections, exposure to ultraviolet light, tissue or nerve damage, suppressed immune system, heat/cold, menstruation and fatigue.



Herpes labialis. **A.** With primary herpes simplex virus infection, virus replicates in the oropharyngeal epithelium and ascends peripheral sensory nerves into the trigeminal ganglion. **B.** Herpes simplex virus persists in a latent phase within the trigeminal ganglion for the life of the individual. **C.** Various stimuli initiate re-activation of latent virus, which then descends sensory nerves to the lips or perioral skin, resulting in recurrent herpes labialis.

Figure 4.4 Primary infection,latent phase and recurrence of herpes labialis

Clinical presentation

Irrespective of the viral type, HSV primarily affects skin and mucous membrane. Primary infection denotes initial HSV infection in individuals without pre-existing antibody to HSV-1 or HSV-2, and recurrent infection refers to the reactivation of HSV after the establishment of latency. Non- primary initial infection refers to an infection with one HSV type in an indivdual who already has pre-existing antibody to the other type.

Host immunity to HSV influences the risk of acquiring the infection, severity of disease &frequency of recurrences. Patients with mild decrease in cellular immunity may experience only increased number of recurrences & a slower resolution of lesions while severly compromised patients are more likely to develop disseminated, chronic or drug resistant infections.

Asymptomatic infection is the rule rather than the exception. Classical herpes lesions are divided into three stages:

- ✓ Developmental stage: prodrome, erythema, papule
- ✓ Disease stage: vesicles, ulcerate or crust
- ✓ Resolution stage: dry flaking & residual swelling

Genital primary disease is more commonly symptomatic than oral. Three hallmarks of HSV infection are pain, active vesicular border & scalloped periphery.

Variants of HSV Infection

1 Herpes Labialis(Herpetic orolabialis/ cold sore/fever blister
2 Herpetic Gingivostomatitis.
3 Herpes Genitalis
4 Herpetic Whitlow
5 Herpetic Keratoconjuctivitis
6 Neonatal Herpes Simplex
7 Eczema Herpeticum
8 Disseminated Herpes Simplex

Herpetic orolabialis/ cold sore/fever blister

Herpes labialis is most commonly caused by HSV-1 and it is the most common variant world wide. Oral lesions caused by HSV-2 secondary to orogenital contact has been identified.

Primary infection may include a prodrome of fever, sorethroat & submandibular or cervical LAP, in children odynophagia are also observed. Painful vesicles develop on the lips, the gingiva, palate or tongue often associated with erythema & edema. The lesions ulcerate and heal within 2-3 weeks.

Recurrences present after the disease stayed dormant for variable amount of time. 1/3 of patients will experience a recurrence, of these 50% will experience at least 2 recurrence annually. Reactivation in the trigeminal ganglia leads to recurrence in face, oral, labial & ocular mucosa. Pain, burning, itching or paresthesia precedes recurrent vesicular lesions, vesicles eventually ulcerate or form crust commonly over the vermillion border of the lip. Untreated recurrence lasts for about 1 week. Post herpetic erythema multiforme may occur.

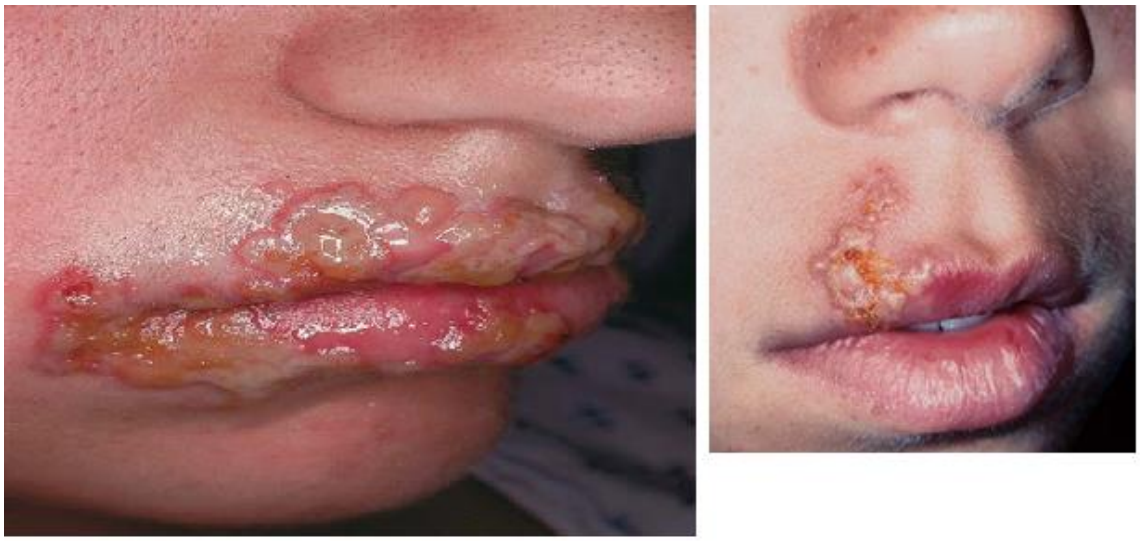


fig 4.4 Herpes Labialis: Multiple grouped vesicular lesion on the lips.

Herpetic Gingivostomatitis

Herpetic gingivostomatitis occur most commonly in 1-5 years of age. After constitutional symptoms which may be severe the stomatitis began, the gums swollen, become red and bleeds easily. Vesicles presents as white plaques which seen on tongue, pharynx, palate and buccal mucosa. Regional lymph node may be enlarged and tender. Fever subside after 3-5 days and recovery is completed in 2 weeks.

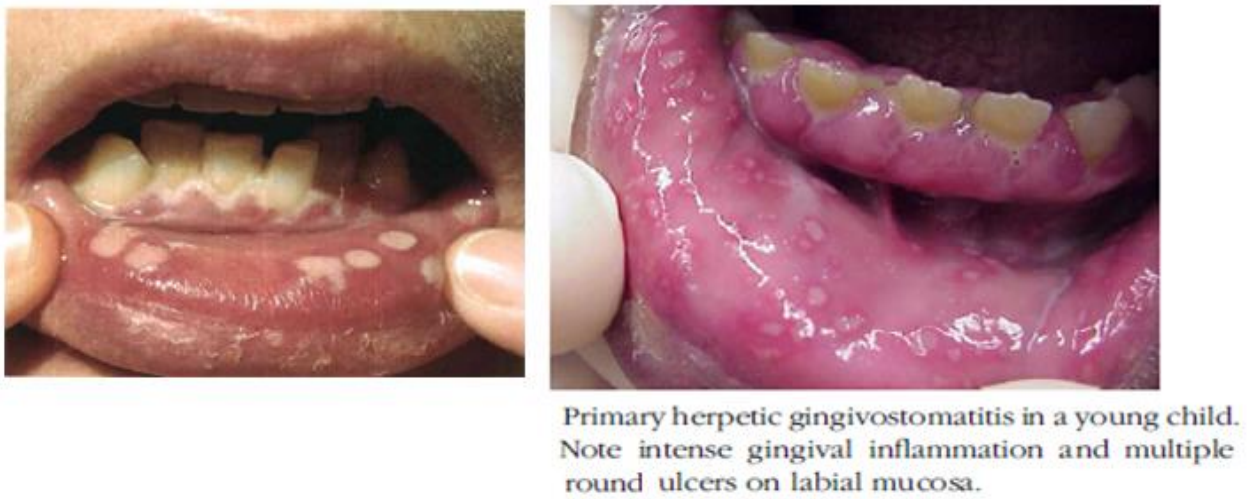
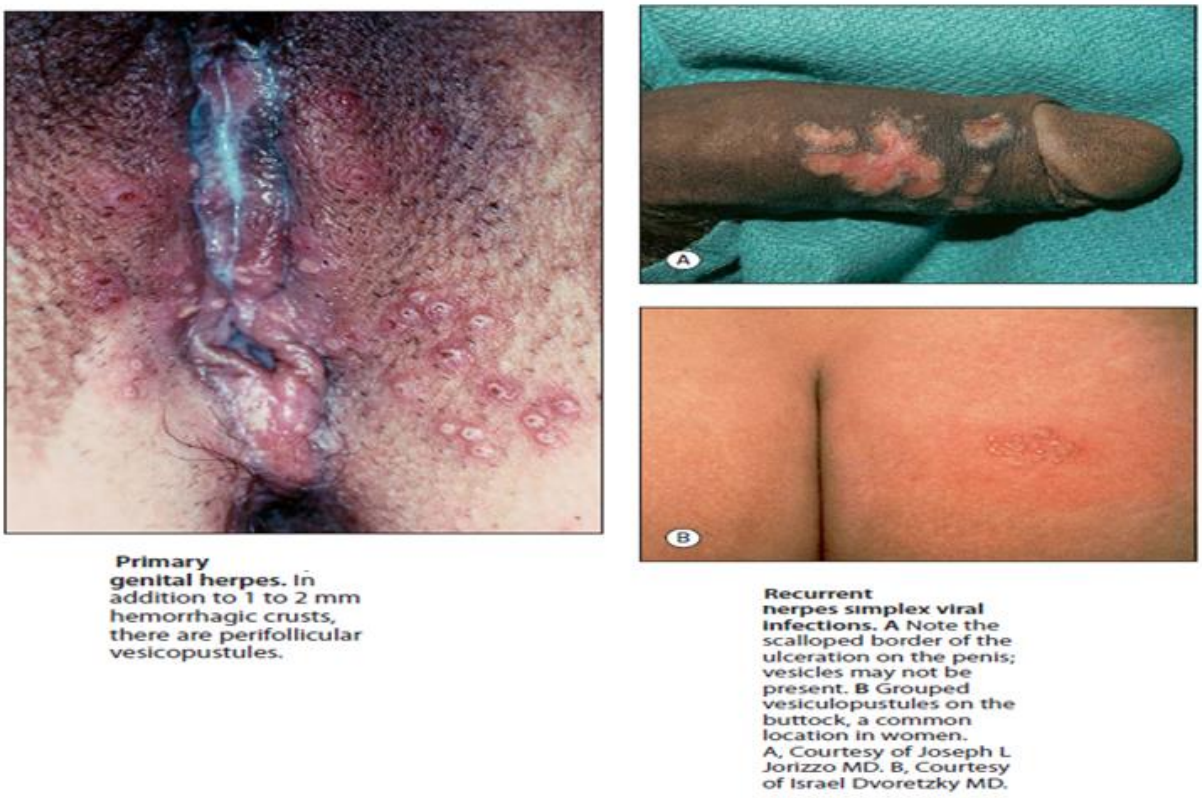


Figure 4.5 Herpetic gingivostomatitis

Herpes Genitalis

Primary genital herpes infection produces a severe clinical picture and presents as an excruciatingly painful, erosive balanitis, vulvitis or vaginitis. In women, lesions can also involve the cervix producing cervicitis(80%), buttocks, perineum and are associated with inguinal adenopathy and dysuria. Primary HSV lesions heal over 2 to 6 weeks, but viral shedding may persist longer. HSV can cause urethritis, usually manifested only as a clear mucoid discharge, dysuria, and frequency. Occasionally HSV can be associated with endometritis, salpingitis, or prostatitis.



Primary genital herpes. In addition to 1 to 2 mm hemorrhagic crusts, there are perifollicular vesicopustules.

Recurrent nerpes simplex viral infections. A Note the scalloped border of the ulceration on the penis; vesicles may not be present. **B** Grouped vesiculopustules on the buttock, a common location in women. A, Courtesy of Joseph L Jorizzo MD. B, Courtesy of Israel Dvoretzky MD.

Figure 4.6 Genital Herpes

Herpetic whitlow

Herpetic whitlow represents HSV infection of the hands & digits, occur as a direct inoculation of the virus from oral or genital lesions, commonly due to HSV-1. It occours in children who sucke their thumbs, dental & medical health care worker before use of gloves. Occurence due to HSV-2 increasing due to digital-genital contact. Clinicaly they will have painful, grouped, confluent vesicles on an erythematous & edematous base which commonly miss diagnosed as cellulities.

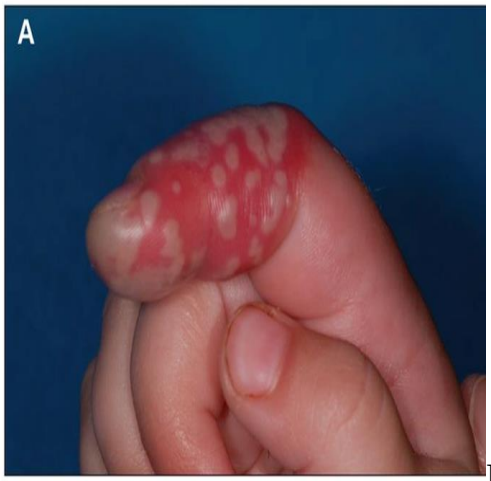


Figure 4.7Herpetic whitlow

Ocular HSV

Ocular HSV is one of the most common cause of corneal blindness in the US. If it occured beyond the newborn period, caused by HSV-1. Infection present as unilateral or bilateral keratoconjuctivitis with eyelid edema, tearing, photophobia, chemosis & periauricular LAP. Branching dendritic lesions of the corneal epithelium is pathognomonic. Recurrent episodes with unilateral involvement is common. It complicates with corneal ulceration, scarring, globe rupture & blindness

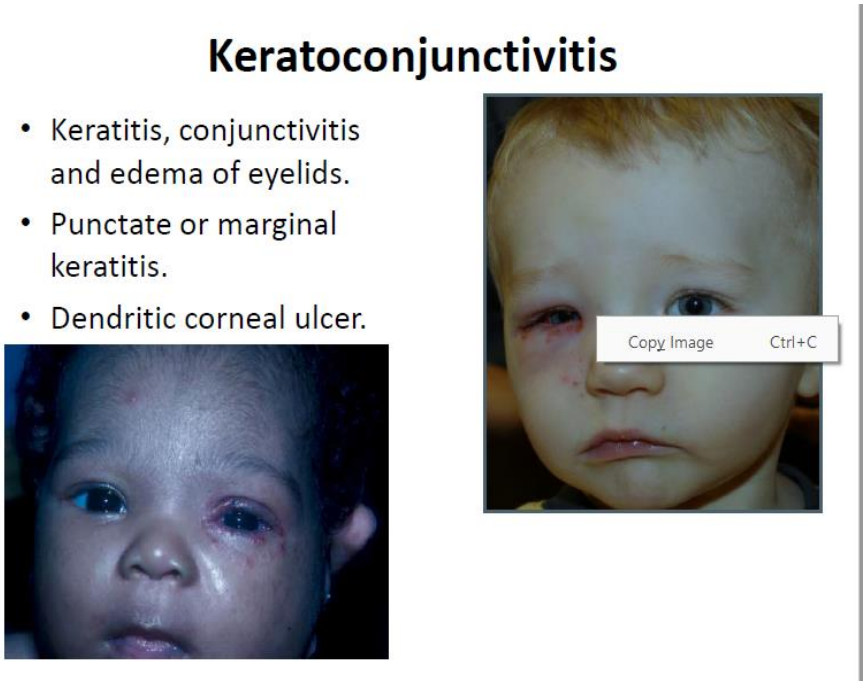


Figure 4.8keratoconjuctivitis

Eczema herpeticum (Localized or disseminated)

Eczema herpeticumalso known as kaposi varicelliform eruptions, is caused by HSV-1(primary or recurrent), commonly develops in patients with atopic dermatitis(AD), burns or other inflammatory conditions. Children are commonly affected but also 2-3 decades could be affected. It is characterized by vesicles in large number over the areas of active or recently healed AD lesions, particularly affecting the face. It continue to appear in crops for several days and become pustular & markedly umblicated, it is associated with high grade fever and adenopathy. It should be considered in children with infected eczema particularly if child is more ill systemically. EH of young infants is medical emergency and early treatment is life saving.

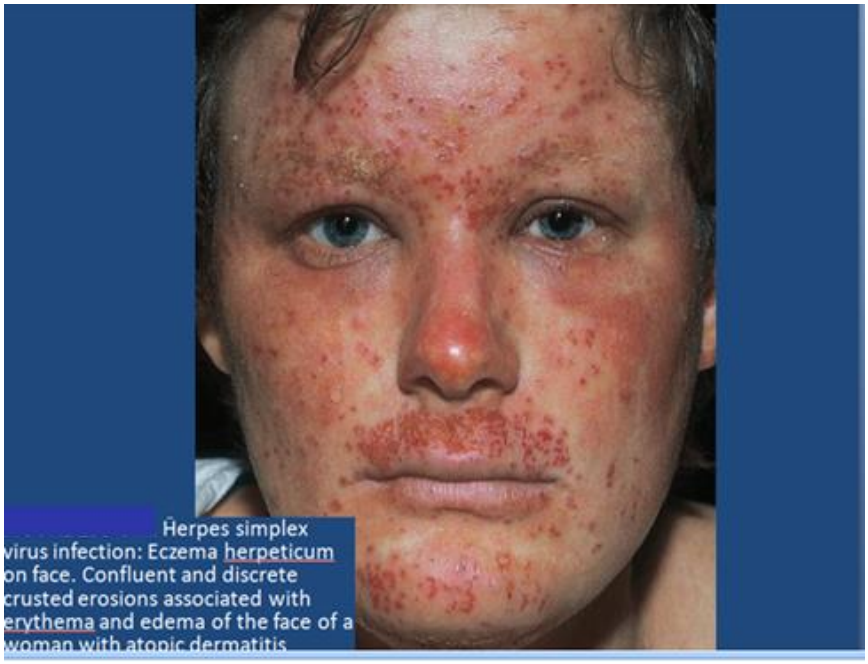


Figure 4.9 Eczema Herpeticum

Herpes gladiatorum

Herpes gladiatorum is caused by HSV-1, seen as papular or vesicular eruptions on the torso of athletes , on lateral aspect of neck especially wristlers due to close physical contact. Any wrestler with episode of orolabial herpes should be on suppressive antiviral therapy.

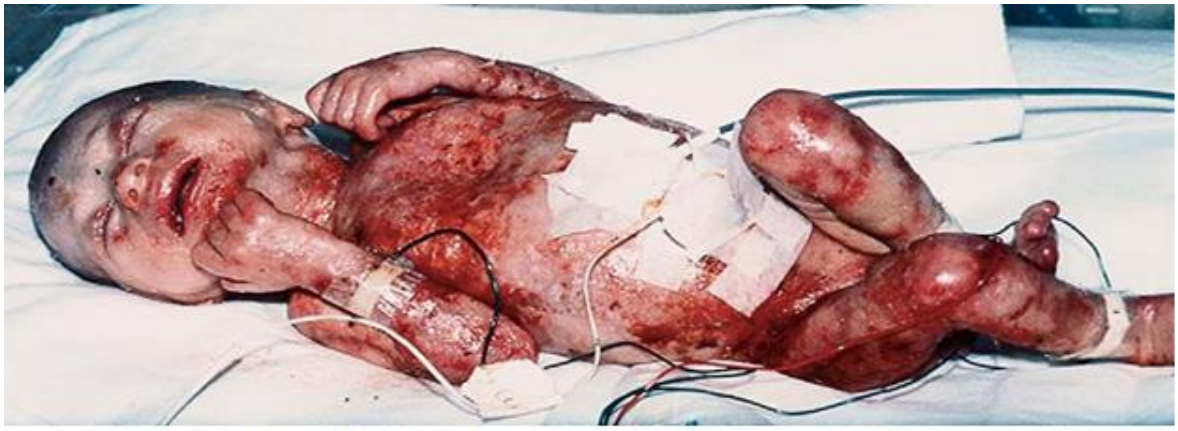
Disseminated HSV Infection

Disseminated HSV Infection commonly present in females who are pregnant & immunocompromised individuals. Present with atypical sign and syptoms and its difficult to diagnose.

Risk Factors Includes:Immunodeficiency.e.g. *AIDS, drugs, malignancy etc*., malnutrition, eczema herpeticum.

NEONATAL HERPES

Neonatal herpes is due to HSV-2 infection, occoures 1 in 2000 – 5000 deliveries, manifests usually within the first 2 weeks of life. HSV-2 infection during pregnancy can have devastating effect to fetus (which ranges from localized skin , mucosal or eye infection to encephalitis, pneumonitis, disseminated infection and fetal demise). Vesicles are initially 1-2mm in diameter & can progress to bullous lesions larger than 1cm in diameter. Worst prognosis in those with dissiminated disease with a component of encephalitis presenting with seizure, lethargy, irritability, tremors, poor feeding, temperature instability, and bulging fontanelles



Neonatal herpes due to HSV-2.Widespread erosions and ulcerations are seen

Figure 4.10 Neonatal Herpes

Labratory diagnosis

Cytopathology:A rapid cytologic method, Scrapings obtained from the base of a vesicle is stained with 1% aq. solution of toluidine blue '0' for 15 seconds. Presence of multinucleated giant cells or 'Tzanck cells' dectates HSV positivity.Intranuclear inclusion bodies with Giemsa-stained smears can also be used.

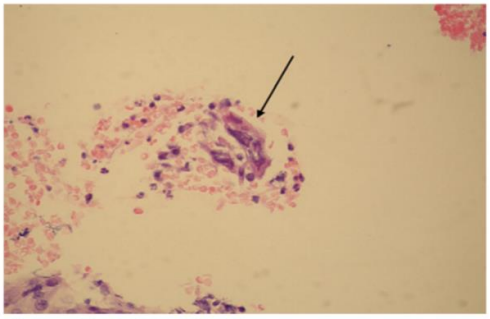


Figure 4.10 Multi nucleated giant cells

Inoculation of tissue cultures in human diploid fibroblasts is preferred for viral isolation (culture). Typical cytopathic changes may be seen in 24-48 hrs. Polymerase chain reaction (PCR) can also be done.

Serology: Antibodies appear in 4–7 days after infection; reach a peak in 2–4 weeks. Rise in Antibody titer may be demonstrated by ELISA or complement fixation tests.

Treatment

There is *no treatment that can cure herpes*, but antiviral medications can shorten & prevent outbreaks during the period of time the person takes the medication, reduces viral shedding, healing time, & duration of symptoms, partially control the signs & symptoms of herpes episodes. Daily suppressive therapy for symptomatic herpes can reduce transmission to partners. Oral treatment is superior to topical treatment but effective only if started early ***(within 48-72 hours of onset).***

- Aciclovir, Valaciclovir, Famciclovir … antiviral therapy can be used
- Acyclovir, 400mg thrice daily for 10-days.
- Famciclovir, 250 mg thrice daily for 5-days.
- Valaciclovir, 1g, twice daily for 10-days.

Treatment of recurrence

Acyclovir 400mg twice daily for one year suppresses recurrence by 75%

PREVENTION

Asymptomatic shedding is frequent in patients with genital herpes. Transmission can be reduced by avoidance of contact with potential virus-shedding lesions, safe sexual practice and antiviral therapy

Varicella-zoster virus (VZV)

Varicella-zoster virus (VZV) causes primary, latent, and recurrent infections. The primary infection is manifested as varicella (chickenpox). VZV is a neurotropic human herpesvirus, results in lifelong latent VZV infection of sensory and autonomic neurons, and host immunity to VZV and predisposes to severe group A streptococcus and *Staphylococcus aureus* infections. The virus is enveloped with double-stranded DNA genomes, encode more than 70 proteins. Transmission of VZV to susceptible individuals occurs at a rate of 65-86%, contagious 24-48 hr before the rash is evident and until vesicles are crusted. VZV is transmitted by airborne spread (oropharyngeal secretions) and through direct contact (fluid of skin lesions). Varicella vaccine is introduced in 1995 (Live attenuated Oka VZV), have virtually eliminated varicella in countries where they have been deployed.

Pathogenesis

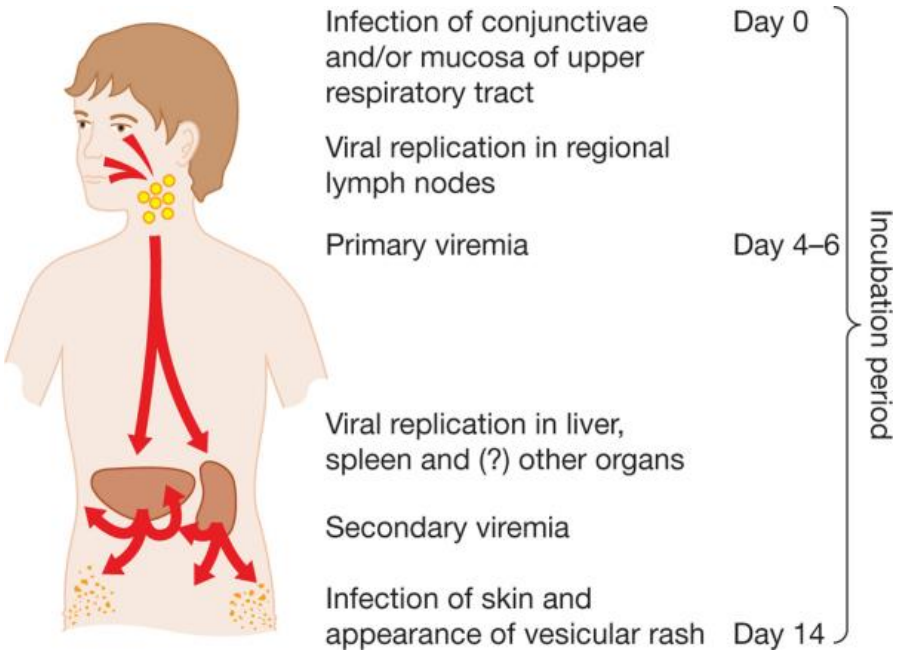


Figure 4.11 Pathogensis of varicella zoster infection

Virus is transported in a retrograde manner through-------- sensory axons -------dorsal root ganglia throughout the spinal cord----------virus establishes latent infection in the neurons and satellite cells---Subsequent reactivation of latent virus will lead to------herpes zoster

Clinical manifestations of VZV

- Varicella (Chicken pox)
- Varicella Zoster

- Breakthrough varicella
- Progressive varicella
- Neonatal varicella
- Congenital varicella syndrome

Varicella (Chicken pox)

Varicella (Chicken pox) is a primary infection of VZV. Incubation period is 10 -21 days. Subclinical varicella is rare. Commonly presented with prodromal symptoms including fever, malaise, anorexia, headache, mild abdominal pain. Then the skin lesions appear first on the scalp, face, or trunk. The initial exanthem consists of intensely pruriticerythematous macules followed by papular stage which include fluid-filled vesicles. Clouding and umbilication of the lesions begin in 24-48 hr. Simultaneous presence of lesions in various stages of evolution is characteristic of varicella. The distribution of the rash is predominantly central or centripetal, the number of lesions could range from 10 to 1,500. Ulcerative lesions involving the mucosa of oropharynx and vagina can be seen. Vesicular lesions on the eyelids and conjunctivae could also present. The exanthem may be much more extensive in children with skin disorders. Hypopigmentation or hyperpigmentation of lesion sites persists for days to weeks.

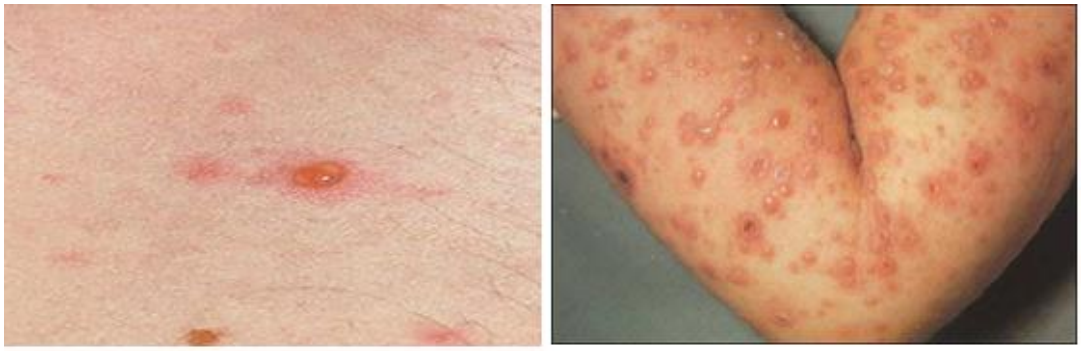
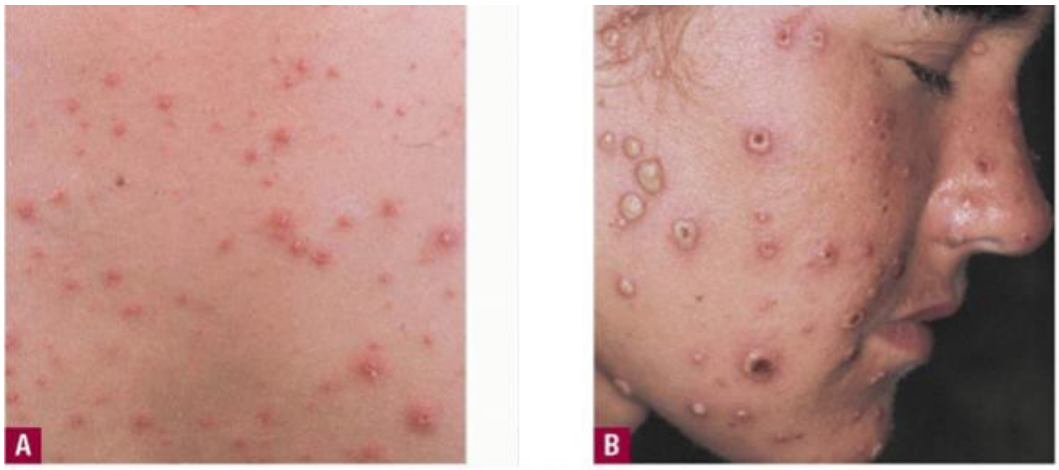


Figure 4.12 Chicken Pox: Macules,papules followed by vesicular lesion.



A full spectrum of lesions—that is, erythematous papules, vesicles ("dewdrops on rose petals"), crusts, and erosions at sites of excoriation—is seen in a child with a typical case of varicella. B. A wider range of lesions, including many large pustules, is seen in a 21-year-old woman who was febrile as well as "toxic" and had varicella pneumonitis

Figure 4.13 Chicken Pox: multiple erythematous papules ,vesicles,pusules and excoriation.

Laboratory diagnosis

Laboratory evaluation has not been considered necessary, leukopenia, relative and absolute lymphocytosis, liver function tests are mildly elevated, CSF in CNS complication could have mild lymphocytic pleocytosis and moderate increase in protein content. Mmultinucleated giant cells can be detected with nonspecific stains like Tzanck smear.

Treatment

In normal children, varicella is generally benign and self-limiting. They only need **Symptomatic treatment** including dress cool, light clothing, meticulous skin care with daily bathing and cool compresses, keep the enviroment cool, calamine lotion, antipyretics (salicylates must be avoided b/c of their association with Reye syndrome), antihistamines, and antibiotics for secondary bacterial infection.

TABLE 194-2 Treatment of Varicella in the Normal and Immunocompromised Patient

PATIENT GROUP	REGIMEN
Normal	
Neonate	Acyclovir, 500 mg/m^2 q8h × 10 days
Child	Symptomatic treatment alone, or acyclovir, 20 mg/kg PO qid × 5 days
Adolescent, adult, or glucocorticoids used	Acyclovir, 800 mg PO 5×/day × 7 days
Pneumonia, pregnancy	Acyclovir, 800 mg PO 5×/day × 7 days, or acyclovir, 10 mg/kg IV q8h × 7 days
Immunocompromised	
Mild varicella or mild compromise	Acyclovir, 800 mg PO 5×/day × 7-10 days
Severe varicella or severe compromise	Acyclovir, 10 mg/kg IV q8h × 7 days or longer
Acyclovir resistant (advanced acquired immunodeficiency syndrome)	Foscarnet, 40 mg/kg IV q8h until healed

Herpes Zoster (HZ)

HZ is an acute localized viral infection caused by reactivation of varicella-zoster virus and characterized by unilateral pain and vesicular eruption limited to a dermatome innervated by a corresponding sensory ganglion. Its very rare in healthy children <10 years of age. The lifetime risk for herpes zoster for individuals with a history of varicella is 10-20%, 75% of cases occurring after 45 years of age. When immunity to the virus(VZV) decreased the virus replicate within the ganglion then travel back the sensory nerve to skin resulting in dermatomal pain and skin lesion

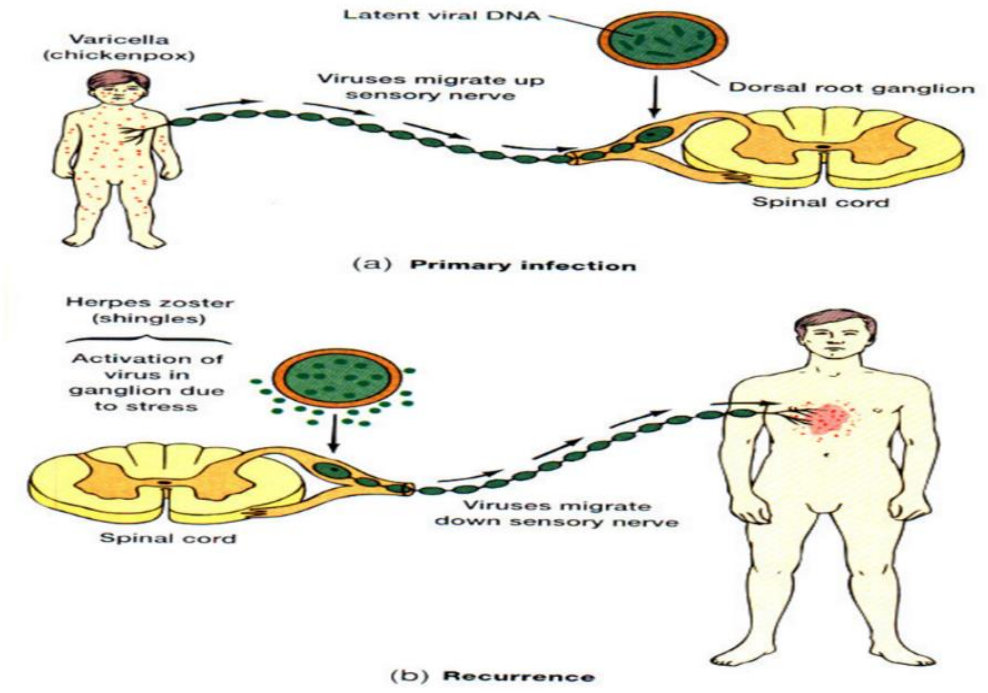


Figure 4.14 Pathogenisis of recurrence of varicella zoster infection.

Risk factors

Major risk factor is cellular immune dysfunction. Immunosuppressed patients have a **20 to 100 x** greater risk of HZ than immunocompetent individuals of the same age. Recurrent HZ more common in immunocompromised individuals. Immunosuppressive conditions associated with high risk of HZ include HIV infection/AIDS (25%), bone marrow transplant patients (30–40%), renal and cardiac transplant recipients (7–9%), malignancy(leukemia & lymphoma) - 10%, use of cancer chemotherapy, radiotherapy, use of corticosteroids and another strong risk factor is older age.

Clinical Manifestation

Clinical presentation is classified in to three distinct clinical stages:

- A-Prodrome which presented with neuritic pain or paresthesia precedes. Prodromal pain is uncommon in immunocompetent patients younger than 30 years of age, but it occurs in the majority of pts with HZ > 60 years. A few patients experience acute segmental neuralgia without ever developing a cutaneous eruption—a condition known as zoster sine herpete.

- B- active infection -- lesions begin as erythematous macules and papules that often first appear where superficial branches of the affected sensory nerve are given off. Acute vesiculation seen within 12 to 24 hours and evolve into pustules by the third day. Crust formed within 7 to 10 days to 2–3 weeks. *Active Vesiculation Skin lesions may be pruritic* but inthemselves are not painful.
- C-chronic: postherpetic neuralia (PHN) ---PHN, described as "burning," "ice-burning," "shooting," or "lancinating," pain can persist for weeks, months, or years after the cutaneous involvement has resolved.

Distribution of HZ is unilateral, dermatomal. Two or more contiguous dermatomes may be involved called Zoster multiplex seen in HIV/AIDS pts. Noncontiguous dermatomal zoster is rare. Hematogenous dissemination to other skin sites can happen in 10% of healthy individuals.

Site of Predilection are Thoracic (>50%), Trigeminal (10–20%) and lumbosacral and cervical (10–20%).

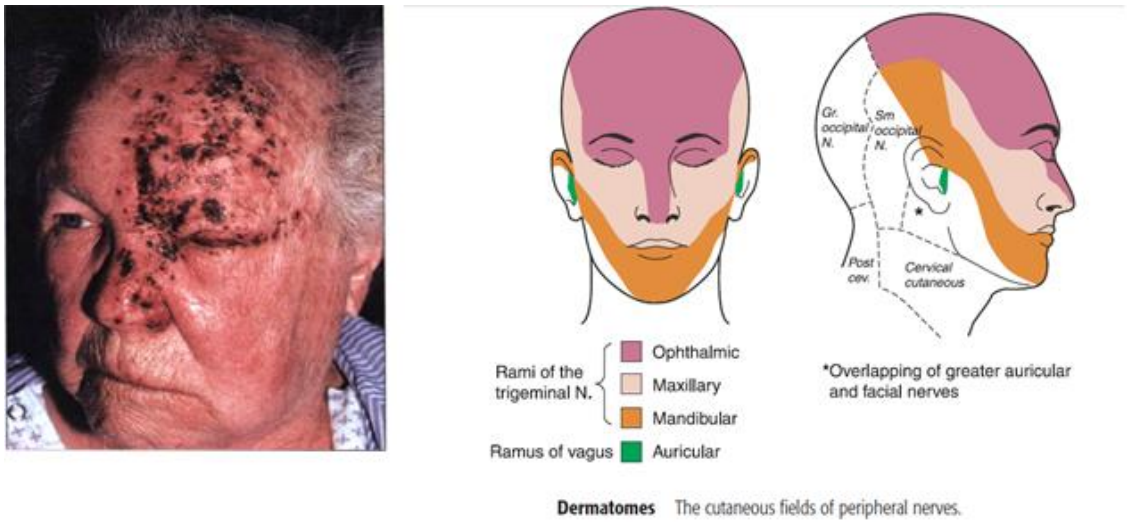


Fig 4.12 Zooster Opthalmicus: Branches of Trigiminal Nerve affected by herpes zoster.

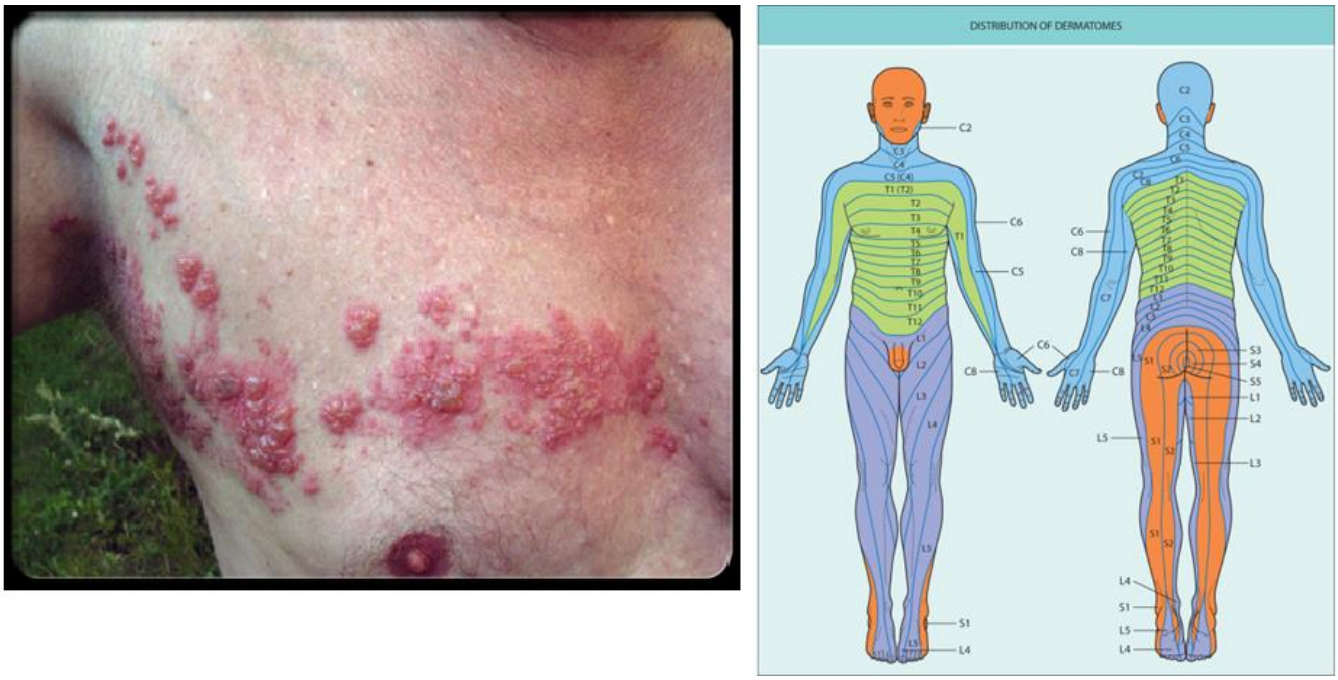


Fig 4.13 Dermatomal distribution of herpes zooster

MANAGMENT

Local therapy is used to releive symptoms and facilitate crustation of lesions. moist dressings(saline,water,burrows solution), Calamine lotion. Avoid occlusive ointments and creams & lotions containg glucocorticoids.

Systemic antibiotics for bacterial superinfection can be used. Topical antiviral treatment for herpes zoster is not effective.

ANTI VIRAL THERAPY

Goal of treating with antiviral therapy is to limit extent,duration and severity of the pain and rash in the involved dermatome, prevent disease elsewhere and it prevents PHN. But the use of antiviral agents is unproven if treatment is initiated > 72 hours after rash onset except in ophthalmic zoster or in pts who continue to have new vesicle formation.

Treatment of Herpes Zoster in the Normal Immunocompromised Patient

PATIENT GROUP	REGIMEN
Normal	
Age < 50 yr	Symptomatic treatment only, or acyclovir, 800 mg/PO 5×/day × 7 days
Age ≥ 50 yr, or with ophthalmic involvement	Acyclovir, 800 mg PO 5×/day × 7 days, or valacyclovir, 1 g PO q8h × 7 days, or famciclovir, 500 mg PO q8h × 7 days
Immunocompromised	
Mild compromise, or human immunodeficiency virus	Acyclovir, 800 mg PO 5×/day × 7–10 days, or valacyclovir or famciclovir
Severe compromise	Acyclovir, 10 mg/kg IV q8h × 7–10 days
Acyclovir resistant (advanced acquired immunodeficiency syndrome)	Foscarnet, 40 mg/kg IV q8h until healed

Figure 4.14 Treatement of herpes zooster

Treatment of Postherpetic Neuralgia

It resolves spontaneously in most patients, although this often requires several months. Some of the drugs are topical 5 percent lidocaine patch, Gabapentin, Pregabalin, Opioids, TCAs

Cutaneous warts (human papilloma virus infection)

Benign proliferations of the skin and mucosa that are caused by infection with human papilloma viruses (HPVs). Warts are common in school aged children (10-20%) and decline thereafter with increasing age.

Clinical classification of Human Papillomavirus (HPV) Types

HPV TYPE	MOST COMMON CLINICAL LESION	LESS FREQUENT LESION	POTENTIAL ONCOGENICITY
1	Deep plantar/palmar warts	Common warts	
2, 4, 27, 29	Common warts	Plantar, palmar, and mosaic warts	
3, 10, 28, 49	Flat warts	Flat warts in EV	HPV-10 rare in cervical and vulvar carcinomas
7	Butcher's warts		
13, 32	Oral focal epithelial hyperplasia		
5, 8, 9, 12, 14, 15, 17, 19-26, 36, 47, 50	EV, warts in immunosuppression	Normal skin (?)	HPV-5, -8, -9 isolated from SCCs
6, 11	Anogenital warts, cervical condylomata	Bowenoid papulosis, common warts; respiratory papillomatosis, common warts	Buschke-Löwenstein tumor; rare in penile, vulvar cervical, and other urogenital tumors; "low risk"
16, 18, 31, 33-35, 39, 40, 51-60	Cervical condylomata; anogenital warts; bowenoid papulosis	Common warts	Genital and cervical dysplasias and carcinomas; rare in cutaneous SCC; "high risk"

Figure 4.15 Clinical Classification of Human Papilloma Virus

Common Warts (verruca vulgaris)

Common warts are caused by human papilloma virus (HPV) subtypes 1, 2, 4, 26 and 27. Presented with Papules / nodules with rough surface. They may occur as single lesion or in groups, anywhere but most commonly over dorsal aspect of fingers & hands. Characterized by black dots on the surface which represents thrombosed capillaries. New warts may appear at sits of trauma (koebner phenomenon). Periungual warts and filiform warts are variants of common warts.

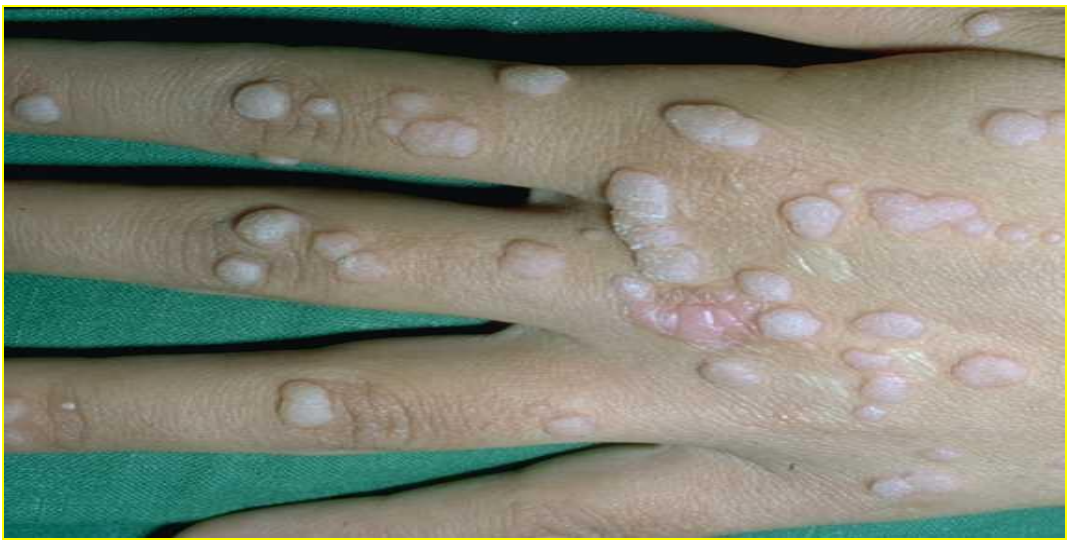


Fig 4.14 Verruca Vulgaris

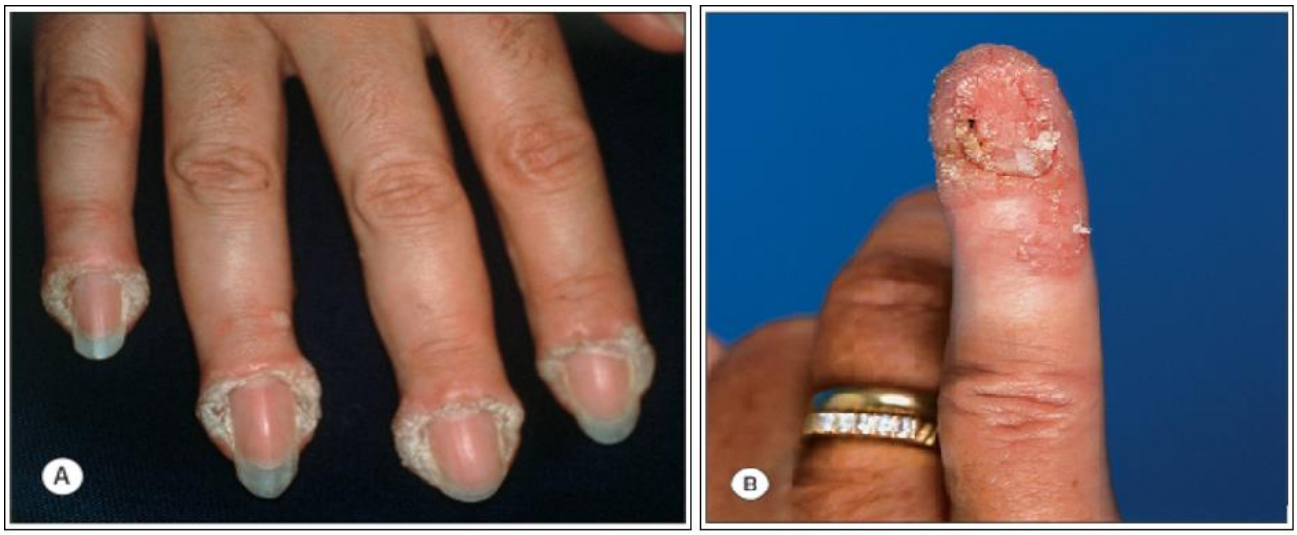


Fig 4.15 Periungual Wart

Flat warts (verruca plana)

Flat warts are caused by HPV subtypes 3, 10, 27, and 38. Present as slightly elevated papule with smooth surface, the number range from few to many hundreds. They can be skin-colored, light brown, pink, or hypopigmented in color and shape may be round, oval, polygonal, orlinear lesions (auto-inoculation by scratching). Common site is the face or beard area, but may be seen on dorsa of hands.

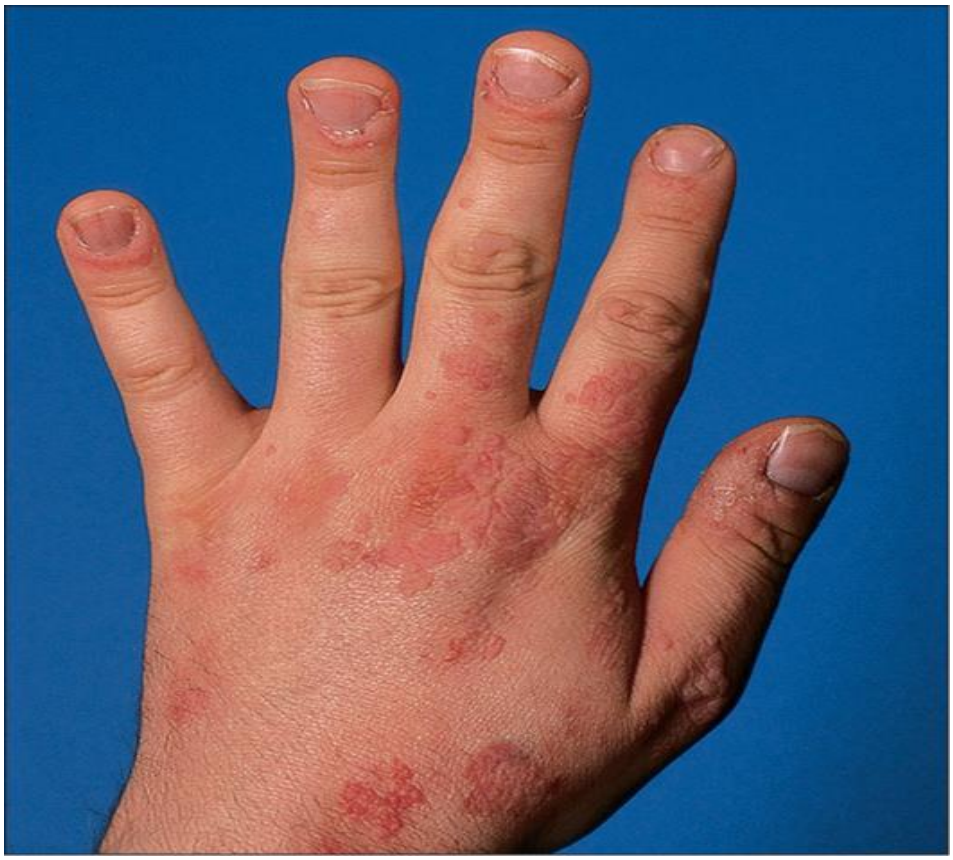


Fig 4.16 Flat Wart

Plantar warts (verruca plantaris)

Plantar wartsare caused by HPV subtypes 1, 2, and 4. Clinical presentation is with rough hyperkeratosis surface studded with black dots (thrombosed capillaries), usually single but may be multiple, affecting the planter aspects of feet or hands. When multiple warts coalesce into large flat plaque it is called mosaic wart. Paring using surgical scalpel will produces pinpoint bleeding spots.

Fig 4.17 Plantar Wart: Hyperkeratotic Plaques on the sole of the foot

Genital warts (condyloma accuminata)

Genital warts are caused by HPV subtypes 6, 11, 16, and 18. It present with cauliflower papules, nodules or plaques. It can occur solitary, multiple or in large masses and is the most common STD. It is seen in external genitalia of both sexes, perianal region and in anal canal. May affect the urethral meatus, urethra, vagina or cervix. Huge warts are at risk of malignant changes.

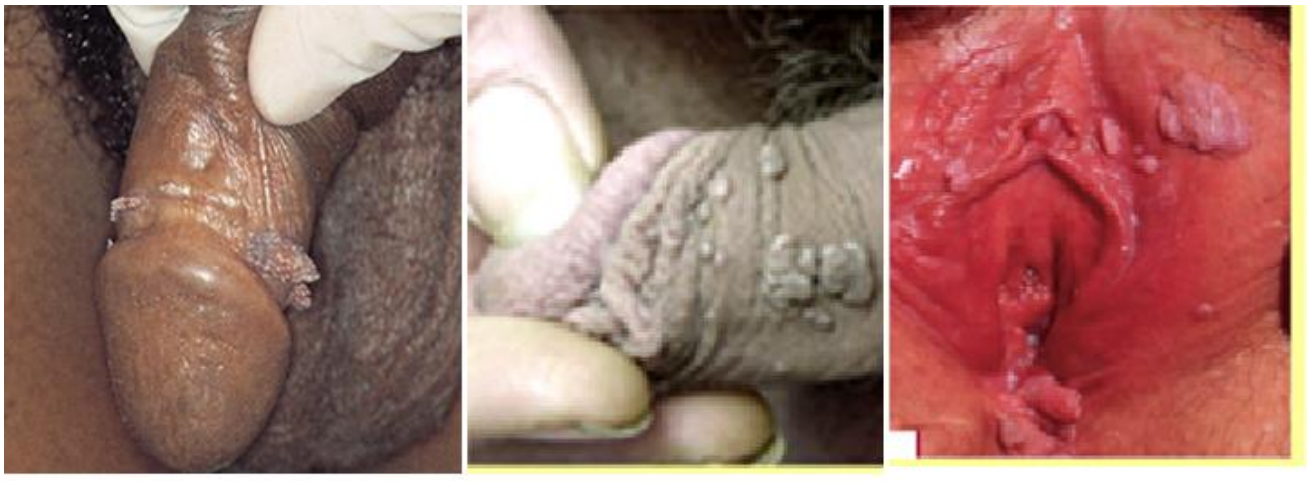


Fig 4.18 Genital Wart

Course and prognosis

In immuno-competent individuals, cutaneous HPV infections usually resolve spontaneously. Of which 50% of warts will resolve within 1 year and 70% within 2 years. But in immuno-compromised patients cutaneous HPV infections may be very resistant to all modalities of therapy.

Treatment

Treatment depends on number of lesions, site of wart and cosmetic disability. Among the different modalities of treatments keratolytics, chemical cautery, retinoic acid, cryotherapy, electrocautery, topical 5-flurouracil, podophyllin 20%, Imiquimod 5% and laser therapy can be used.

keratolytics which include salcilic acid (SA 10- 30%) can be used for common and plantar warts,TCA(TriChloroAcetic Acid 70-80%) is commonly used for genital warts.

Cryotherapy is done using liquid nitrogen (-196 ^{o}C) and its quite effective. The procedure is minimally painful, heals without scarring and it can be used for all types of warts.

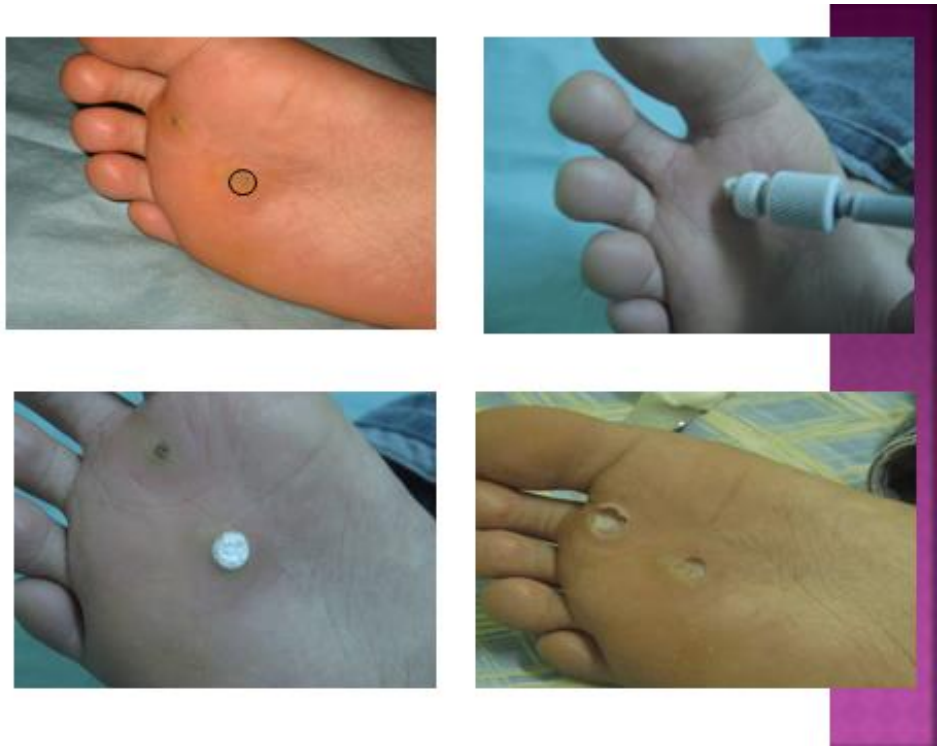


Fig 4.19 Cryotherapy for plantar wart

Podophyllin 20% is a cytotoxic agent that arrest mitosis. The treatment most commonly used for genital warts previously but currently is not available in the market. Contraindicated during pregnancy.

Molluscum contagiosum (MC)

Molluscum contagiosum (MC) is a common benign cutaneous viral infection specific to humans that occurs worldwide and is transmitted by skin-to-skin contact. Since the eradication of smallpox, MC virus is the primary poxvirus affecting humans. Henderson and Paterson identified its characteristic intracytoplasmic viral inclusion bodies in 1841.

EPIDEMIOLOGY

MC infection most commonly affects children, sexually active adults, athletes participating in contact sports, and individuals with impaired cellular immunity. The infection is most prevalent before the age of 14 years, with a median age of 5 years. MC lesions are mainly limited to the skin, but rarely develop on mucosal surfaces, including the eye.

In children, lesions are usually on exposed areas, whereas in adults, many cases are limited to the genital area, suggesting sexual transmission. Genital and perianal lesions can also develop in children, but are rarely associated with sexual transmission in this age group.

MC infections are more common in individuals infected with HIV, but with the increased use of antiretroviral therapy, the rate may be lower.

Transmission may occur via direct skin or mucous membrane contact, or via fomites. Bath towels, swimming pools, and public or shared baths are reported as sources of infection.

- Autoinoculation and koebnerization also play a role in the spread of lesions. Vertical transmission from mother to neonate during the intrapartum period has been reported.

ETIOLOGY AND PATHOGENESIS

- MC virus is a large, brick-shaped double-stranded DNA poxvirus with genomic similarities to other poxviruses
- The incubation period of the virus estimated to be approximately 2 to 6 weeks
- MC virus replicates in the cytoplasm of epithelial cells. Viral inclusion bodies known as Henderson-Paterson bodies develop in the basal layer of the epidermis and enlarge as cells rise through the epidermis, pushing cellular organelles against the sides of the cell. Proliferation and enlargement of the virion packed cells causes disintegration of

the stratum corneum and the formation of a dimple-like ostium through which the virions are released when the inclusion bodies rupture.

Risk Factors: AD (atopic dermatitis), HIV, OR Patients receiving immunosuppressive medications for organ transplants or other indications also have increased risk. MC infections have been reported in patients taking methotrexate, alone or in combination with a tumor necrosis factor- inhibitor or cyclosporine, for treatment of Crohn disease, mycosis fungoides, mixed connective tissue disease, psoriasis, and exfoliative dermatitis.

CLINICAL FEATURES

Cutaneous Findings: MC often presents as small pink, pearly, or skin-colored papules that enlarge to 2 to 5 mm in size. As they enlarge, they may become flat-topped, dome-shaped, and opalescent. Lesions may have a central dell or umbilication, from which a white curd-like substance containing the virus can be expressed with pressure. Children usually develop multiple papules, often in exposed sites like the face and extremities or intertriginous sites, such as the axillae and popliteal fossae. Lesions may be grouped in clusters or appear in a linear array. The latter often results from koebnerization or development of lesions at sites of trauma. In adults, lesions typically develop in the genital area.

Immunosuppressed patients typically have more severe and extensive disease, and may develop giant molluscum as large as 2.5 cm in diameter.

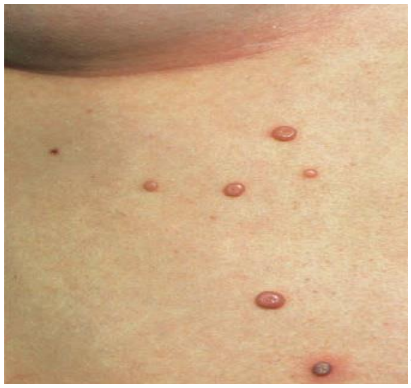


Figure 4.20 Mollescum Contangiousum

DIAGNOSIS

Clinical diagnosis is usually straightforward

Complications

MC is not associated with systemic complications.Many patients are asymptomatic, pruritus may be a significant problem, particularly in those patients with underlying atopic dermatitis. Chronic conjunctivitis and punctate keratitis may develop in patients with eyelid lesions.Secondary bacterial infection can occur, particularly if patients scratch their

lesions.Approximately 19% to 39% of children with MC develop an erythematous, eczematous dermatitis surrounding their molluscum lesions, known as *molluscum dermatitis*. This is more common in children with atopic dermatitis; roughly half of children with both atopic dermatitis and MC develop molluscum dermatitis.

In approximately 20% of patients, molluscum lesions may become inflamed, with erythema and swelling, and these inflamed lesions may become pustular or fluctuant. The development of inflamed MC lesions suggests a robust immune response and tends to be associated with a subsequent decline in the number of lesions.

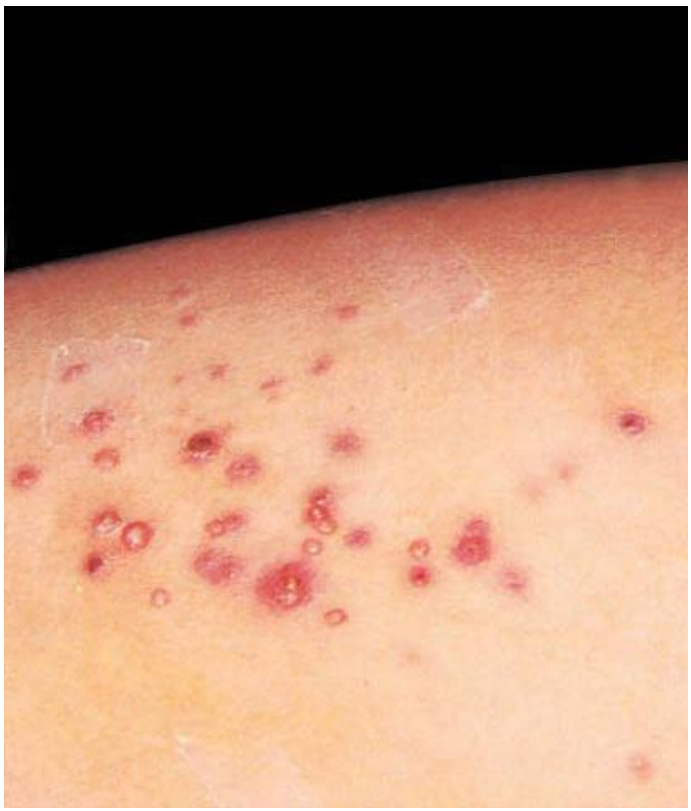


Figure 4.21 Inflammed M.C.: Erythemaous Central Umbilicated Papules

TREATMENT

Multiple therapies are used, including destructive, immunomodulatory, cytotoxic, and antiviral therapies.Physically destructive therapies include curettage, cryotherapy, CO2 laser, pulsed-dye laser, and electrodessication. They may work by rupturing the intracytoplasmic sacs containing MC viral proteins and triggering an immunologic response that clears the infection.Chemically destructive therapies include potassium hydroxide (5-10%), silver nitrate, trichloracetic acid, phenol, and the blistering agent cantharidin. Cantharidin 0.7% in a collodion base is applied to the lesions and washed off after 2 to 6 hours.

Pityriasis Rosea

Pityriasis rosea (PR) is an acute, self-limiting disease, probably infective in origin, affecting mainly children and young adults. It is characterized by a distinctive skin eruption and minimal constitutional symptoms. Pityriasis means scaly and rosea means pink so the name PR is used to describe the colour of the skin lesions. PR is reported in all races throughout the world, irrespective of climate condition. The average annual incidence reported to be 0.16 percent. Worldwide, pityriasis rosea has been estimated to account for 2% of dermatologic outpatient visits. Female preponderance of approximately 1.5:1, most commonly occurs between the ages of 10 and 35 years. It is rare in both the very young (defined as less than 2 years) and the elderly (defined as older than 65 years).

Etiopathogensis

The cause of pityriasis rosea is uncertain but many epidemiological and clinical features suggest that an infective agent may be implicated because 0f

(1) the resemblance of the rash to known viral exanthems,
(2) rare recurrences of PR that suggest lifelong immunity after one episode
(3) occurrence of seasonal variation in some studies
(4) clustering in some communities, and
(5) the appearance of flu-like symptoms in a subset of patients

Most recent PR etiologic and pathogenetic studies suggest two Human Herpes Viruses, **HHV-7 and HHV-6**as a cause. An increased incidence is reported among groups with close physical contact (eg, families, students, and military personnel), though the condition does not appear to be highly contagious. The incidence of PR among dermatologists is 3-4 times that among other physicians.

Clinical Feature

The eruption of pityriasis rosea follows a distinctive and remarkably constant pattern and course in most cases. Prodromal symptoms are usually absent and the vague complaints of headache and slight malaise. Itching/pruritus is a common clinical feature. Pruritus is severe in 25 percent of patients, slight to moderate in 50 percent, and absent in 25 percent of the cases.

The herald patch

The first manifestation of PR is usually the appearance of the herald patch, which is larger and more obvious than the lesions of the later eruption, usually situated on the thigh or upper arm, the trunk or the neck;rarely it may be on the face, scalp or the penis. It is a sharply defined,erythematous, round or oval plaque, soon covered by fine scale. It rapidly reaches its maximum size, usually 2–5 cm in diameter, but occasionally much larger. Rarely, there may be more than one herald patch.

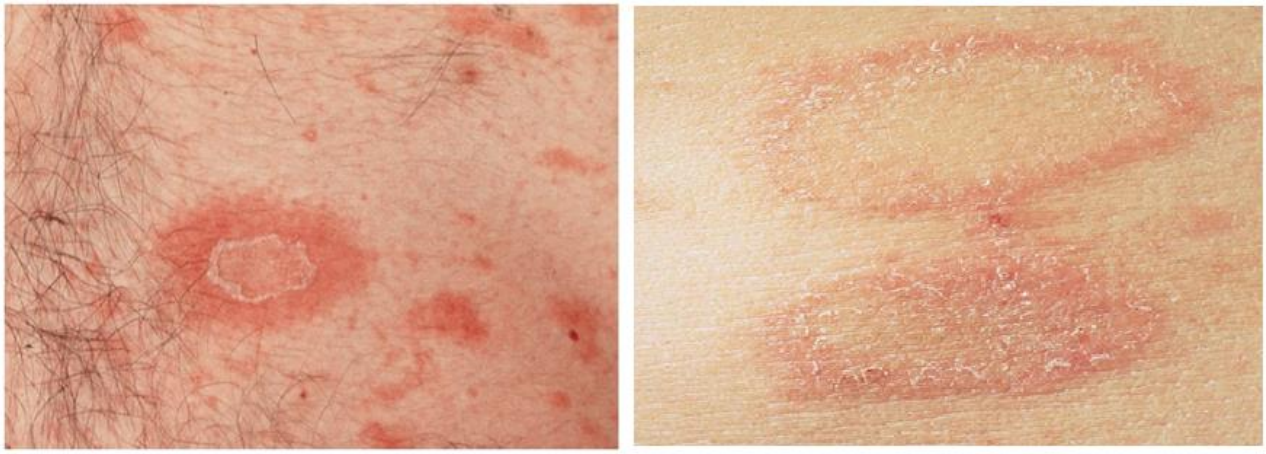


Fig 4.22 herald patch

Secondary lesions of pityriasis rosea

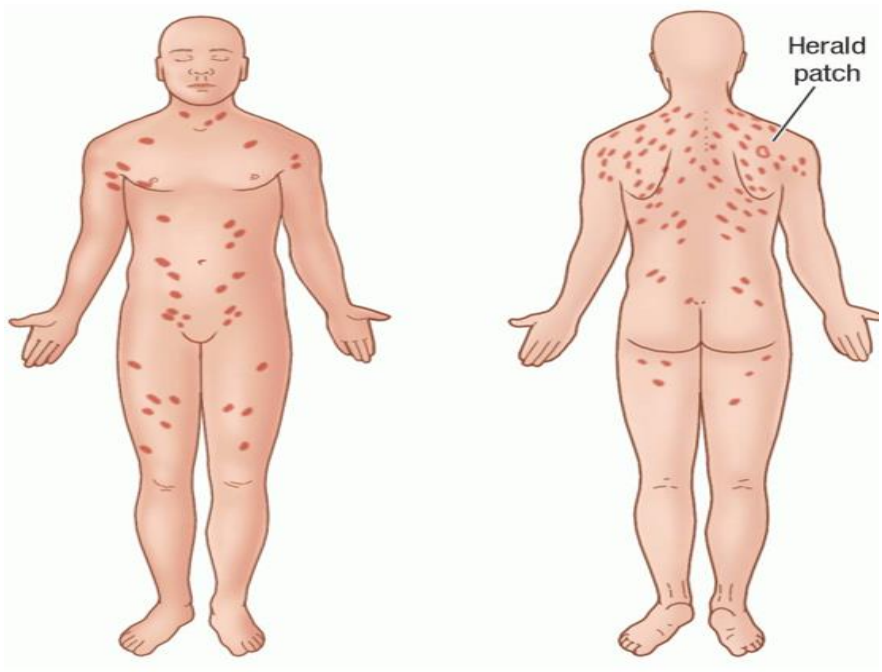
Afteran interval, which is usually between 5 and 15 days, but may be as short as a few hours or as long as 2 months, the general eruption begins to appear in crops at 2 to 3-day intervals over a week or 10 days. Less often, new lesions continue to develop for several weeks. In its classical form the eruption consists of discrete oval lesions, dull pink in colour and covered by fine, dry, silvery-grey scales. The centre tends to clear and assumes a wrinkled, atrophic appearance and a tawny colour,with a marginal **collarette of scale** attached peripherally. The long axes of the lesions characteristically follow the lines of cleavage parallel to the ribs in a **Christmas** tree pattern on the upper chest and back. The scaly lesions are commonly associated with pink macules of varying size and the eruption may be exclusively macular.

Two main types of secondary lesions occur:

(1) small plaques resembling the primary plaque in miniature aligned with their long axes along lines of cleavage and distributed in a Christmas tree pattern, and

(2) small, red, usually non-scaly papules that gradually increase in number and spread peripherally.

Both types of lesions may exist concomitantly, the lesions are usually said to be confined to the trunk, the base of the neck and the upper third of the arms and legs, these sites are certainly most consistently and severely affected. But involvement of the face and scalp is quite common, especially in childrenand in one large series of cases lesions were found on the forearms and lower legs in about 12% and 6%, respectively. Lesions on the palms & plantar surfaces are exceptional, but can occur. There may be discrete, scaly, red patches, diffuse redness and scaling or scattered small vesicles.Oral lesions are not infrequently present and can consist of ill-defined red patches with some desquamation or with punctate haemorrhages, or bullae. Exceptionally, there may be lesions on the vulva.



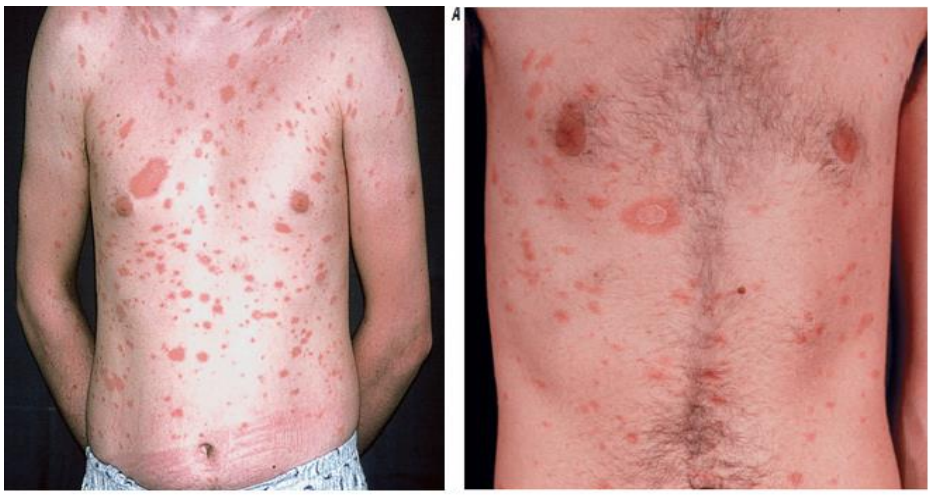


Fig 4.23 herald patch

The skin lesions commonly fade after 3–6 weeks, but some clear in 1 or 2 weeks and a few persist for as long as 3 months, A longer duration, except in localized forms, is very unusual. There may be temporary hyper- or hypopigmentation, but usually the lesions vanish without trace.

Variants and Atypical presentations

Atypical in the appearance or distribution of the lesions or in its course. The herald patch is absent or undetected in about 20% of cases, the 'secondary' eruption varies greatly in extent, it may be almost generalized or may be limited to a few lesions, often around the herald patch. At times the eruption is confined to a single region, or may be maximal on the extremities almost sparing the trunk. Unilateral pityriasis rosea has been reported. Especially in children, the lesions may be predominantly papular or urticarial in the early stages, but they are soon surmounted by an inconspicuous ring of fine scales.Papulovesicular, vesicular, purpuric, erythema multiforme-like lesions and even pustular forms may rarely occur. In a variant of the papular form more common in Africans than Europeans,small lichenoid papules are thickly set in the edges of the lesions. An inverse pityriasis rosea may be seen, in the generalized form rash spreads to areas it usually does not affect, such as the face, hands, and feet. The face may be more commonly affected in young children, pregnant women, and black people. In such cases, the physician should consider secondary syphilis in the differential diagnosis, especially when involvement of the palms and soles is present.

Additional considerations in BLACK people:

Black people are more likely to experience widespread forms of disease and concurrent lymphadenopathy, with hyperpigmentation upon resolution (48% of black children have residual hyperpigmentation). Black children are also more likely to have papular lesions (33%), scalp (8%) or facial (30%) involvement, and a shorter course of disease, with resolution sometimes within 2 weeks.

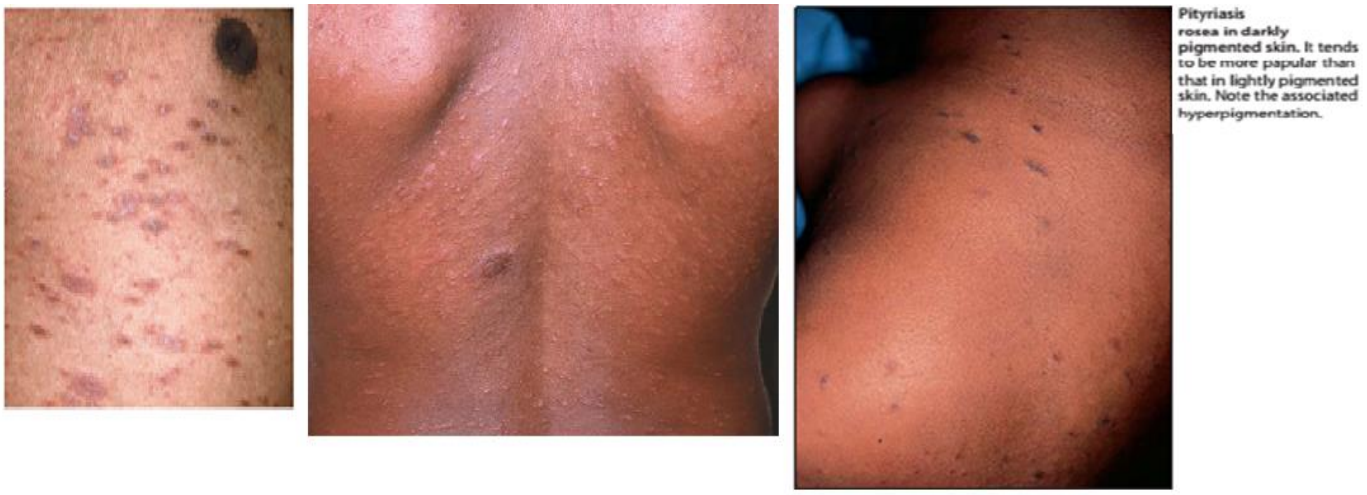


Fig 4.24 Pityriasis rosea in darkly pigmented skin

Laboratory tests

Routine blood studies usually give normal results and are not recommended!In a patient who has a pityriasis-type rash and risk factors for sexually transmitted diseases (eg, intravenous [IV] drug use, HIV infection, or multiple sexual partners), syphilis should be considered to be present until proved otherwise. In cases of classic PR, most patients do not require skin biopsies.

Differential Diagnosis of Pityriasis Rosea (PR)

- **Secondary syphilis:** history of primary chancre, no herald patch is present, lesions typically involve palms and soles, condyloma lata may be present, usually more systemic complaints and lymphadenopathy, presence of plasma cells on histology. When in doubt, serologically test patient for syphilis (e.g., perform a Venereal Disease Research Laboratory test).
- **Tinea corporis:** scale is usually at periphery of plaques, plaques usually not oval and distributed along lines of cleavage. When in doubt, perform a KOH examination.
- **Nummular dermatitis:** plaques usually circular and not oval, no collarettes of scale, tiny vesicles common. When in doubt, perform a biopsy.
- **Guttate psoriasis:** plaques usually smaller than PR plaques and do not follow lines of cleavage, scale is thick and not fine. When in doubt, perform a biopsy.
- **Pityriasis lichenoides chronica:** longer disease course, smaller lesions, thicker scale, no herald patch is present, more common on extremities. When in doubt, perform a biopsy.
- **PR-like drug eruption:** see text for extensive list. When in doubt, obtain a drug history.

Complications

Patients may experience flu-like symptoms, but these are relatively mild if they occur.Both postinflammatory hyperpigmentation and hypopigmentation may occur. **No serious complications occur in PR patients!**

Pregnancy complications---An increased risk of miscarriage may occur, especially in mothers who developed PR within the first 15 weeks of their pregnancy. It has been associated with neonatal hypotonia, hyporeactivity, and premature delivery

Prognosis

All patients with PR have complete spontaneous resolution, the disease duration normally varies between 4 and 10 weeks, Both post-inflammatory hypopigmentation and hyperpigmentation can follow PR. As with other skin diseases, this occurs more commonly in individuals with darker skin color, with hyperpigmentation predominating.Treatment with ultraviolet light phototherapy may also worsen post-inflammatory hyperpigmentation and should be used with caution.Recurrent disease is possible, but it is rare

Treatment

Treatment for all patients is education about the disease process and reassurance, no need for active treatment in uncomplicated cases. For patients with associated pruritus: midpotency topical corticosteroids, OR oral antihistamines. Systemic steroids are not recommended.

For patients early in the disease course who demonstrate associated flu-like symptoms and/or extensive skin disease: oral acyclovir 800 mg five times daily for 1 week may hasten recovery from disease. For selected patients: phototherapy(UVB) may be useful

Further Outpatient Care

Generally, the disease resolves within 12 weeks, most cases do not recur. In cases where the diagnosis is in doubt or if the disease persists past this period, further evaluation is advised. Persistent pityriasis rosea of more than a 3-month duration is often better classified as pityriasis lichenoides chronica.

Summary

HERPES SIMPLEX VIRAL(HSV) INFECTION

- There are two types of HSV: HSV-1 and HSV-2. HSV-1 is mostly associated with orofacial disease, whereas HSV-2 usually causes genital infection, as a general rule HSV1 affects above the wrist and HSV2 affect below the wrist, but both can infect oral and genital areas and cause acute and recurrent infections. Majority of infections are acquired in childhood. Acquisition of HSV-2 correlates with sexual behavior.
- Most primary HSV infections are asymptomatic or not recognized, but they can also cause severe disease. Most recurrences are not symptomatic and most transmissions occur during asymptomatic shedding.
- Genital herpes is the most prevalent sexually transmitted disease worldwide and is the most
- common cause of ulcerative genital disease; it is an important risk factor for acquisition and transmission of HIV.
- HSV can cause diseases involving the eye, CNS, and neonatal infection. Cellular immunity defects are a risk factor for severe and disseminated disease.
- Diagnosis is made by polymerase chain reaction, viral culture, or serology, depending on the clinical presentation.
- Treatment is with acyclovir, valacyclovir, or famciclovir. Regimens and dosages vary with the clinical setting. Resistance is rare, other than in immunocompromised patients.

Varicella

- Varicella (chickenpox) and herpes zoster (shingles) are distinct clinical entities caused by a single member of the herpesvirus family, varicella-zoster virus (VZV).
- Varicella, a highly contagious exanthem that occurs most often in childhood, is the result of primary VZV infection of a susceptible individual.
- The rash of varicella usually begins on the face and scalp and spreads rapidly to the trunk, with relative sparing of the extremities. Lesions are scattered, rather than clustered, reflecting viremic spread to the skin, and they progress sequentially from rose-colored macules to papules, vesicles, pustules, and crusts. Lesions in all stages are usually present at the same time.

- In immunocompetent children, systemic symptoms are usually mild and serious complications are rare. In adults and immunocompromised persons of any age, varicella is more likely to complicate.

HERPES ZOSTER

- Herpes zoster is characterized by unilateral dermatomal pain and rash that results from reactivation and multiplication of latent VZV that persisted within neurons following varicella.
- The erythematous maculopapular and vesicular lesions of herpes zoster are clustered within a single dermatome, because VZV reaches the skin via the sensory nerve from the single ganglion in which latent VZV reactivates, and not by viremia.
- Herpes zoster is most common in older adults and in immunocompromised individuals.
- Pain is an important manifestation of herpes zoster. The most common debilitating complication is chronic neuropathic pain that persists long after the rash resolves, a complication known as postherpetic neuralgia (PHN).

Molluscum contagiosum

- Molluscum contagiosum is a common benign cutaneous infection with associated signs isolated to the skin. Children are most commonly affected. The typical lesion is skin colored papule with central umblication.
- Severe inflammatory responses can occur at the site of the lesions, which are sometimes mistaken for secondary bacterial infection or cellulitis.
- A number of associated skin findings, including eczematous reactions surrounding the lesions, more diffuse autoeczematization-type reactions lesions may develop.

Chapter 5: Eczema

Chapter description:this chapter includes definition, classification, clinical features, diagnosis and management of eczema .

Learning objective

- Define Eczema
- Explain classification of Eczema
- Discuss the clinical presentation and diagnosis of Eczema
- Explain the aims of Eczema treatment and treatment options

Outline:

- Introduction
- Epidmology
- Pathogensis
- Clinical presentation
- Treatment of eczema
- Summary

Introduction

- Eczema: Come from the Greek name for boiling, a reference to the tiny vesicles (bubbles) that are commonly seen in the early acute stage of the disease
- Dermatitis: means inflammation of epidermal layer of the skin.
- Eczema/dermatitis has the symptoms of itching, reddening, scaling, and edematous papules, and the condition progresses in a specific inflammatory reaction pattern.
- Eczema/dermatitis is histopathologically characterized by intercellular edema called spongiosis, which can be caused by extrinsic factors, such as irritants or allergens, or by intrinsic factors, such as atopic diathesis.
- These factors interact in complex ways, and extrinsic and intrinsic factors are seen together in many cases. If the cause is not identified, eczema may be called acute, subacute or chronic, depending on the clinical and pathological features.

Pathogenesis

- When an extrinsic agent such as a drug, pollen, house dust, or bacteria invades the skin, an inflammatory reaction is induced to eliminate the foreign substance. The severity and type of reaction vary according to intrinsic factors such as seborrhea, dyshidrosis, atopic diathesis, and the health condition of the patient.
- Both extrinsic and intrinsic factors are involved in eczema

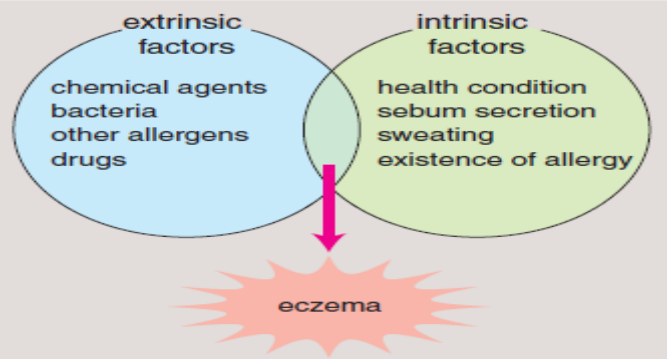


Figure 5.1Factors associated witheczema

The progress of eczema

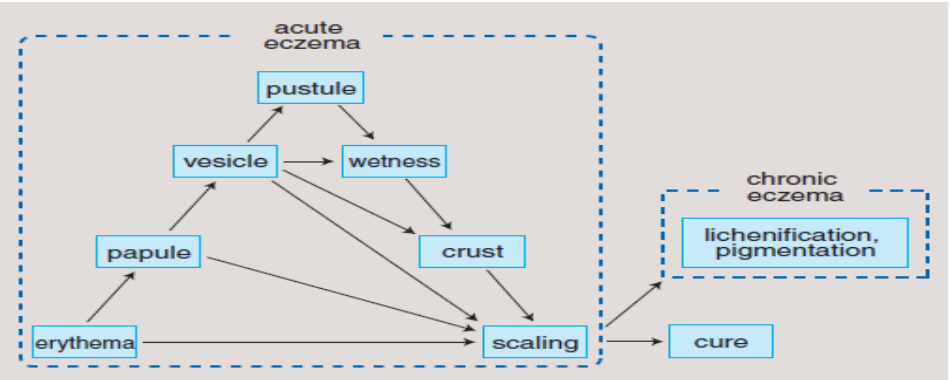


Figure 5.2 Progress of eczema

Clinical Presentation

- Itchy edematous erythema forms, on which papules and serous papules are produced.
- After the formation of vesicles, pustules,erosions, crusts and scales , the condition begins to subside.
- In the acute stage, these symptoms are present singly or together.
- In the chronic stage, lichenification, pigmentation and depigmentation are found, in addition to the symptoms of the acute stage.

Classification

1) Acute Eczema
- Acute eczema is accompanied by exudative erythema, edema, and sometimes vesicles.

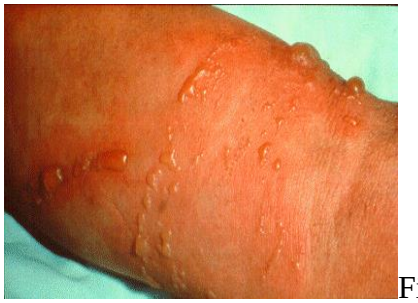


Figure 5.3 acute eczema

2) Subacute eczema
- Subacute eczema has a severity between that of acute and that of chronic.
- Such eczema is accompanied by erythema and edema, and it is slightly lichenoid.
- Mild edema is produced in the epidermis.

3) Chronic eczema
- Chronic eczema is characterized clinically by lichenification. When acute eczema continues for more than one week after onset, it is likely to appear lichenified, and the diagnosis is chronic eczema.

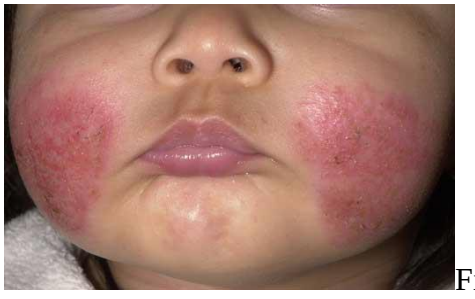
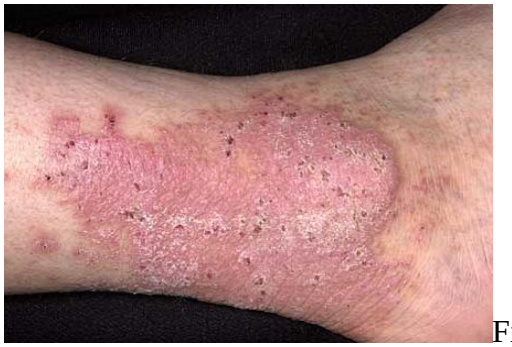


Figure 5.4 chronic eczema

 Figure 5.5 chronic eczema:Lichenification

Other Classification of Eczema

- Exogeneous:
  - trigerred by external factors
- Endogenous :
  - The eczematous condition is not due to external environmental factors, but is mediated by immunologic processes originating within the body.

Endogenous:

- ❑ Atopic eczema
- ❑ lichen simplex chronicus
- ❑ Nummular eczema
- ❑ Pompholyx
- ❑ Asteatotic eczema
- ❑ Varicose eczema
- ❑ Seborrehic eczema

Exogeneous:

- Allergic contact eczema
- Irritant contact eczema
- Photo-contact dermatitis

Atopic dermatitis

Introduction

- Atopic dermatitis is a chronic inflammatory skin condition characterized by pruritic, erythematous, and scaly skin lesions often localized to the flexural surfaces of the body
- It can present with asthma and allergic rhinitis as part of an allergic triad; an estimated 30 percent of children with atopic dermatitis develop asthma later in life.

- The onset of atopic dermatitis generally is before two years of age, with only 10 percent of cases diagnosed after five years of age. Early diagnosis and treatment may prevent significant morbidity from sleep disturbances, chronic postinflammatory skin changes, scarring from picking and scratching, and the development of secondary skin infections with Staphylococcus, Streptococcus, and herpes species.

Pathophysiology

- A genetic defect in the filaggrin protein is thought to cause atopic dermatitis by disrupting the epidermis.
- This disruption, in turn, results in contact between immune cells in the dermis and antigens from the external environment leading to intense itching, scratching, and inflammation.

Scratching can then lead to further disruption and inflammation of the epidermal skin barrier; this has been described as the itch-scratch cycle.

Clinical Presentation

- Atopic dermatitis can present in three clinical phases. Acute atopic dermatitis presents with a vesicular, weeping, crusting eruption.
- Subacute atopic dermatitis presents with dry, scaly, erythematous papules and plaques. Chronic atopic dermatitis demonstrates lichenification from repeated scratching .
- A more subtle presentation of atopic dermatitis that commonly occurs in children is pityriasisalba, which is characterized by hypopigmented, poorly demarcated plaques with fine scale.
- Atopic dermatitis tends to involve the flexural surfaces of the body, anterior and lateral neck, eyelids, forehead, face, wrists, dorsa of the feet, and hands.

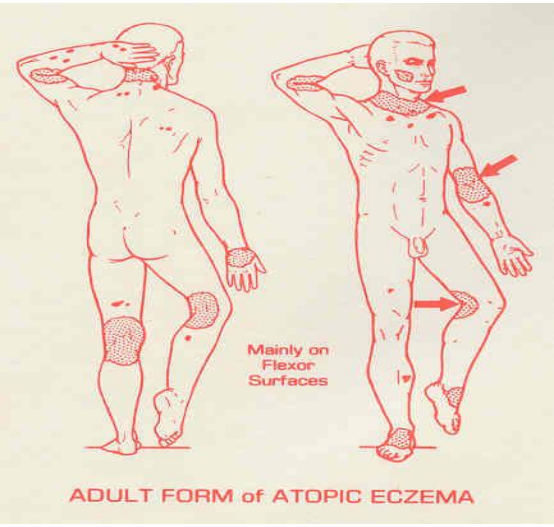


Fig 5.6 body site involment in adult form of atopic eczema

DIAGNOSTIC GUIDELINES FOR ATOPIC DERMATITIS
Must have: • An itchy skin condition (or parental report of scratching or rubbing in a child) plus Three or more of the following: • History of involvement of the skin creases such as folds of elbows, behind the knees, fronts of ankles or around the neck (including cheeks in children under 10 years of age) • A personal history of asthma or hay fever (or history of atopic disease in a first-degree relative in children under 4 years of age) • A history of general dry skin in the last year • Visible flexural eczema (or eczema involving the cheek/forehead and outer limbs in children under 4 years of age) • Onset under 2 years of age (not used if child is under 4 years of age)

Table 5.1 Diagnostic guidelines for atopic dermatitis

Complications

- Patients with atopic dermatitis can develop a secondary bacterial infection from skin flora, particularly Staphylococcus and Streptococcus species.
- Secondarily infected atopic dermatitis presents with pustules and crusts, and should be suspected if symptoms do not respond to conventional therapy, or if the patient presents with fever and malaise or rapidly worsening symptoms.
- Patients with atopic dermatitis are also at risk of developing herpes simplex virus infection, known as Kaposi varicelliform eruption or eczema herpeticum.
- Eczematous skin enables a localized herpes outbreak to spread over the skin and create a painful papulovesicularrash .
- Other complications of atopic dermatitis include scars from picking and scratching, chronic postinflammatory skin changes, and skin atrophy from long-term treatment with topical corticosteroids.

Management

- Emollients
- Topical corticosteroids
- Topical calcineurin inhibitors
- Antibiotics
- Antihistamines
- Systemic steroid and ultraviolet phototherapy

Seborrheic Dermatitis

Introduction

- A common disorder of the skin, seborrheic dermatitis is characterized by the development of erythematous patches with yellow-gray scales that appear most often appear on the face, scalp, upper chest, and back.
- Seborrheic dermatitis is one of the most common dermatoses seen in individuals infected with human immuno deficiency virus (HIV) infection, particularly those who have a CD4 T-cell count of below 400 cells/mm3.
- Other medical conditions associated with an increased incidence of seborrheic dermatitis are neuroleptic-induced Parkinsonism, familial amyloidosis, and trisomy 21.

Epidemiology

- One of the most common skin disorders, It affects approximately 11.6% of the general population and up to 70% of infants in the first three months of life may have the condition. Among adults, the peak incidence is in the third and fourth decades of life.
- Seborrheic dermatitis is characterized by the development of pruritic, erythematous patches with easily detachable, greasy large scales. Although it may appear in various anatomical locations, it tends to occur in areas that contain numerous sebaceous glands, such as the scalp, face, upper chest, and back.
- Seborrheic dermatitis of the scalp commonly presents as dandruff, a milder eruption, characterized by smaller dry, flaking scales.
- In HIV-positive individuals, the onset of the lesions may be sudden; the lesion can be more widespread and recalcitrant with an associated discharge.
- When seborrheic dermatitis appears on the face, it tends to affect the lateral sides of the nose and nasolabial folds as well as the eyebrows and glabella.

Site	Subtype
Scalp	Cradle cap, dandruff
Eyes, face	Seborrheic blepharitis
Chest	Annular
Generalized	Erythrodermic

Table 5.2 Manifestations of Seborrheic Dermatitis

Differential Diagnosis

- Tineacapitis
- Psoriasis
- Atopic dermatitis
- Contact dermatitis
- Drug eruption

Treatment

Antifungal shampoo

Tar shampoo

Steroid lotion

Steroid + Antifungal cream

Contact Dermatitis

Definition

- A skin inflammation that responses to a substance (allergen) where the skin has come into contact.(often chemical substances).
- There are a lot of substances in our surroundings that can damage our skin when it come in contact or be exposed to the skin.(solid, liquid, dust in the air)
- The substances work as irritant or allergen.

Divided in to:

- Irritant contact dermatitis
- Allergic contact dermatitis
- Photo contact dermatitis

Irritant Contact Dermatitis

- It accounts 80 % of contact dermatitis .
- It is caused by irritant that exposed the skin and shows a non-allergic reaction.
- Not necessary being exposed from the same substance before ; it can occur after exposure for the first time.

Irritant substance classification

- **Strong irritant** ;Can cause an acute irritation that occurs very quick (eg : strong acids, strong base, plant rubber or some certain fruits) and in severe cases strong irritants can cause bulla or vesiculobullous skin lesions.
- **Weak irritant**; Needs time and contact more than once to cause chronic irritant dermatitis , (eg: soap, detergent, antiseptics)

Allergic Contact Dermatitis

Definition

- ACD can occur because of the skin being exposed to sensitizer substance (allergen).
- It accounts 20% of contact dermatitis.
- It occurs only in genetically senisitive individuals where as irritant contact dermatitis can occur in all individuals.

Clinical Presentation

- It is characterized by erythema of the skin, papule and vesicles .
- Early symptom are itching.

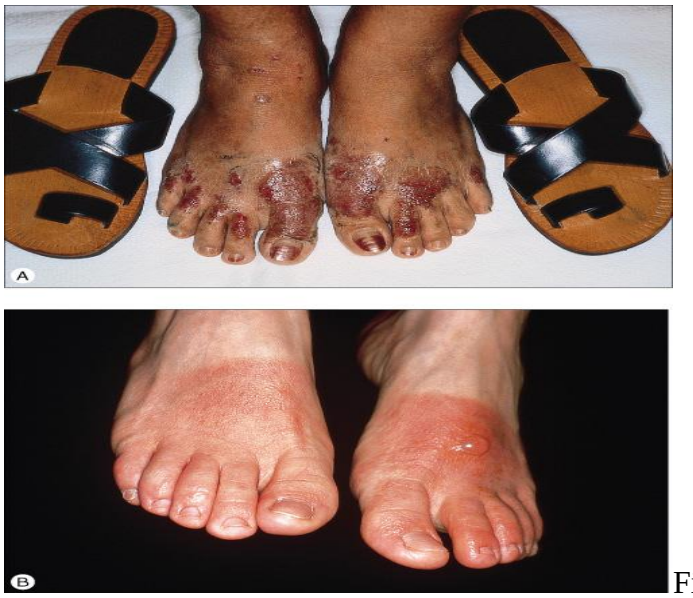


Figure 5.7 contact shoe dermatitis

- Lesion can be extended to surrounding of old lesion, join together, and the border becomes unclear.
- New lesion can also appear quite far from the old lesion.
- In chronic ACD, the disorder is dry skin, thickening, fissure appears, squame, lichenification, papule.
- Can be toxic dermatitis or allergic, depends on the type of substance that contact the skin.

- After contacted with certain substance, lighted with UVA, skin becomes inflamed with eczema manifestation for example skin contacts with kumarin and being lighted by UVA can cause phototoxic.
- Meanwhile, Photo allergic occurs based on immunologic reaction and this reaction appears only in a small number of patients that has been sensitized before with photosensitize substance and then exposed by the sun light.
- Photosensitize substance example : phenothiazine, sulfonamide, non steroid topical substance, anti inflammation, sunblock (PABA), parfume, coloring substance, etc.

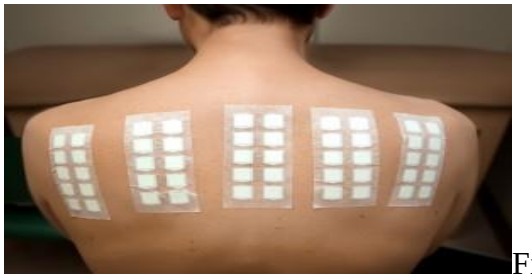
Diagnosis

- In chronic ACD, skin disorder appears slow, so patient often don't recognize when, how and what substance that they have contacted with.
- Moreover, there is a possibility to have a cross reaction with another chemical substance. Lesion examination and localization are also important to help determine diagnosis.
- To prove that dermatitis was caused by allergic contact ; it is necessary to do Patch Test.

Investigation

Patch Testing

- used to identify the allergen.
- A series of allergens are applied to the back, & then removed after 2 days .
- On day 4 or 5, the patient returns for results
- Positive reactions show erythema ,papules or vesicles

 Figure 5.8 patch test

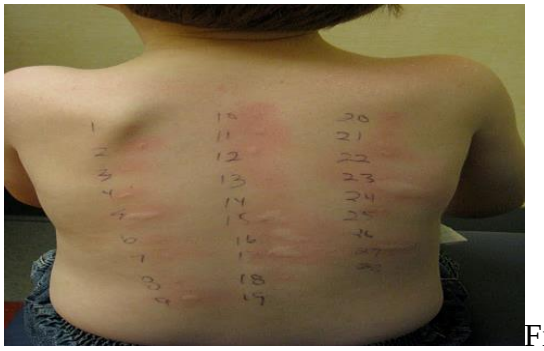


Fig5.9 oedema and erythema at allergic reaction site

Lichen Simplex Chronicus

Clinical Presentation

- Lesions: lichenification, papule, squame (scale) and hyperpigmentation. Scratches cause erosion, excoriation can leave scars.
- Location : areas that are easy to reach by hand
- For women, mostly on the neck area, for men, usually in anogenital area. Other places; face, wrist, lower arm (extensor) near the elbow, upper thigh, lateral foot, dorsum of foot, scrotum, vulva and also in scalp.
- Clinical variation, placate with clear border or unclear ; grouped papule, hard and dry with rough surface.

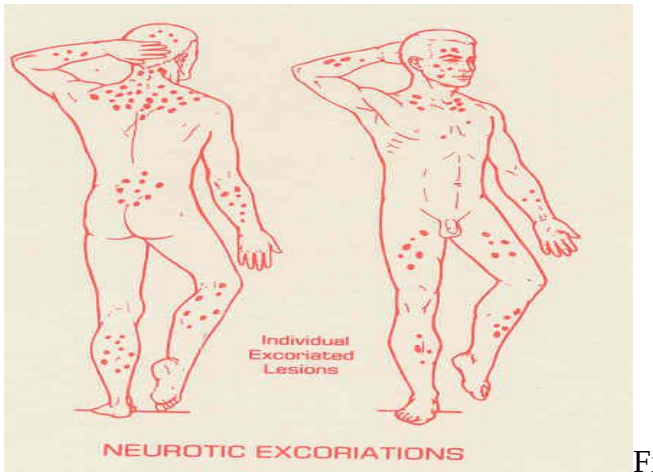


Figure 5.10 lichen simplex chronicus

Treatment:

- skin hydration,
- topical corticosteroids,
- intralesional injection,
- coal tar ointments,
- UVB treatment,
- treat secondary infection

Aim of Eczema Treatment

- To treat & control the symptoms of itching, pain & discomfort
- Reduce inflammation

- Replace lost moisture
- Inhibit scratching & thus infection
- Improve the quality of life for the patient & their family

Summary

Eczema means dermatitis which is inflammation of the skin and it is an hyper responsiveness of the immune system against various allergens. The clinical stages of developments are acute,subacute and chronic ezema.

Acute Eczema are characterized by erythema,scaling,swelling,papulo vesicles and oozing.

Subacute Eczem are characterized by scaling,crust or excoriation.

Chronic Eczema are characterized by lichenification,scaling and hyperpigmentation.

Main types of eczema with sites of body distribution

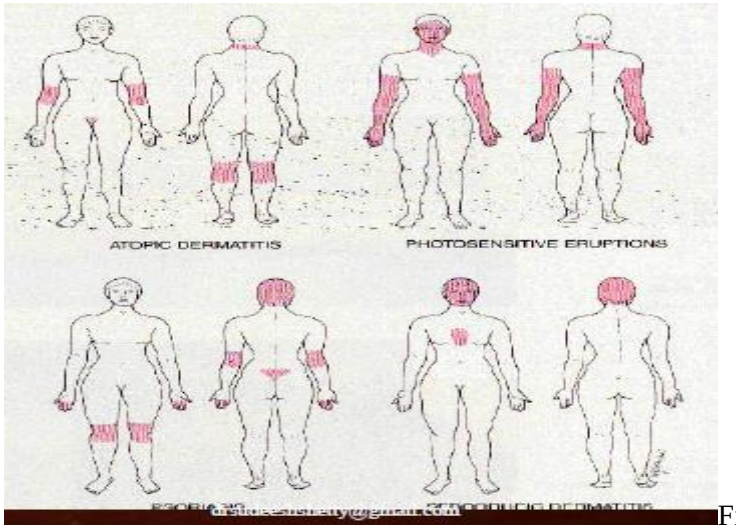


Figure 5.11 Various types of eczma with specific body site involvement .

1. Atopic eczema : is the most common type and it usually develops by early childhood and resolves during teen age years.the cause is a positive family history of atopy is often present and a primary defect in skin barrier function(flaggrin protein deficiency). It is triggered by infections, alleregns (house dust mite,animal fur,pollens,insect bite) ,environmental change and emotional stress.
   The skin lesion presents on the face and extensor part of the extrimities during infantile phase and it is more common on flexural part of the limbs during childh and adult phase.

   Management involves avoid triggering factors,frequent use of emollients,topical steroids and systemic antihistamines.

2. **Contact dermatitis**:it is classified into irritant and allergic contact dermatitis.
   - **Irritant contact dermatitis**: usually occurs immediately after exposure and it is due to direct damage by strong alkalines,acid or irritant substances.
   - **Allergic contact dermatitis**:is an immunological reaction that develops in genetically susceptible individuals after exposur to allergen. The common allergen are Nickel, chromate,rubber,resinglues,cosemetics and topical medicaments.
   - Patch test is done to identify the allergen in case of allergic contact dermatitis and the treatment is to avoid the allergen and to use topical steroid.

Chapter 6: Psoriasis

Chapter description: this chapter describes the clinical types and management of psoriasis .

Learning Objective

- Define and discuss about psoriasis.
- Explain the pathogensis of psoriaisis.
- Describe the triggering factors of psoriasis.
- Discuss the sign and symptoms of clinical patterns of psoriaisis.
- Explain how to make diagnosis of psoriasis .
- Discuss management options for psoriaisis.

Outline:

Introduction

Epidmology

Pathogensis

Clinical Presentation

Treatment of Psoriasis

Summary

Introduction

Psoriasis is a chronic and recurrent inflammatory disorder which is characterized by epidermal cell proliferation(rapid cell turn over).

It results from a polygenic predisposition combined with immune dysfunction.

Epidmology

Psoriasis is a very common skin disease which affects 2% of the world population.

It has two peaks in age of onset in which the first peak is at 20-30 years and the second peak is at 50-60 years of age.

Males and females are affected with equal proportion (1:1).

Pathogensis

Psoriasis has some genetic background and 35% to 90% of patients reported family history of psoriasis.

The exact cause of psoriasis is unknown.

There is an interactions b/n environment and genetic factors which are important for disease causation.

Historicaly it was believed to be a disease of keratinocyte but now regarded as T-cell driven disease which means psoriasis is an autoimmune disease, but no true auto antigen has been identified.

The main pathogenesis of psoriasis includes activation of T- lymphocytes against unknown antigen that results in increased cytokine release and then increased accumulation and activation of lymphocytes andantigen-presenting cells (APCs), neutrophils which finally results in increased proliferation of keratinocytes.

Accelerated epidermal cell proliferation results from recruitment of a large proportion of resting cells into the proliferative cycle.

The pathogenesis of psoriasis involves immune mediated inflammation and epidermal cell proliferation.

There are Triggering Factors for the occurance of psoriasis

- Trauma[Koebner phenomenon]
- Infections[streptococcal,HIV]
- Endocrine factors[Hypocalcemia]
- Psychogenic stress
- Drugs[Lithium,IFNs,b-Blockers,Antimalarials]
- Obesity, Alcohol consumption and Smoking

Clinical Features

The Classic lesion of psoriasis is a well-demarcated, raised, erythematous plaque with a silvery white scale on the overlying surface.

The skin lesions of psoriasis often tends to be in symmetrical distribution.

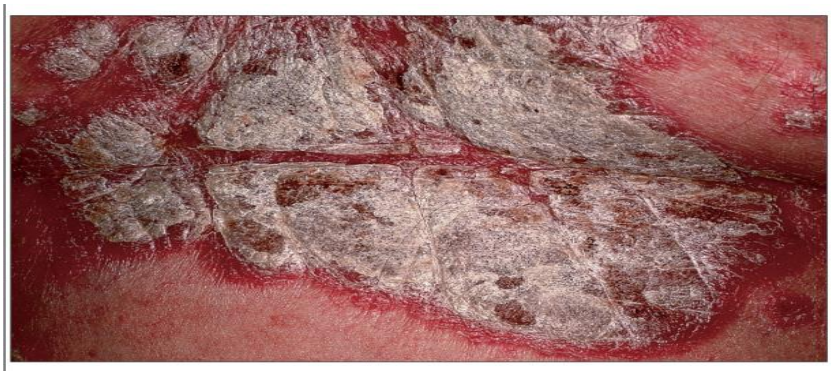


Figure 6.1 The classic lesion of psoriasis : well demarcated erythematous scaly plaque

Auspitz sign

If you remove the scale of psoriatic skin lesion it has pin point bleeding which is called "Auspitz sign"

"Auspitz sign" is a pathognomic sign of psoriasis.

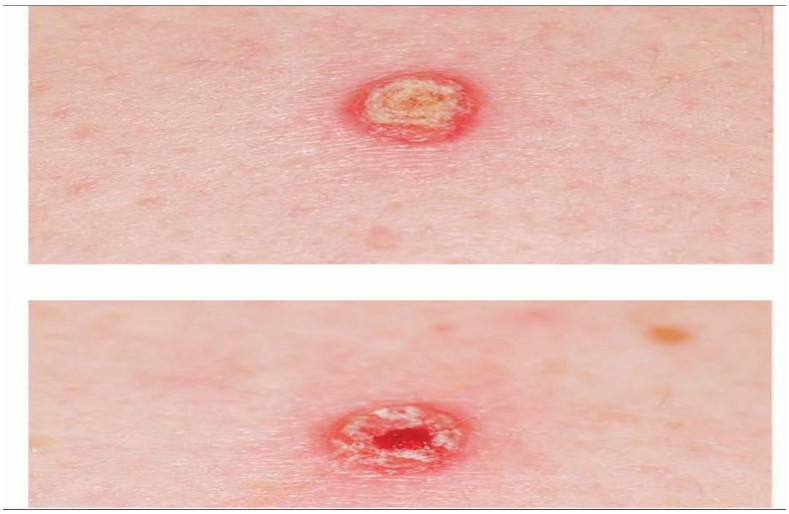


Figure 6.2."Auspitz sign" pin point bleeding after scale is removed

Clinical Patterns of Psoriaisis

1.PSORIASIS VULGARIS (chronic plaque psoriasis)

It is the most common form of psoriasis which accounts 90% of cases.

It mainly distributes on the extensor aspects of the extremities(elbows and knees),Scalp,lower back, buttocks, and genital area.

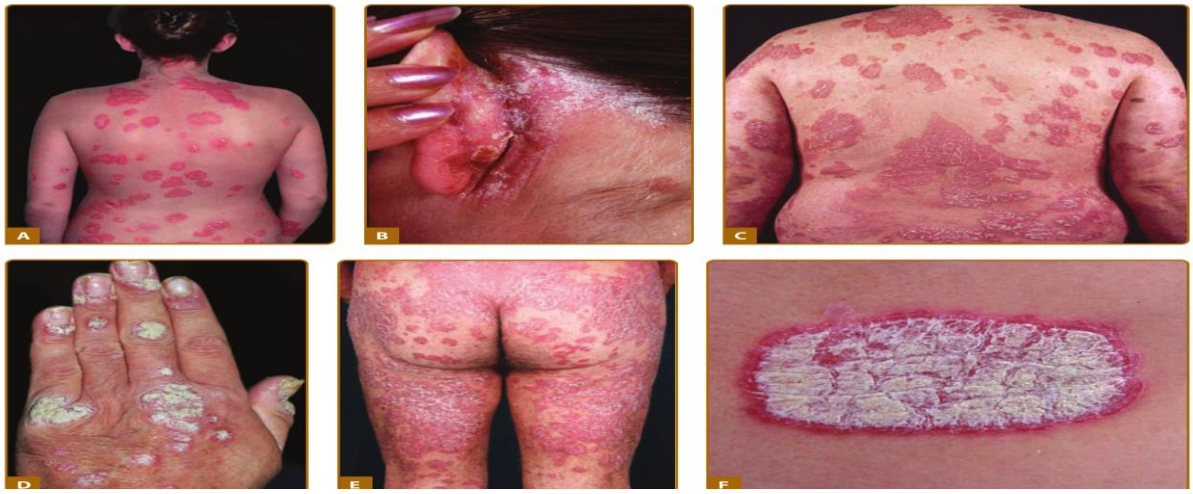


Figure6.3A.chronic plaque psoriasis located at typical sites. Note marked symmetry of lesions

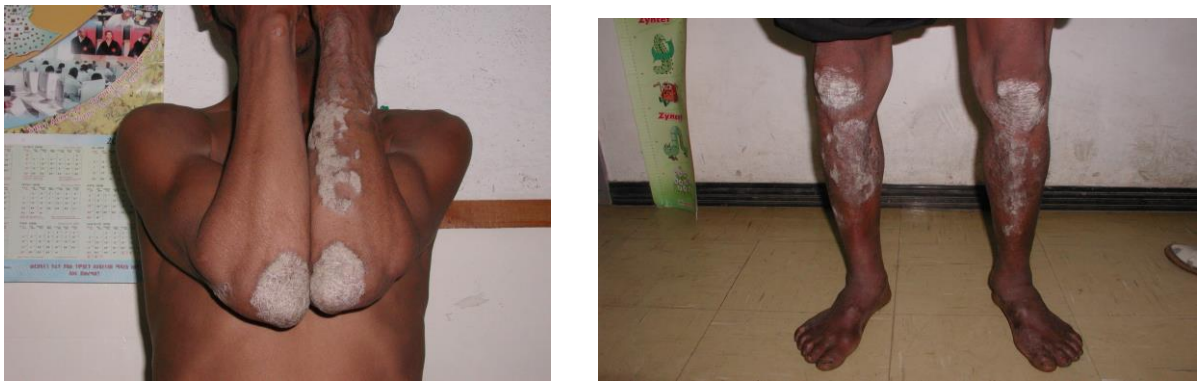


Figure 6.3 B Chronic plaque psoriasis involving the extensor part of the arms and legs

Fig 6.4scalp psoriasis

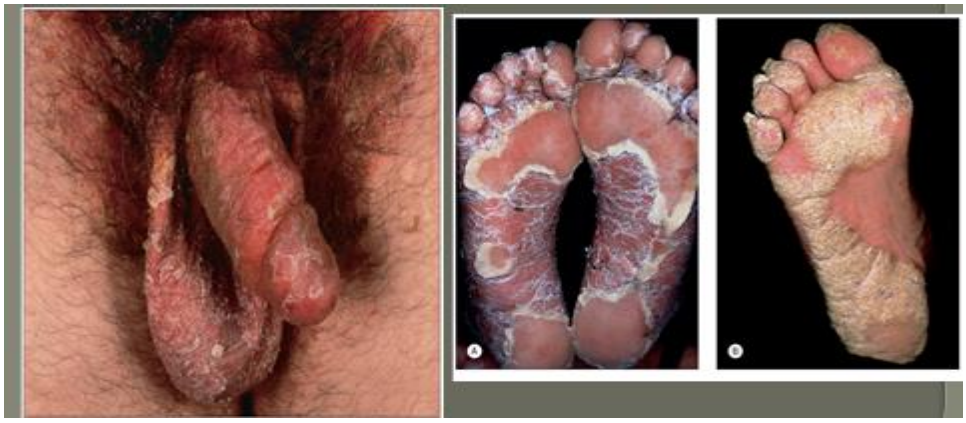


Fig 6.5 psoriasis involving genital and plantar surfaces

2. Gutattate Psoriasis

It is common in children and young adults.
It often follows acute streptococcal sore throat infections[Pharyngitis].
The size of the lesion is 2 mm to 1 cm in diameter and it is characterized by round or oval slightly scaly plaque.
It usually scattered in wide areas particularly on the trunk and proximal extremities.
It can also occur as acute eruption on chronic plaque psoriasis.

Guttate psoriasis←→Chronic plaque psoriasis

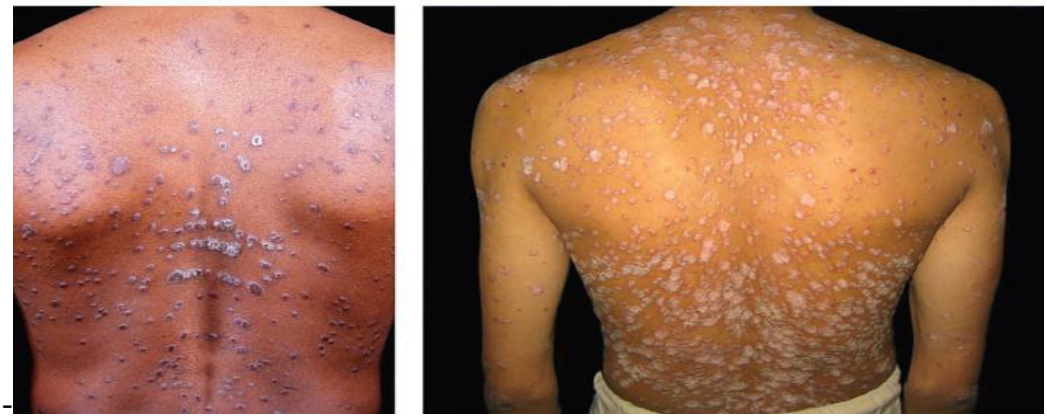


Fig 6.6 Gutate Psoriasis

3. Small Plaque Psoriasis

It is characterized by well demarcated erythematous scaly plaques and the skin lesion size is usually 1 to 2 cm.

4.Inverse (flexural) Psoriasis

It is usually localized to the major skin folds such as the axillae, genito-crural region,inframammary and neck region.
The lesions are moist and scaling.The scaling is minimal or abscent.

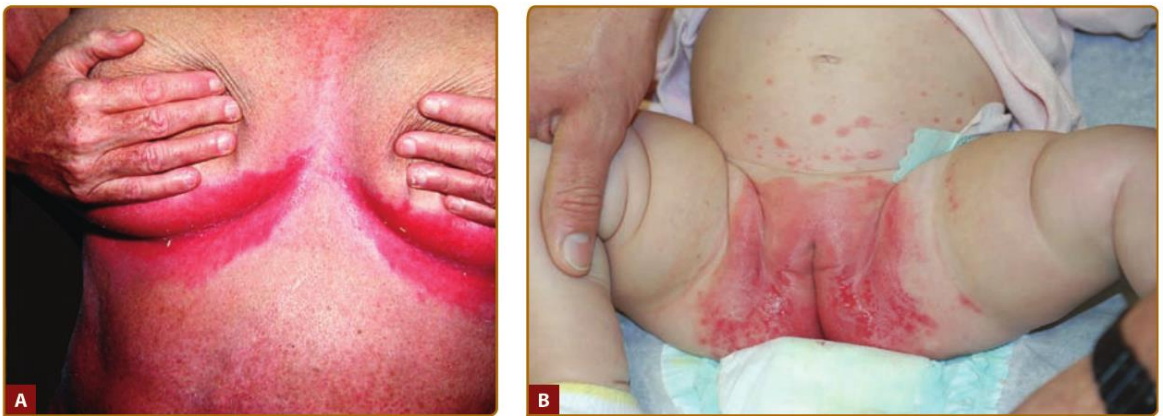


Figure 6.7 **A.**well-demarcated, beefy-red plaques .**B**.the infant is suffering from "napkin psoriasis"

5.Erythrodermic Psoriasis

It represents the generalized form of the disease (more than 90 % of the body surface area affected).

Erythema is the most prominent feature and the scaling is instead of being localized thick, adherent and white it is superficial and diffuse.

It is also called exfoliative dermatitis.

It has mortality if not treated and the Complications of erytherodermic psoriasis are

- Hypothermia
- High-output cardiac failure
- Impaired hepatic and renal function

Clinical features of erythrodermic psoriasis as compared to other types of exfoliative dermatitis are

- previous chronic plaques in classic locations
- characteristic nail changes
- facial sparing

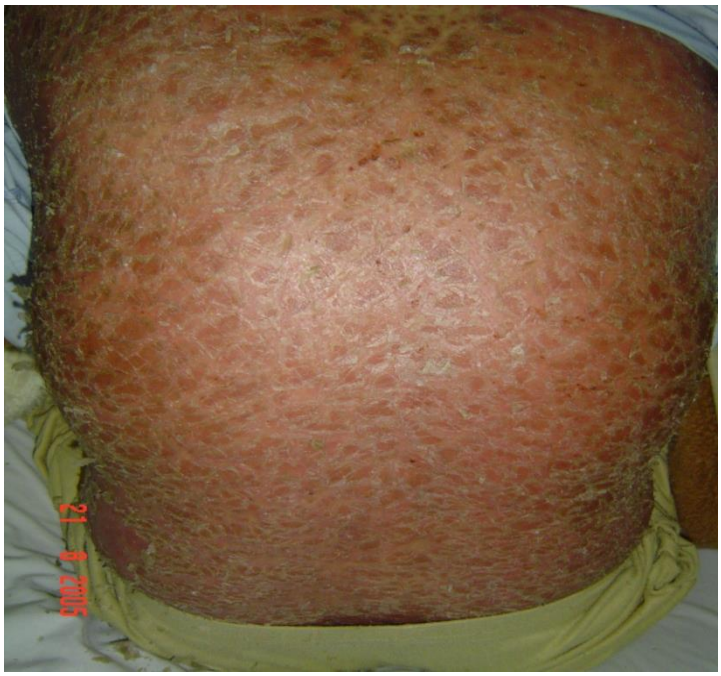


Fig 6.8 erythrodermic psoriasis : Diffuse scaling all over the body with or without erythma of the skin.

6.Pustular Psoriasis

It is characterized by sterile small pusutles with the size of 2 to 3 mm in diameter.
Pustular psoriasis tends to be generalized or localized.
Generalized form of pustular psoriasis is called von Zumbusch type.

6.1 Generalized Pustular Psoriasis

Is an unusual manifestation of psoriasis
Presents with erythema and sterile pustules
There are various triggering factors of generalized psoriasis such as
Pregnancy,rapid tapering or withdrawl of systemic corticosteroids, hypocalcemia, infections or the application of irritants.

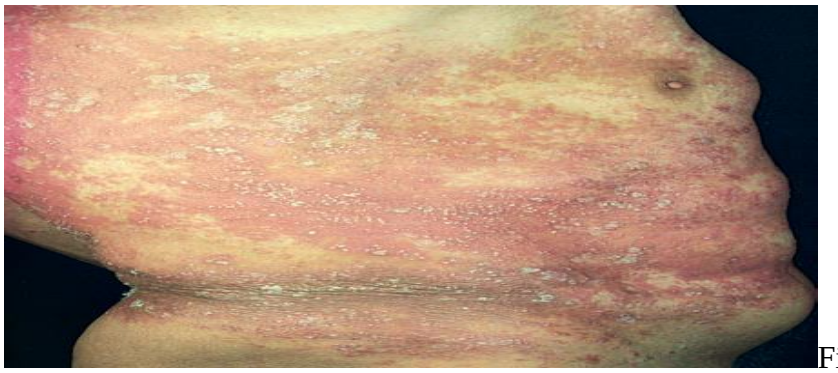


Figure 6.9 pustular psoriasis

6.2 There are Two variants of localized pustular psoriasis:

- Palmo plantar psoriasis
- Acrodermatitis continua of Hallopeau

In case of Acrodermatitis continua of Hallopeau there are pustules within the nail bed, and partial shedding of the nail plate.

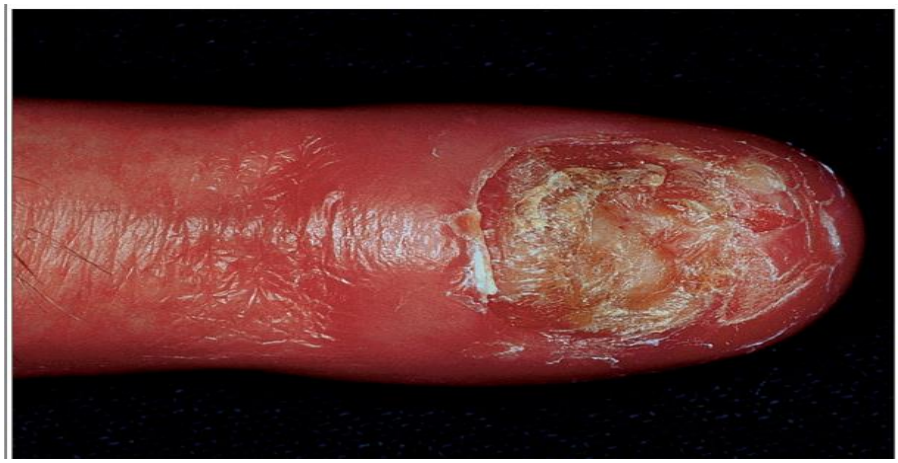


Fig 6.10 acrodermatitis continuea of hallopeau

The other type of localized pustular psoriasis is pustulosis palmaris et plantaris which presents as multiple sterile pustules on the palms and soles.

Fig 6.11palmoplantar pusutlar psoriasis

Nail Psoriasis

Nail changes are frequent in psoriasis and it occurs in 40% of patients.
Fingernails are more affected than toe nails.
Nail pitting is the commonest manifestation.
Oil spotting is nearly specific for psoriasis.
There is increased incidence of psoriatic arthritis occurrence in patients who have nail changes.

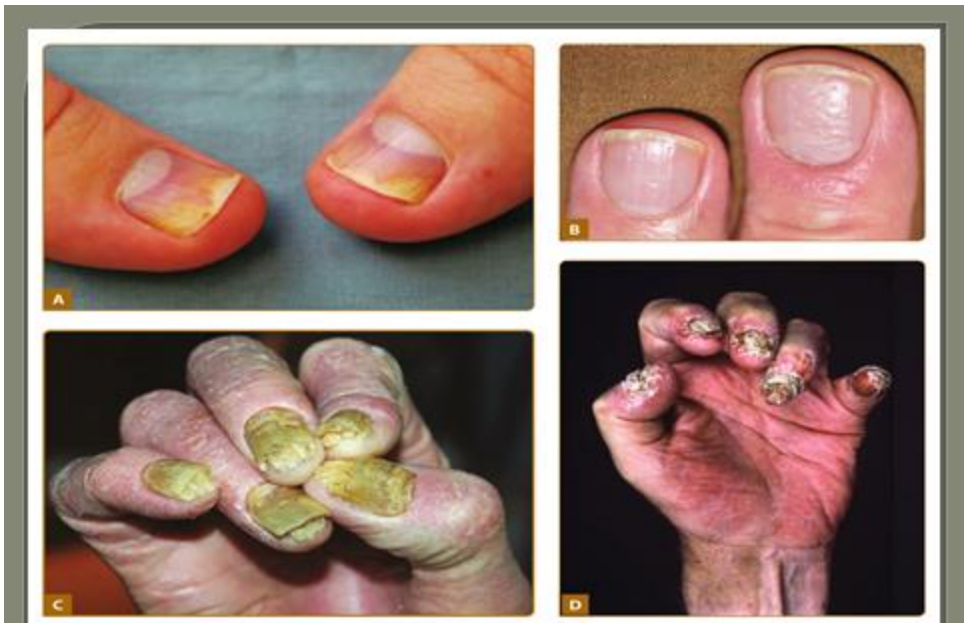


Figure 6.12. Nail psoriasis: A.Distal onycholysis and oil drop spotting. B. Nail pitting. C. Subungual hyperkeratosis. D. Onychodystrophy and loss of nail .

Psoriatic Arthritis

It is an inflammaton of the small or big joints associated with cutaneous psoriasis.

Psoriatic arthritis is a sero negative for rheumatoid factor.

40% of patients with cutaneous disease are affected by psoriatic arthritis.

Psoriatic arthritis has strong genetic component.

There are five patterns of psoriatic arthritis and it includes the following:

1. Asymmetric Oligoarthritis
2. Symmetric polyarthritis with rheumatoid like
3. Spondylo arthritis
4. Distal inter phalangeal joint arthritis
5. Mutilating arthritis

fig6.13psorathic arthritis

Diagnosis

The diagnosis of psoriasis is mainly clinical.

Biopsy is indicated when the diagnosis is doubtful .

Imaging studies in case of psoriatic arthritis.

Prognosis and Clinical course

Guttate Psoriasis

It is a self-limited disease and it lasts from 6-12weeks without treatment.

1/3 of cases later develop the chronic plaque type of psoriasis.

Chronic Plaque Psoriasis

In most cases it is a life long disease.

Spontaneous remission can occur in 50% of cases.

Erythrodermic and Generalized Pustular Psoriasis

In such cases the disease tends to be severe and persistent.

Management of psoriasis

Explain the patient that psoriasis remains to be chronic and recurrent but it can be controlled with treatment.

Patients should be aware of the psoriasis triggers & avoid them.

Different treatment options are available to reduce or temporarily eliminate the symptoms of psoriasis.

Treatment Modalities

Topical Preparations

Photo(chemo) therapy

Systemic treatments

Severity of psoriasis can be classified as :

- **Mild** < 10% BSA
- **Moderate** > 10% BSA
- **Severe** > 30% BSA

In case of mild to moderate psoriasis topical treatment is indicated.

In case of moderate to severe psoriasis systemic therapy is indicated.

Exceptions are

- Painful palmoplantar involvement with limited activities.
- Psoriatic arthritis
- Impact on quality of life

Topical Treatment 0ptions

Topical treatment is indicated when the affected body surface is <20 % .

Approximately 70% of patients with mild-to-moderate psoriasis can be managed with topical therapies alone.

Combination of topical treatments have better therapeutic effect.

Topical treatment options are salicylic acid, coal tar,anthralin, vitamin A derivates,Vitamin D analoges.
A combination of topical treatments have synergistic effect.

Keratolytic

- Salicylic acid(2% to 10%)
- Urea

- Helps dissolve keratin to soften and remove psoriasis scales.
- May enhance penetration of other topical therapies.

Coal Tar

Coal tar has been used to treat psoriasis for decades, its mechanism of action is still not well understood.
Help reduce inflammation and pruritus

May induce longer remissions

Use limited by distinctive smell and ability to stain clothing and skin

Dithranol

It has antiproliferative effect.
It is effective for thick plaque of psoriasis.
It is not suitable for face, flexures or genitals because it may cause local skin irritation

It stains skin and clothes.

Emollient

Moisturizer (Vaseline,liquid paraffine) .
Moisturizer (Emollients) help to hydrate, soften, and loosen psoriatic plaques.

Calcipotriol

It is a Vitamin D3 analogues such as Calcitriol and Calcipotriol.
It reverses abonormal keratinocyte changes by inducing differentiation and supress proliferation of keratinocytes.
It is effective for chronic plaque psoriasis.

Topical corticosteroid

Possess anti-inflammatory, antiproliferative and immunomodulatory properties.
A combination of calcipotriol and potent topical corticosteroid is effective for chronic plaque psoriasis.

Tazarotene

It is a synthetic Vitamin A Derivative .
It regulate keratinocyte proliferation and maturation.
The main side effect is irritation.
Special precaution is mandatory for women of child-bearing age.

Medication	Uses in Psoriasis	Side effects
Topical steroids	Plaque-type psoriasis	Skin atrophy, hypopigmentation, striae
Calcipotriene (vitamin D derivative)	Use in combination with topical steroids for added benefit	Skin irritation, photosensitivity (but no contraindication with UVB phototherapy)
Tazarotene (Toicla retinoid)	Plaque-type psoriasis, best when used with topical corticosteroids	Skin irritation, photosensitivity
Salicylic or Lactic acid (Keratolytic agents)	Plaque-type psoriasis to reduce scaling and soften plaques	Systemic absorption can occur if applied to >20% BSA. Decreases efficacy of UVB phototherapy
Coal tar	Plaque-type psoriasis	Skin irritation, odor, staining of clothes

Table 6.1 Topical Treatment Of Psoriasis

Phototherapy

For psoriasis resistant to topical therapy and covering > 10% of body surface area.

It has Immunomodulatory and anti-inflammatory effects.

Three main types of phototherapy:

- Broadband UVB
- Narrowband UVB
- PUVA (administration of psoralen before UVA exposure)

PUVA

Photo chemotherapy also known as PUVA in which a photosensitizing drug methoxsalen(8-methoxypsoralens) is given orally, followed by ultraviolet A (UVA) irradiation to treat patients with more extensive disease. UVA irradiation utilizes light with wavelengths 320-400 nm. PUVA, decreases cellular proliferation by interfering with DNA synthesis, and also induces a localized immunosuppression by its action on T lymphocytes. Therapy usually is given 2-3 times per week on an outpatient basis, with maintenance treatments every 2-4 weeks until remission. Adverse effects of PUVA therapy include nausea, pruritus, and burning. Long-term complications include increased risks of photo damage and skin cancer.

Re-PUVA

It is a combination of PUVA with oral retinoid derivatives.
It helps to decrease the cumulative dose of UVA radiation to the skin.

Systemic therapy

Reserved for patient with wide spread involvement and severe cases.
Methotrexate,retinoids, cyclosporine, hydroxyurea or biologic therapy may be used.

Methotrexate

It is the most commonly used systemic treatment for psoriasis.
It slows epidermal cell proliferation and acts as immunosuppressant.
It has myelosuppression effect and needs close monitor of kidney, liver and bone-marrow function during treatment.

Cyclosporin

It is immunosuppressive agent.
It is used for patients with severe psoriasis refractory to other treatments.
It requires ongoing monitoring of blood counts , renal and liver function.

Acitretin

It is a systemic retinoid.

It is used for treatment of all forms of severe psoriasis.
The dose is once-daily oral therapy.
It has Teratogenic effect and it is contraindicated during pregnancy.

Biologic Agents

Are proteins derived from living organisms that exert pharmacological actions.
For adults with moderate-to-severe chronic plaque-type psoriasis who are candidates for phototherapy or systemic therapy.
It is mostly administered sub-cutaneously.
It targets key parts of immune system that drive psoriasis.
Biological agents include:

- **Tumour necrosis factor-alpha inhibitors**
  - Etanercept
  - Adalimumab
  - Infliximab
- **Interleukin (IL-12 and IL-32) inhibitor**
  - Ustekinumab

Summary

Psoriasis is a common problem which is genetically determined hyperproliferative disease.

It is characterized by well defined erythematous scaly plaques.

The main pathogensis of psoriasis is increased rate cell division at basal layer that results decreased rate of epidermal cell turn over. The epidermal cell turn over in case of normal skin is 28 days but incase of psoriasis it is shortened to 4 days.

Removal of the scale in psoriatic lesion causes pin point bleeding which is called Auspitz sign which is the pathognomic signs of psoriasis.

Clinical types of psorias are psoriasis vulgaris,inverse psoriasis,gutate psoriasis,ertyhrodermic psoriasis and pustual psoriasis.

There is also nail and joint involvement (psoriathic arthritis).

Local therapy is indicated for mild and localized cases such as :

- Coal tar preparation: 2 to 5% followed by sun exposure.
- Topical corticosteroid: for localized areas such as scalp
- Saliycilic acid 5% : it has keratolytic effect
- Calciptrol vitamin D 3 analogue : induces differentiation of keratinocytes and it also inhibits T cell proliferation.

Photo therapy such as PUVA (Psoraline + UVA) and Narrow Band UVB is indicated for moderate cases.

Systemic Therapy is indicated for extensive psoriasis vulgaris,erytherodermic and pustualar psoriasis which should be treated with methotrexate,retionid (acetritin), cyclosporine or PUVA.

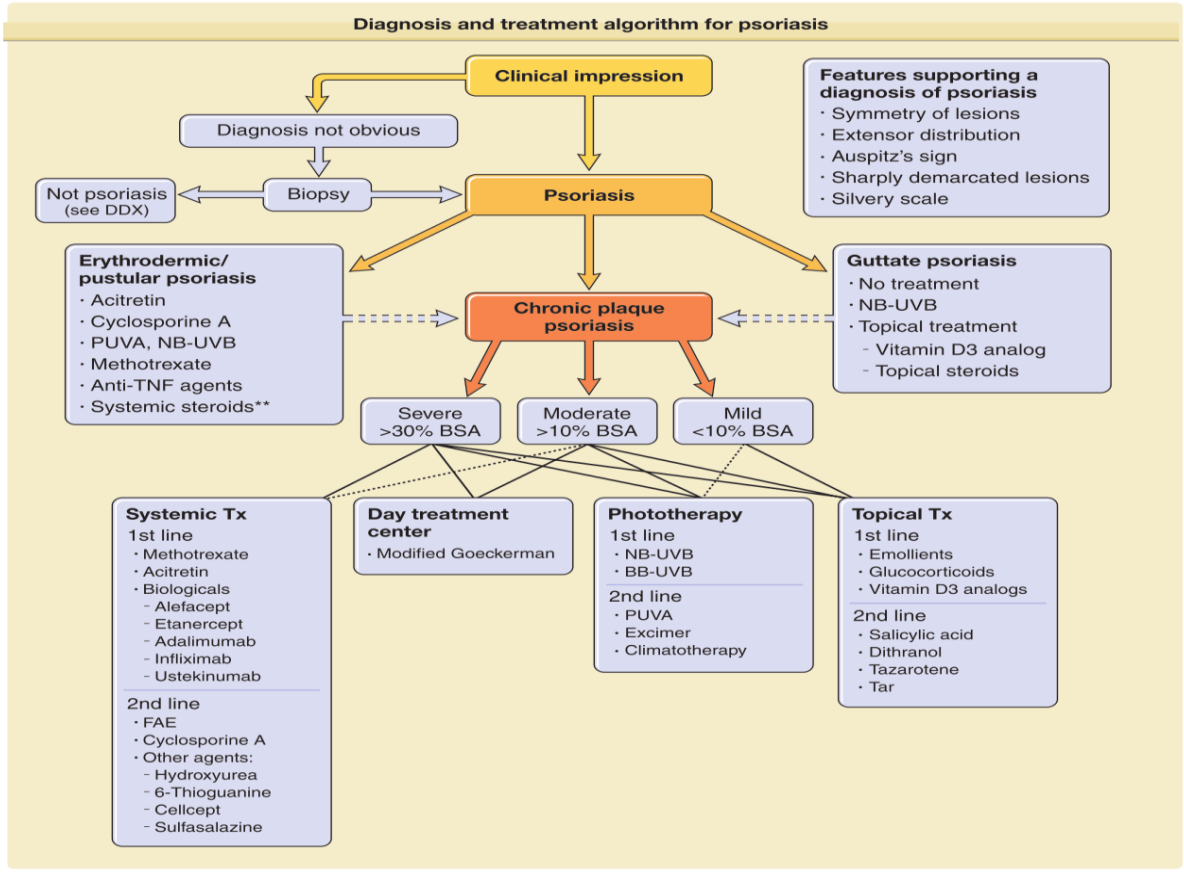


Figure 6.14 : Diagnosis and Treatment Algorithm for Psoriasis

Chapter 7: Lichen planus

Chapter description: this chapter includes introduction, epidemiology, clinical presentation,clinical forms, management and complication of lichen planu

Learning Objectives

- ✓ Discuss the different clinical types of lichen planus
- ✓ Discuss the characteristic clinical presentation of lichen planus
- ✓ Discuss the treatment option of lichen planus

Outline:

- Introduction
- Epidemiology
- pathogensis
- Clinical Presentation
- Treatement
- Summary

Introduction:

- Lichen planus is a disease of the skin and/or mucous membrane that resembles lichens.
- It is thought to be the result of an autoimmune process with an unknown initial trigger.
- It is most likely an immunologically mediated reaction, through the pathophysiology is unclear.

- Lichen planus lesions are so called because of their "lichen-like" appearance.

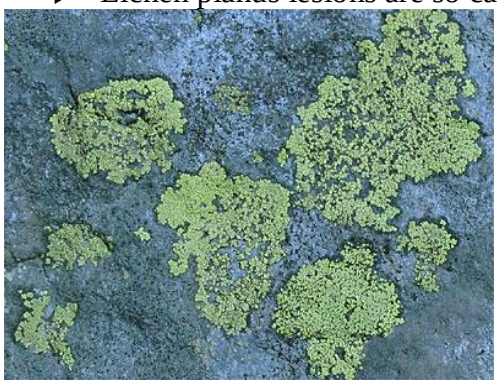


Fig 7.1lichen like apperance

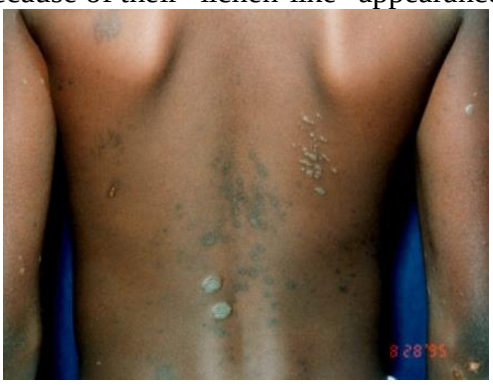


Fig 7.2 lichen planus

Epidemiology:

- Risk for the condition include:

Exposure to medicines,dyes,and other chemicals(including gold,antibiotics,arsenic,diuretics,chloroquine) or infections such as hepatitis C virus.

- Race: no racial predispositions.
- Sex: lichen planus effects women more compared to men (3:2) ratio.
- Age: more than two third of lichen planus patients are aged 30-60 years however it can occur at any age.

Clinical Feature

- The typical rash of lichen planus is well-described by the **"5 P's":** well-defined
  - pruritic,
  - planar,
  - purple,
  - Polygonal,
  - Papules

Sign and symptoms:

The following may be noted in the patient history:

- ✓ Lesions initially developing on flexural surfaces of the limbs, with a generalized eruption developing after a week or more and maximal spreading within 2-16 weeks .
- ✓ Pruritus of varying severity, depending on the type of lesion and the extent of involvement
- ✓ Oral lesions that may be asymptomatic, burning, or even painful
- ✓ In cutaneous disease, lesions typically resolve within 6 months (>50%) to 18 months (85%); chronic disease is more likely oral lichen planus or with large, annular, hypertrophic lesions and mucous membrane involvement
- ✓ In addition to the widespread cutaneous eruption, lichen planus can involve the following structures:
    - ✓ Mucous membranes
    - ✓ Genitalia
    - ✓ Nails
    - ✓ Scalp

Clinical presentation:

Lichen planus has several variations, as follows:

- ▶ Hypertrophic lichen planus
- ▶ Atrophic lichen planus
- ▶ Erosive/ulcerative lichen planus
- ▶ Follicular lichen planus (lichen planopilaris)
- ▶ Annular lichen planus
- ▶ Linear lichen planus
- ▶ Vesicular and bullous lichen planus
- ▶ Actinic lichen planus
- ▶ Lichen planuspigmentosus
- ▶ Lichen planuspemphigoides

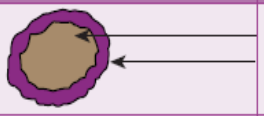
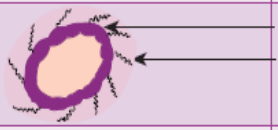
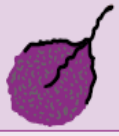
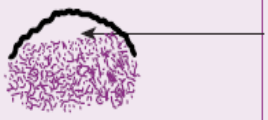
Variant	Change	Morphology	Sites of predilection
Annular (Fig. 4.21A)		Hyperpigmented flat center Violaceous elevated periphery	Face, glans penis
Actinic (Fig. 4.21B)		Annular lesions with thready edge Perilesional hypopigmented halo	Face, dorsal/dorsolateral aspect of upper extremities.
Linear (Fig. 4.21C)		Papules arranged linearly	Extremities
Follicular (Fig. 4.21D)		Perifollicular violaceous papules leading to cicatricial alopecia	Scalp, trunk, medial aspect of extremities
Hypertrophic (Fig. 4.21E)		Central depigmentation Verrucous hyperkeratotic papules and nodules	Shins
Bullous (Rare)		Lesion of LP Bulla	Extremities

Table 7.1 types of lichen planus with their clinical presentation& body involvement

Characteristics:

- **Primary lesion**: Flat-topped, violaceous papules and papulosquamous lesions appear.

On close examination of a papule, preferably after the lesion has been wet with an alcohol swipe, intersecting small white lines or papules **(Wickham's striae)** can be seen. These confirm the diagnosis.

- Uncommonly, the lesions may assume a ring-shaped configuration (especially on the penis) or may be hypertrophic (especially pretibial), atrophic, or bullous.
- On the mucous membranes, the lesions appear as a whitish, lacy network
- **Secondary lesion**: Excoriations and, on the legs, thick, scaly, lichenified patches have been noted. Lesions are often rubbed rather than scratched because scratching is painful.
- **Distribution**:

Most commonly, the lesions appear on the flexural aspects of the wrists and the ankles, the penis, and the oral mucous membranes, but they can be anywhere on the body or become generalized.

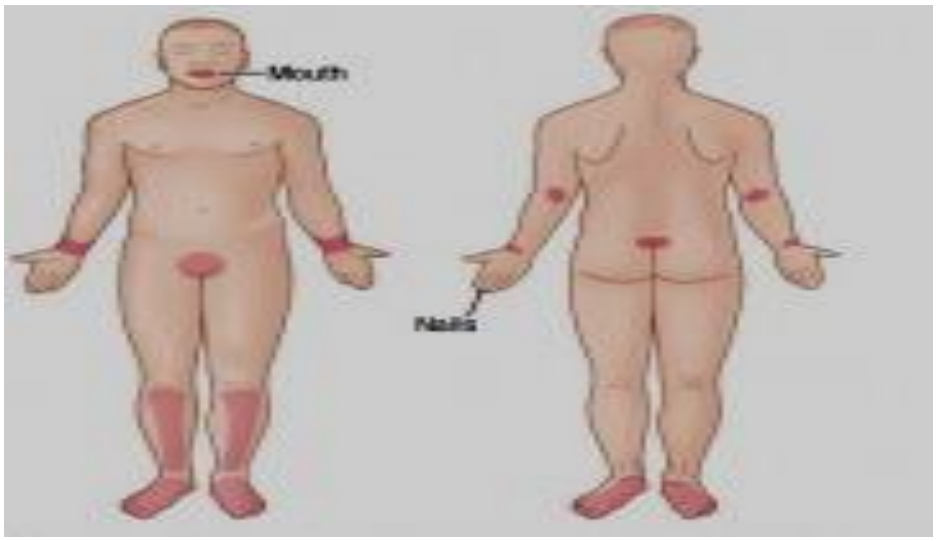


Fig 7.3 lichen planus lesions at wrist ,mouth,nail,genital ,lower leg,ankle area &lower back

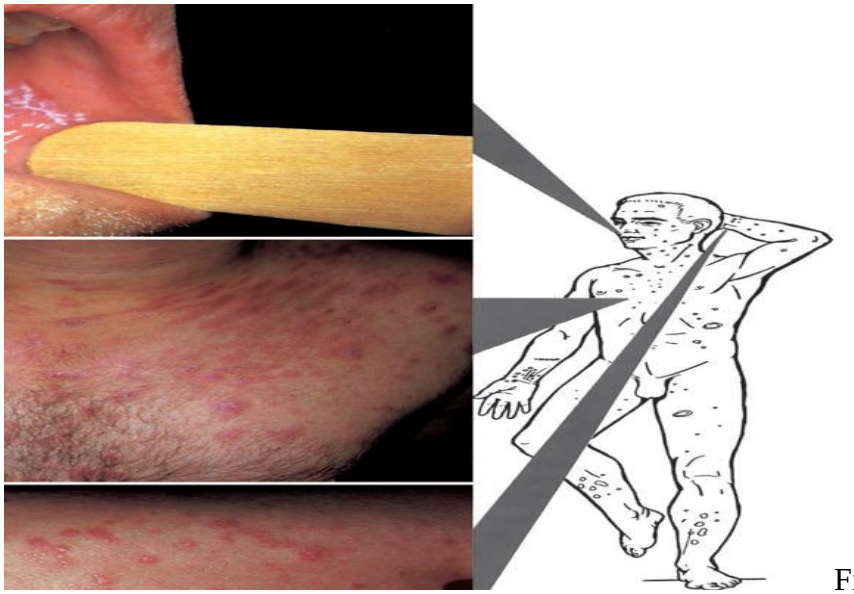


Fig 7.4 lichen planus lesions appearing at buccal mucosa,anterior chest and flexural aspect or wrist joint.

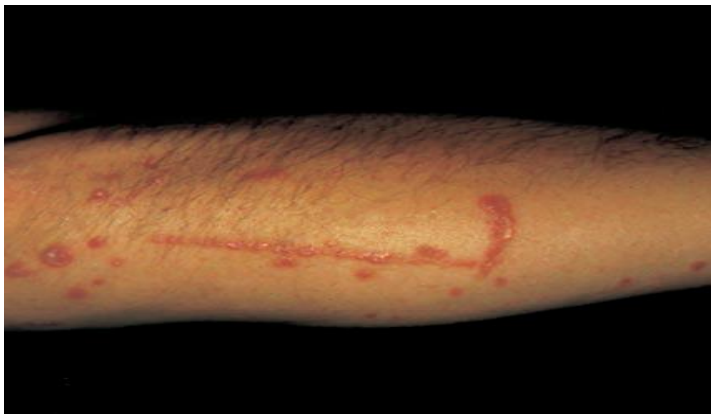


Fig 7.5Lesion may appear at the sites of trauma (koebner's phenomenon)

Clinical Forms:

❖ **Oral mucosa:**

- ❑ Involved in 50% of patients with cutaneous lichen planus and may be sole manifestation of lichen planus in 10% of patients.
- ❑ **Reticular** the most common presentation of oral lichen planus,characterized by the net like appearance of lacy white lines,oral variant of **Wickham's straise**. This is usually asymptomatic.
- ❑ **Erosive/ulcerative** characterized by oral ulcer presenting with Persistent irregular areas of redness,ulceration and erosion covered with a yellow slough,the gums are involved described as **desquamative gingivitis**.

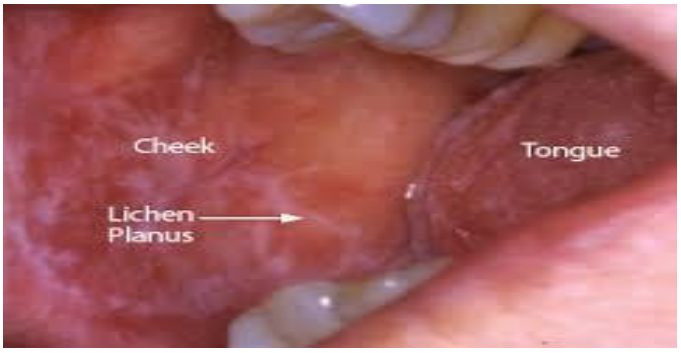


Fig 7.6 whitish reticulated lesion at the buccal mucosa

- ❑ **Genital mucosa:**

▶ Involved in 25% of patients

- ❑ **Annular lesions** on the glans penis

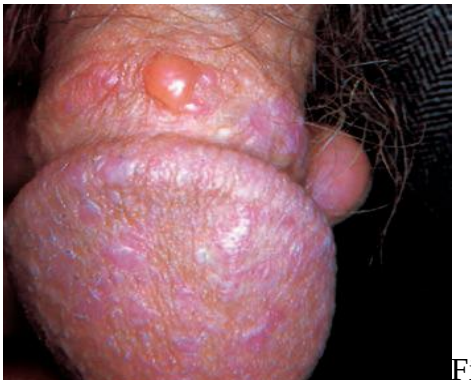
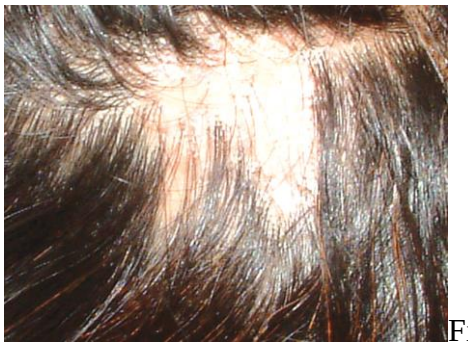


Figure 7.7 lichen planus involving glans penis

❖ **Scalp lesions:**

▶ **Follicular lesions** of lichen planus on the scalp subside with scarring and result in scarring alopecia

 Figure 7.8 lichen plano pillaris

- **Nail changes:**
  - Are seen in 15% of patients (less frequently in children).

Common manifestations of lichen planus of the nails are:

- ✓ Thinning and distal splitting of nail plates.
- ✓ Longitudinal ridging.
- ✓ Tenting of nail plate (**pup tent sign**).
- ✓ **Trachyonychia**: characterized by nail roughness due to excessive longitudinal ridging(sand paper nails).

Pterygium formation is diagnostic clinical feature of lichen planus.

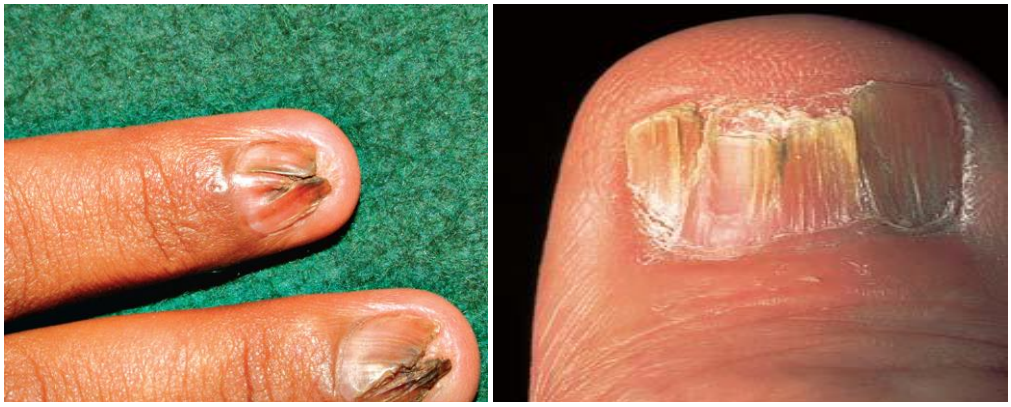


Figure 7.9 pterygium

Diagnosis:

- Histopathologically

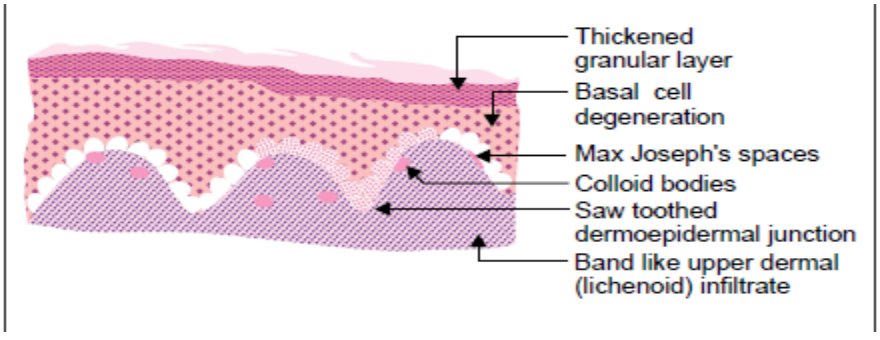


Figure7.10 histology finding in case of lichen planus

- Management:
  - Lichen planus is a self-limited disease that usually resolves within 8-12 months.
  - Mild cases can be treated with fluorinated topical steroids.
  - More severe cases, especially those with scalp, nail, and mucous membrane involvement, may necessitate more intensive therapy.

Pharmacological management

- **Cutaneous lichen planus:**

1. Topical steroids (first-line treatment) if no response then treat with systemic steroids;
2. Oral regimens like metronidazole, acitretin, methotrexate, hydroxychloroquine, griseofulvin, and sulfasalazine are given for generalized lichen planus.

- **Lichen planus of the oral mucosa:**

1. Topical steroids;
2. Topical calcineurin inhibitors;
3. Oral or topical retinoids.

Treatment depends on extent of involvement and the site and morphology of lesions

	Treatment	**Comments**
Localized LP	Topical steroids (medium potency) + Oral antihistamines	Flattens lesions Reduces itching
Extensive LP	PUVA Oral steroids Acitretin	Try weekly steroids (called oral mini pulse-OMP) in resistant cases
Hypertrophic LP	Potent topical steroids + salicylic acid Antihistamines	Response better, if used underocclusion* Intralesinal steroids
LP of nails, scalp	Oral steroids (can use OMP)	Watch for side effects of steroids!
Erosive mucosal LP	Dapsone + oral steroids (can use OMP) Acitretin	Very effective, especially if lesions ulcerated but requires careful monitoring

Table 7.2 Treatment of lichen planus

Complication:

- Malignant transformation has been reported in ulcerative oral lichen planus .
- Cutaneous hypertrophic lichen planus resulting in squamous cell carcinoma .

- Pruritic and painful vulvar lichen planus has been a precursor to squamous cell carcinoma.
- Infection, osteoporosis, adrenal insufficiency, bone marrow suppression, renal damage, hyperlipidemia, and growth restriction in children may occur due to medication adverse effects.
- Postinflammatory/residual hyperpigmentation may be a common marker after lichen planus has subsided.
- Alopecia associated with lichen planus is often permanent.
- Hepatitis C virus infection may be present in 16% of lichen planus patients.

Summary

Lichen planus is pruritic condition which affects the skin ,hair and mucous membrane .

The cause of lichen planus is not clearly known.

It is characterized by well defined flat topped polygonal violaceous papules with shiny surface on the flexor surfaces especially wrists,flanks,medial thighs,shins of tibia,glans peinis,nails,scalp and oral mucosa.

Kobeners phenomenon is common and hyperpigmentation occurs after the lesion subsides.

Treatement of lichen planus involves topical or systemic steroids.

Chapter 8: Acne Vulgaris

Chapter description: This chapter describes about the pathogensis ,clinical features and management of acne vulgaris.

Learning Objectives:

- Define acne and describe its epidemiology.
- Explain the pathophysiology of acne.
- Describe the clinical presentation of acne.
- Explain how acne is diagnosed.
- Discuss the various treatment options for acne.

Outline:

- Introduction
- Epidemiology
- Pathogenesis
- Clinical presentation
- Treatment
- Summary

Introduction

Acne is a chronic, inflammatory disease of the pilosebaceous units of the skin.

Pilosebaceous unit consist of hair , hair follicle and sebaceous gland.

Sebaceous glandis is found in hair-covered areas and it produces sebum.

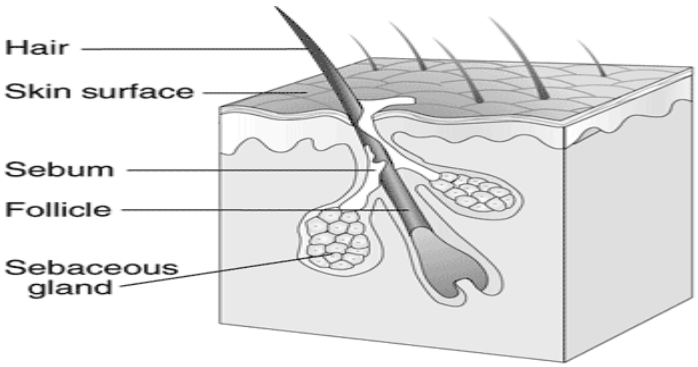


Fig 8.1Pilosebacious Unit

Epidemiology

Acne vulgaris primarly affects 80% of teen agers between 13 to 18 years of age.

Pathogenesis

There are four key factors involved in the pathogenesis of acne vulgaris

1. Increased sebum production
2. Abnormal epithelial desquamation (hyperkeratinization)
3. Bacterialover growth
4. Inflammation

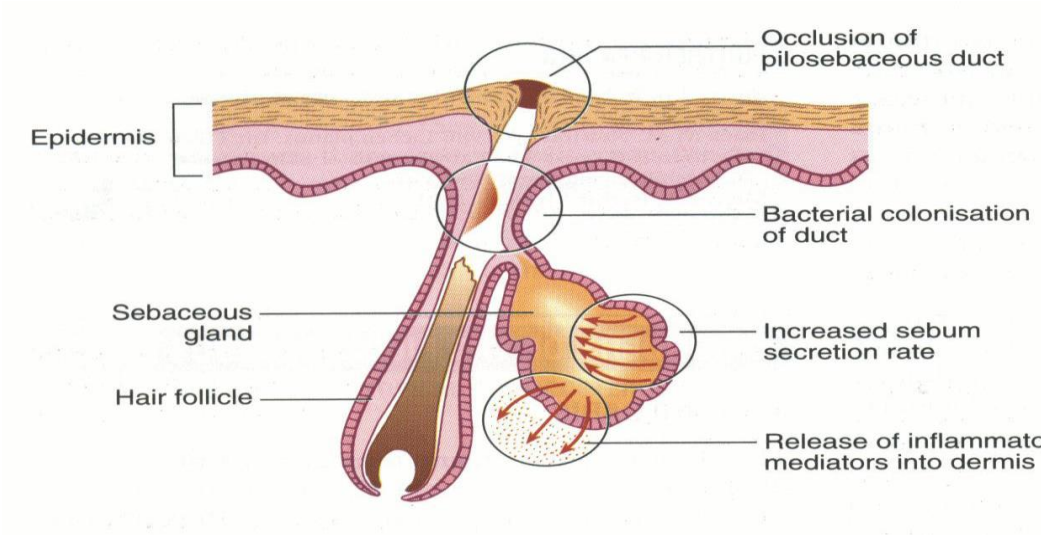


Fig8.2 schematic diagram representing key factors involved in the pathogensis of acne vulgaris

Pathophysiology of Acne Vulgaris

1. Increased Sebum Production

Excess sebum production is a key factor in the development of acne. Sebum production is under hormonal control that means androgen stimulates sebum production where as estrogen has inhibitory effect.

Most men and women with acne have normal circulating levels of androgen hormone but it is belived that there is hyper responsiveness of sebaceous gland to androgen hormone results into excess sebum production.

2. Follicular epidermal hyper proliferation and hyperkeratinazation

Increased levels of adrenal derived androgen,dehydroepidanstrone sulfate induces hyperproliferation. This hyperproliferation of follicular epidermal cellsprevents the normal shedding of follicular keratinocytes that results in hyperkeratinazation.

The excess Sebum mixes with the hyperkeratotic follicular cells in the follicular canal to form a keratinous plug which is called microcomedon which eventually blocks the opening of the hair follicule.

Microcomedons

Comedons are the pathognomic signs of acne vulagris.

There are two types of comedons

1.Blackheadcomedons are called open comedons and the black color is due to the oxidation of tyrosine to melanin upon exposure to air.

2.Whitehead comedons are called closed comedon and the white color is due to inflammation of the follicle.

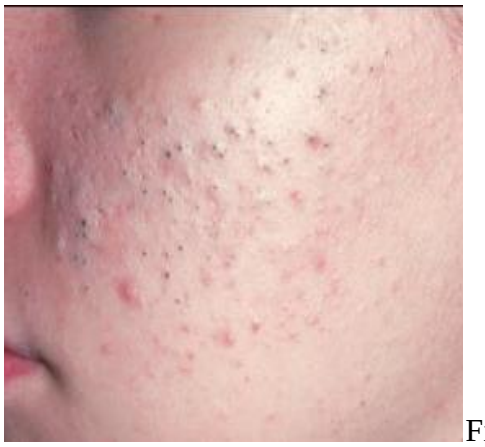


Figure 8.3 Comedons

3. Bacterial Over Growth

The occluded hair follicle in acne vulgaris is rich in lipids and lipid is a major component of sebum.

Sebum is a favorable environment for the growth of Propionibacterium acne which is a lipophilic organism.

Propionibacterium acne is a bacteria which is part of the normal flora of the skin .

4. Inflammation

P. acnes provokes an inflammation by producing proinflamatory cytokines that diffuse into the hair follicules. P. Acne breaks down triglycerides found in sebum into free fatty acids and glycerol, and these compounds are proinflammatory.

P. acnes can also leads to further inflammation by releasing chemotactic factors.

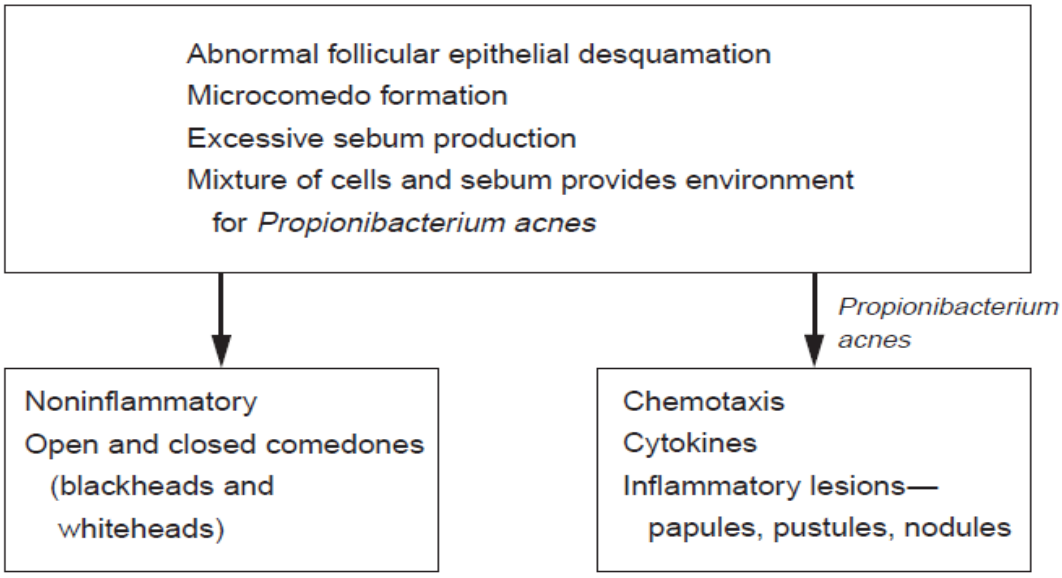


Fig 8.4Schematic diagram representing pathgensis of acne vulgaris

Congenital adrenal hyperplesia,polycystic ovarian syndrome and other endocrine problems with excess androgens may trigger the development of acne.

Aggravating Factors

Emotional stress
Sun exposure
Change in sebaceous activity and hormonal level (e.g. before or during premenstrual cycle)
Squeezing the lesion
Local irritation or friction
Rough or occlusive clothing
Cosmetics(having greasy base)
??Diet

Medications that can cause acne

ACTH
Azathioprine
Barbiturates

Isoniazid
Lithium
Phenytoin
Disulfiram
Halogens
Iodides
Steroids
Cyclosporine
Vitamins B2,6,12

Clinical Presentation

Acne occurs in areas with high density of sebacious glands (sebum rich areas) such as the face, neck, chest, back, shoulders, or upper arms.

Clinical presentation of Acne can be described in terms of type of lesion and depending on the severity of the skin lesions.

Type of skin Lesion in acne vulgaris

There are two types of skin lesions which are non inflmatory and inflammatory skin lesions.

1. Non-Inflammatory lesions are Whitehead" and""Blackhead"Comedons.

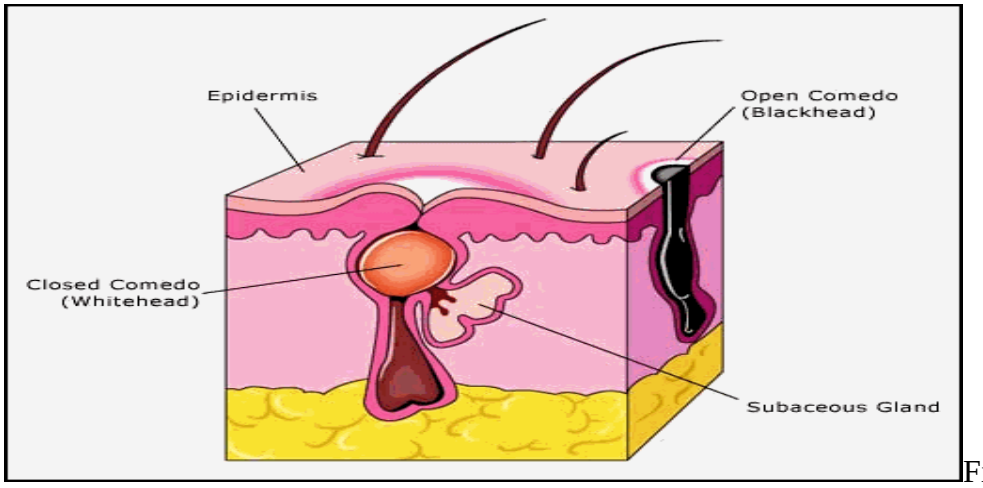
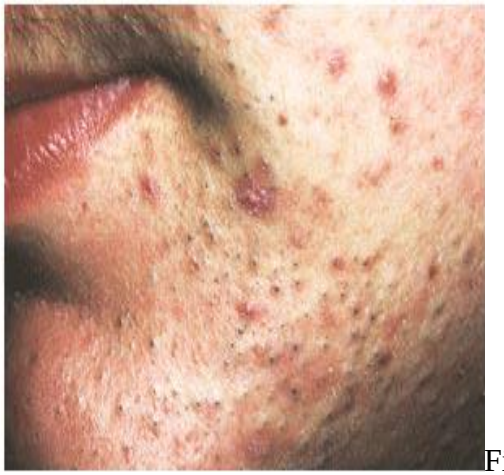


Fig 8.5 comedons

 Fig 8.6 black head comedons

2. Inflammatory Skin Lesion

Inflammatory skin lesions in acne are characterized by

Papule
Pustule
Nodulocystic
Nodule

Depending on the severity acne vulgaris is classified into mild, moderate, moderately severe and severe.

Severity

Table 1. Classification of Acne.*

Severity	Description
Mild	Comedones (noninflammatory lesions) are the main lesions. Papules and pustules (Fig. 1) may be present but are small and few in number (generally <10).
Moderate	Moderate numbers of papules and pustules (10–40) and comedones (10–40) are present (Fig. 2). Mild disease of the trunk may also be present.
Moderately severe	Numerous papules and pustules are present (40–100), usually with many comedones (40–100) and occasional larger, deeper nodular inflamed lesions (up to 5). Widespread affected areas usually involve the face, chest, and back (Fig. 3).
Severe	Nodulocystic acne and acne conglobata with many large, painful nodular or pustular lesions are present, along with many smaller papules, pustules, and comedones (Fig. 4A).

* The information is from Cunliffe et al.[12]

Table 8.1 classification of acne vulgaris depending on severity

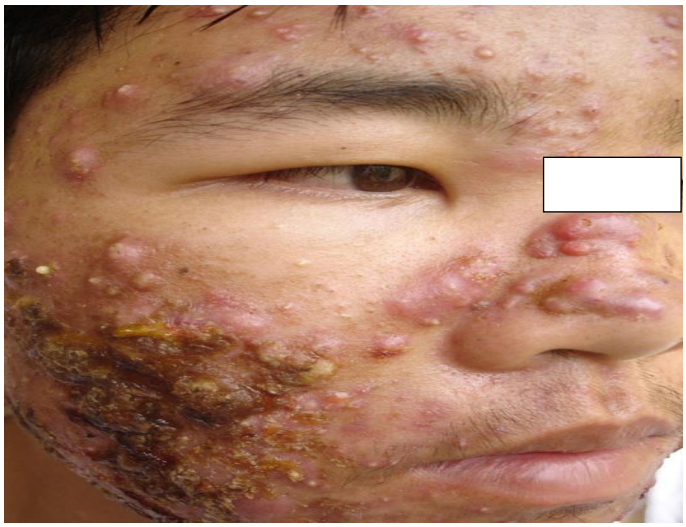


Fig: 8.7 Nodulo cystic acne

Diagnosis

The diagnosis of acne is clinical and it is established by the presence of comedones.

Goal of therapy

Acne vulgaris is a self limiting disease after the age of 25 years and the purpose of treatment is to prevent post inflammatory hyperpigmentation ,Prevent pitting or scarring and reduce psychosocial distress.

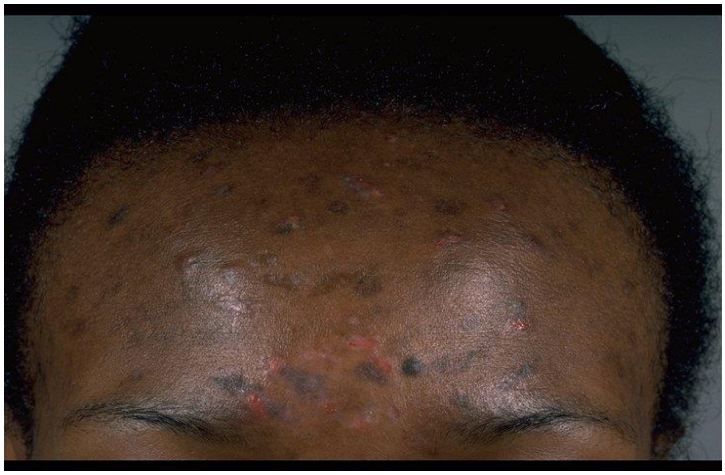


Figure 8.9 post inflammatory hyperpigmentation

Treatment

Treatment of acne should be towards the main pathogenic factors .

The severity and grade of acne determines the type of treatment (topical treatment or systemic treatment).

Acne treatement should be given for at least 6 weeks to produce an effect.

Depending on the severity of the condition acne can be treated with topical or systemic treatment.

Topical treatment options

- Benzoyl peroxide
- Topical antibiotics
- Retinoid analogues
- Azelaic acid
- Salycilicacid ,Sulphur ,resorcionol

Topical Treatment

Each of topical treatments have different mechanism of action.

1. Benzoyl Peroxide

It is a non-antibiotic antibacterial agent which has bacteriostatic effect againstP.acne.

Benzoyl Peroxide increases the sloughing rate of abnormal epithelial cells and loosens the follicular plug structure.

Benzoyl Peroxide is an effective treatment for acne vulgaris.

It is available in a wide variety of dosage forms (e.g., soaps, lotions, creams, washes, and gels) and dosages (e.g., 2.5% to 10%).

Common side effects are dryness and irritation.

2. Retinoid Analogues

It works by Increasing cell turnover in the follicular wall so it normalize the keratinization process.

It leads to extraction of the comedones and inhibition of new comedon formation

they are effective in the treatment of acne.

2.1. Tretinoin (topical vitamin A acid)

It is the most common available option in Ethiopia and it is availabile in concentration of 0.025% and 0.05%.Tretionin is commonly available one.

Dosing – applied once nightly

Side Effects – skin irritation, erythema, peeling, increased sensitivity to sun exposure.

2.2. Adapalene

Availability – 0.1% gel, cream, alcoholic solution

Dosing - applied once daily at night

Side Effects – minimal irritation

Azaleic Acid

Azaleic Acid has comedolytic, anti-inflammatory, and antibacterial properties.

It is available in 20% cream.

It is applied twice daily on clean, dry skin.

Side effects are mild transient burning, pruritus, stinging, and tingling.

Drugs	Available Formulations (Concentrations)	Dose	Common Adverse Effects	Place in Therapy
Topical Retinoids				
Adapalene	Cream (0.1%) Gel (0.1%, 0.3%) Lotion (0.1%)	Once daily (cream, gel: daily in the evening)	Dryness, erythema, photosensitivity, pruritus, scaling, stinging	Any stage
Tazarotene	Cream (0.05%, 0.1%) Foam (0.1%) Gel (0.05%, 0.1%)	Once daily in the evening		
Tretinoin	Cream (0.025%, 0.05%, 0.1%) Gel (0.01%, 0.025%) Micronized gel (0.04%, 0.08%, 0.1%)	Once daily in the evening		
Topical Antibiotics				
Clindamycin	Foam (1%) Gel (1%) Lotion (1%) Pledget (1%) Solution (1%)	Twice daily (foam: once daily)	Burning, dryness, erythema, oiliness, pruritus	Mild inflammatory acne; moderate to severe acne
Erythromycin	Gel (2%) Pad (2%) Solution (2%)	Twice daily (gel: once or twice daily)		
Topical Combinations				
Adapalene/BPO	Gel (0.1%/2.5%; 0.3%/2.5%)	Once daily	Burning, dryness, erythema, oiliness, pruritus	Any stage
Clindamycin/ tretinoin	Gel (1.2%/0.025%)	Once daily in the evening		
Clindamycin/BPO	Gel (1.2%/2.5%; 1.2%/5%)			
Erythromycin/BPO	Gel (3%/5%)	Once daily in the evening Twice daily		

Table 8.2 Topical treatment for acne vulgaris

Salicylic acid, sulphur and resorcinol removes black and white comedons.

Systemic Treatment

Systemic treatment options in acne vulgaris includes

1.Systemic Antibiotics
2.Systemic retinoids
3. Antiandrogens

Systemic Antibiotics

Systemic antibiotic is the Standard of care in the management of severe acne .

Oral Antibiotics				
Doxycycline	Capsule (50–150 mg) Tablet (50–150 mg) Tablet (DR: 75 mg, 100 mg)	50–100 mg once or twice daily	GI upset, esophagitis, photosensitivity, tooth staining*	Moderate to severe acne
Erythromycin	Capsule (DR: 250 mg) Tablet (250–500 mg)	250–500 mg once or twice daily	GI upset, hepatotoxicity	
Minocycline	Tablet (ER: 45–135 mg)	1 mg/kg/day for 12 wk	Autoimmune disorders, dizziness, fatigue, headache, hepatotoxicity, hyperpigmentation, intracranial hypertension, vertigo*	
Tetracycline	Capsule (250 mg, 500 mg)	250–500 mg twice daily	GI upset, tooth staining*	
Trimethoprim/ sulfamethoxazole	Tablet (800 mg/160 mg)	800 mg/160 mg twice daily	Anemia, hypersensitivity reactions, rash	

Table 8.3Systemic treatment for acne vulgaris

Tetracycline groups

Minocycline – reserved for patients who do not respond to other oral antibiotics or topical products; superior to doxycycline in reducing P. acnes.

Doxycycline – more effective than tetracycline and the dose is 100mg po daily for 1month then evaluate the patient.

Tetracycline – least expensive and most often prescribed for initial therapy and the dose is 1gm daily for 1month then evaluate the patient.

Macrolides

Erythromycin – effective, but use is limited to those who can not use the tetracycline groups (e.g., pregnant women or children under 12 years.)

The dose is 1gm po daily for 1 month then evaluate the patient.

Azithromycin can also be used and the dose is 500 mg po 3 times weekly.

The use of systemic Clindamycin in acne is limited by its side effect of pseudomembranous colitis.

Cotrimoxazole

It has antibiotic and anti-inflammatory effects.

Trimethoprim-Sulfamethoxazole is effective, but use is limited to those who cannot use the tetracyclines or erythromycin, or in case of resistance to these antibiotics.

Trimethoprim-Sulfamethoxazole – 160/800mg twice daily.

Isotretinoin

It is a very effective drug for severe and recalcitrant acne.

The dose is 0.5-2 mg/kg/day and it is usually given for 20 weeks.
The common side effects are dry mouth, nose and eyes, it also increases cholesterol,triglyceride,glucose and transaminases.
Other reported side effects are mood disorders,depression and suicidal ideation.

Hormonal Agents

Estrogen-containing oral contraceptives can be useful in the treatment of severe acne in some women.

Spironolactone can be used in severe acne which is resistant to systemic antibiotic treatment.
Sprinolactone is a potassium sparing drug which works by antagonizing androgen hormone.

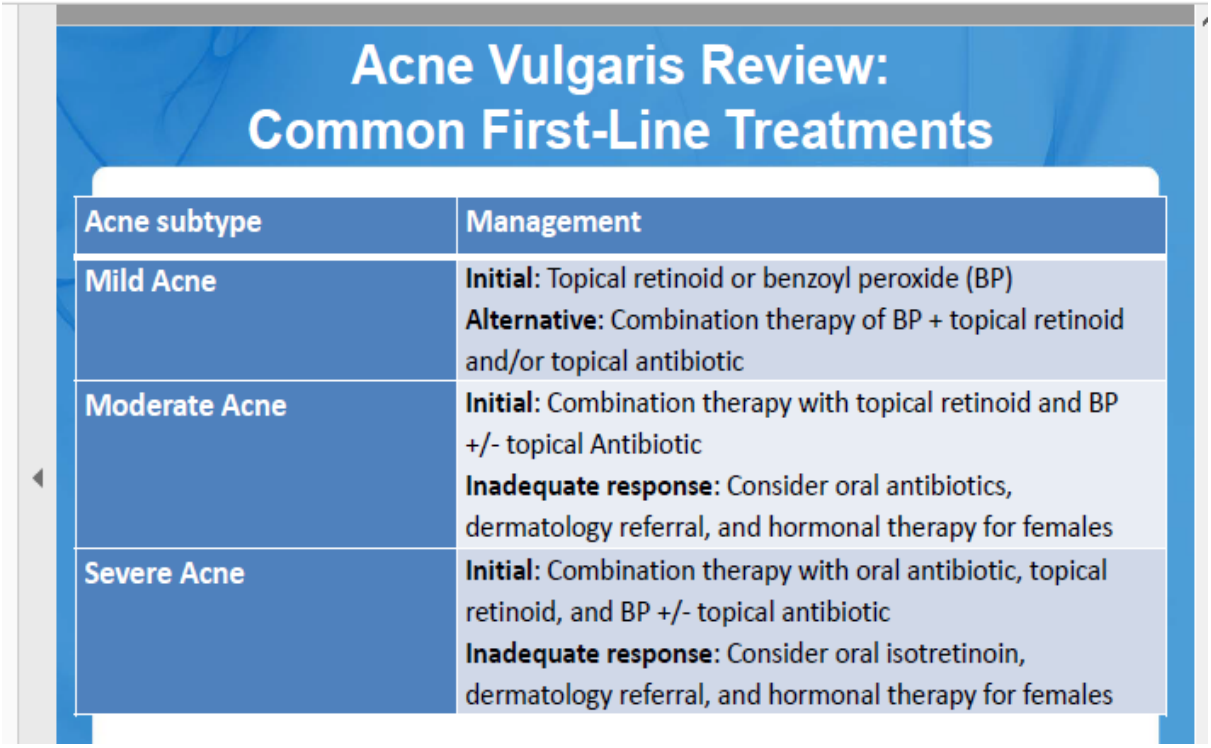


Table 8.4 Classification of acne vulgaris depending on severity

Summary

Acne is a chronic inflammatory disorder of the pilosebacious unit.

It is one of the most frequent chronic skin disease and the commonest disorder in adolescents.

Acne is a multifactorial disorder which include hyperproliferation of keratinocytes,increase sebum production,microbial colonization of pilosebacious unit by propionbacterium acne.

Acne occurs at puberty and it involves the face,chest,back and shoulders.

Acne is characterized by the presence of black and white head comedons in the pilosebacious orifice. Other lesions include papule,pustules ,nodules and cysts .

According to severity,acne is classified into :

1. Mild acne : comedones + few papules
2. Moderate acne : comedones + papules + pustules
3. Severe acne(acne conglobate) : nodules + cysts

Topical treatment is given for mild cases.

Topical therapy options are topical antibiotics (clindamycine or erythromycin) , topical retinoids which decrease keratinazation in the pilosebacious unit orifice and benzoyl peroxide has antibacterial effect.

Systemic treatement is indicated for moderate and severe cases and the treatment opitions are tetracycline group which has anti inflammatory effect and systemic retionids which regulate proliferation in the pilosebacious unit.

Anti androgens can be give for female patients.

Chapter 9: Rosacea and Periorifical Dermatitis

Chapter description: This chapter describes the clinical features and management of rosacea and periorifical dermatitis.

Learning Objectives:

- Discuss about ethiopathogensis of rosacea
- Explain the clinical features of rosacea
- Discuss about the clinical variants of rosacea
- Discuss about diagnosis and management of rosacea

Outline:

Introduction

Epidemiology

Pathogensis

Clinical feature

Treatement

Summary

Introduction

Rosacea is a chronic disorder that occur mainly at the convexities of facial skin but may also involve the eyes.

Epidemiology

The prevalence of rosacea is unknown and it is as common as psoriasis.
Age: The usual age of onset is between 30–50 years. It can occur in children, adolescents, and young adults.

It is less prevalent in the elderly.

Sex: it Occurs in both men and women equally but male patients are said to develop more severe rosacea (rhinophyma).

Ethnicity:

- It affects all races
- Predominantly it affects fair skin individuals.

Pathogenesis

- The exact pathogenesis of rosacea is unknown.
- It is unlikely that a single pathophysiological pathway is responsible for the diverse clinical features seen in patients.
- Several mechanisms have been proposed.
- There may be a genetic predisposition; as 10–20% of patients report a family history of rosacea.
- Pathogenic hypotheses for Rosacea:
    - Aberrant innate immune system
    - Ultraviolet radiation (UVR)
    - Vascular changes
    - Epidermal barrier dysfunction
    - Neurogenic inflammation
    - Microbes

Aberrant innate immune system

The innate immune response protects against microbial infection without requiring specific recognition of the pathogenic stimulus.

Activation of innate immunity leads to release of cytokines & antimicrobial molecules such as cathelicidin.

In rosacea, there is upregulation of cathelicidin which stimulate inflammatory reaction and its processing serine protease (kallikrein 5), suggesting dysfunction of the innate immune system.

Doxycyline inhibits the proteases which are required for the activation of cathelicidins.

Ultraviolet radiation (UVR)

UVR markedly increases dermal angiogenesis.
Newly formed and/or widened blood and/or lymphatic vessels facilitate the infiltration of inflammatory cells into the dermal tissue resulting in damage to dermal matrix components.

Vascular changes

An elevation in cutaneous blood flow has been observed in skin affected by rosacea, when compared with non-affected skin.

Epidermal barrier dysfunction

Patients with rosacea often have epidermal barrier dysfunction which is characterized by increased transepidermal water loss and lowered threshold for skin irritancy.

Neurogenic inflammation

In rosacea patients there is an inflammatory response induced by sensory nerves which release neuromediators that result in oedema, erythema and hyperemia of facial skin.

UV radiation and emotional stress activates the release of neuromediators.

Microbes

Demodex mites (folliculorum and brevis), which are commensals of normal skin, are found in greater numbers in rosacea patients.

Demodex infestation is associated with an intense perifollicular infiltrate of predominantly CD4+helper T cells.

It has been suggested that Demodex mite infestation may play a role in the initiation of inflammatory ocular changes that occur in meibomian glands.

Triggers of Rosacea

- ✓ Hot or cold temperature
- ✓ Sunlight
- ✓ Wind
- ✓ Hot drinks
- ✓ Exercise
- ✓ Spicy food
- ✓ Alcohol
- ✓ Emotions
- ✓ Cosmetics
- ✓ Topical irritants
- ✓ Menopausal Flushing
- ✓ Medications that promote flushing

Clinical features of Rosacea

Based on the clinical features there are two types of classification of rosacea.

1. Plewig and Kligman staging of roseacea
   - It has 3 stages
   - It Assumes signs & symptoms of rosacea progress in stages(begins in flushing & terminate in phymatous change).

Table 9.1 Plewig and Kligman Staging Rosacea

Stage	Description
1	- Prolonged erythema/cyanosis - Teleangiectases - Sensitive skin (stinging)
2	- Appearance of inflammatory papules/pustules - Oedematous papules - Prominent pores - More frequent attacks of inflammatory papules/pustules - Involvement of larger inflammatory nofules
3	- Appearance of large inflammatory nodules (furunculoid elements) - Tissue hyperplasia - Oedema - Phymata

2. United State National Rosacea Society expert committee staging of roseacea
   - It has 4subtypes.
   - It assumes progression of rosacea from one subtype to another doesn't occur.
   - Subtypes may overlap in the same individual.
   - Approach for treatment is strongly influenced by the subtype.

Subtype	Descriptive term for rosacea	Clinical signs
1	Erythematotelangiectatic	Flushing and central facial erythema. Additional possible features: edema, stinging and burning sensations, roughness or scaling
2	Papulopustular	Persistent erythema and transient papules or pustules (inflammatory subtype)
3	Phymatous	Thickening skin, irregular surface nodularities, and enlargement of affected areas (the chin forehead, cheeks, ears and nose)

4	Ocular	Conjunctivitis, keratitis, blepharitis

Table9.2 classification of rosacea according to the US National Rosacea Society Expert Committee

Clinical manifestation of Subtypes of Rosacea

1. **Erythematotelangiectatic Rosacea:**

Persistent centrofacial erythema

Flushing

Telangiectasias

Skin sensitivity (burnining, stinging)

Central face edema

Roughness/scaling

Figure 9.1 erythematotelangactatic rosacea

PapulopustularRosacea:

- Persistent centrofacial erythema
- Papules
- Pustules/papulopustules
- Overlap with other subtypes may occur
- The lesions can appear singly or in crops.
- Papules often appear to be at different stages of evolution
- Burning and stinging occurs less commonly & flushing is often less severe

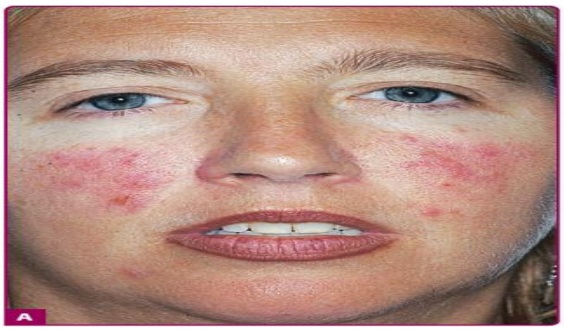


Figure 9.2 papulopustular rosacea

All lesions are relatively superficial and nodules and cysts are not a feature of PPR.

Individual lesions last about 2 weeks then subside.

Lesions that resolve typically heal without scarring; but may leave persistent postinflammatory erythema.

In severely affected skin, slight scaling or a crusted appearance may sometimes be seen.

There may also be mild facial edema.

In both subtypes (ETTR & PPR), erythema spares the periorbital areas.

Phymatous Rosacea:
Patulous follicular orifices
Thickened skin
Nodularities
Irregular surface contours
Can affect nose , chin, forehead, ears ,eyelids
May occur in patients with acne vulgaris.
When phymatous change occur on the Nose it is called Rhinophyma.
When phymatous change occur on the Chin it is called Gnathophyma.
When phymatous change occur on the Forehead it is called Metophyma.
When phymatous change occur on the Ears it is called Otophyma .
When phymatous change occur on the Eyelids it is called Blepharophyma.

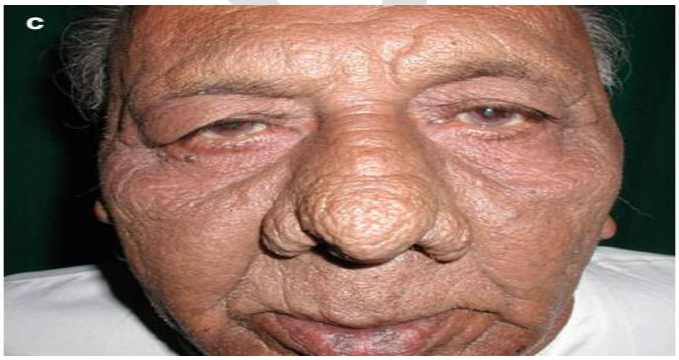


Figure 9.3 rhinophyma

Male patients are predominantly affected by rhinophyma

Women with rosacea less likely to develop phyma, perhaps for hormonal reasons.

Ocular manifestation of Rosacea

- Dry, gritty sensation, inability to wear contact lenses
- Blepharitis
- Conjunctivitis
- Chalazia and hordeola
- Keratitis, episcleritis, scleritis, iritis (rare).
- 20% of cases preceed cutaneous lesion, 50% develop after cut lesions.
- Develops in 50 % of patients with ETTR & PPR.
- Usually bilateral but may be more severe in one eye than the other.
- In severe cases, rosacea keratitis may lead to vision loss.

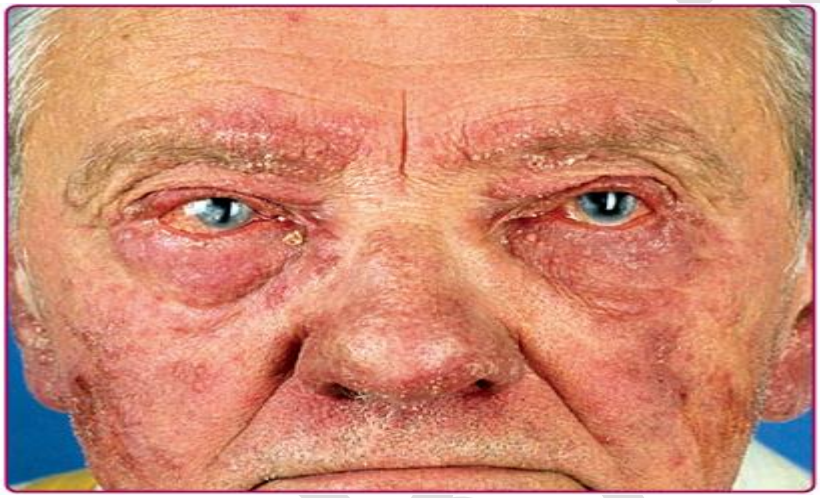


Figure 9.4 Ocular subtype, severe: blepharitis ,conjunctivitis and keratitis

Clinical variants of rosacea

Granulomatous Rosacea

It is considered as the only true rosacea variant.
Clinically it is characterized by yellow–brown or red papules or nodules that are monomorphic and located on the cheeks and periorificial facial skin.
Diascopy: apple-jelly like change.
The background facial skin is otherwise normal.
It was once thought to be linked to cutaneous tuberculosis (lupus miliaris disseminatus faciei)
It is uncommon & resistant to treatment.

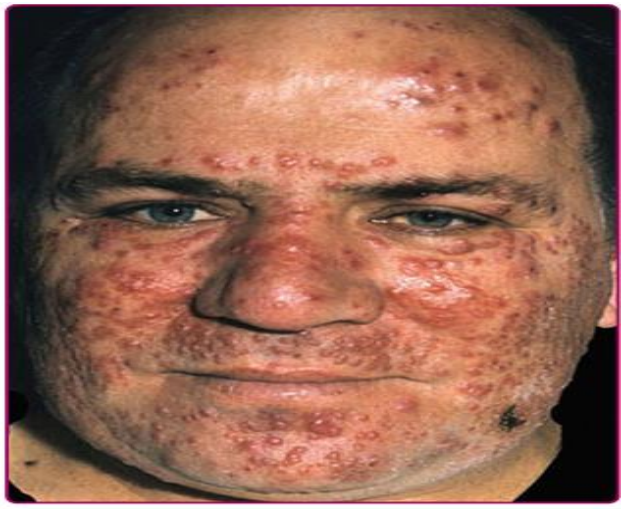


Figure 9.6 Granulomatous rosacea: multi-monomorphic red and yellow brown papules that on diascopy, show apple-jelly-like color/

Rosacea fulminans

- Also known as pyoderma faciale and rosacea conglobata.
- Occurs mainly in women in their twenties.
- Characterized by the sudden onset of confluent papules, pustules, nodules, and draining sinuses on the chin, cheeks, and forehead within a background of diffuse facial erythema.
- Occasionally with general symptoms (fever, arthropathy).
- Controversial in its classification and was not included as a rosacea subtype or variant by the NRS Expert Committee.

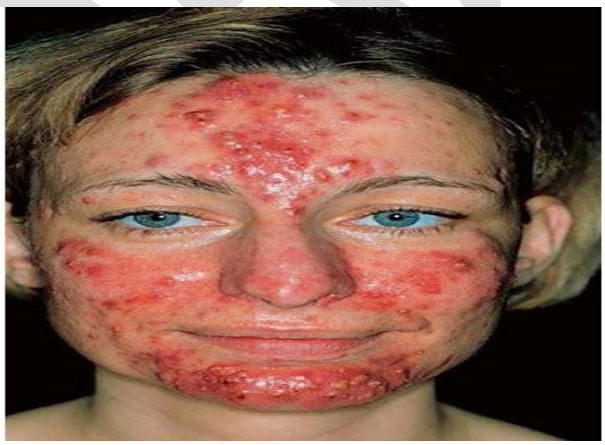


Figure 9.7 Rosacea fulminans

DIFFERENTIAL DIAGNOSIS

Erythematotelangiectatic rosacea

- ❖ Chronic photodamage
- ❖ Seborrhoeic dermatitis
- ❖ Contact dermatitis
- ❖ Lupus erythematosus

- ❖ Dermatomyositis
- ❖ Flushing/blushing due to other causes

Papulopustular rosacea

- ❖ Acne vulgaris
- ❖ Steroid-induced acneiform eruption
- ❖ Pityriasis folliculorum
- ❖ Perioral dermatitis
- ❖ Tinea facie

Phymatous rosacea

- ❖ Lupus pernio
- ❖ Leprosy
- ❖ Leishmaniasis
- ❖ Granuloma faciale
- ❖ Basal cell carcinomas

Diagnosis

Rosacea is a clinical diagnosis.

In patients with atypical presentations or those with unusual symptoms, alternative diagnosis should be considered

There is no specific serological or histopathological test that will confirm the diagnosis of either cutaneous or ocular rosacea.

Histology may be helpful when the facial distribution is atypical or when granuloma formation is suspected.

Associated diseases

- Facial seborrhoeic dermatitis
- Migraine, depression and carcinoid syndrome have been suggested as occurring in association with rosacea.
- GI diseases:
  - An association between the cutaneous lesions of rosacea and GI disturbance has long been considered.
  - Possible role of H. pylori of the stomach causing vasoactive neuropeptide release was raised but subsequent studies suggest that such an association is unlikely.
  - A recent report indicated that more than 50% of rosacea patients showed evidence of small intestine bacterial infection.

Disease course and prognosis

Rosacea is a chronic condition and its course is characterized by episodes of partial remission and repeated relapse.

Untreated ETTR: patients develop persistent facial redness over time, often with prominent malar telangiectasia and increasingly sensitive facial skin.

PPR : characterized by recurrent episodic crops of inflammatory lesions.
Rhinophyma tends to be progressive unless treated.
Occular rosacea has a chronic course with episodes of exacerbation. Dryness tends to be a constant feature, while inflammatory lesions (hordeola, chalazia) occur intermittently.
Conjunctival fibrosis, punctate keratitis and corneal neovascularization have been reported in patients with ocular rosacea but appear to occur rarely.

Management

It differs according to the principal subtype manifest in each patient.

General measures

- Identify & avoid triggers
- Photoprotection: broad spectrum sunscreens, wear hats, avoid mid day sun exposure.
- Avoidance of potential irritants:
  - Astringents
  - Abrasive soaps
  - Perfumes
  - Aftershave lotions
  - skin-peeling preparations
  - Soap free cleansers
- Daily use of moisturizing cream.
- Avoid systemic drugs that causes flushing.

ERYTHEMATOTELANGIECTATIC ROSACEA

Topical α receptor agonists such as brimonidine or oxymetazoline.

PAPULOPUSTULAR ROSACEA

Treated primarily with topical and systemic antibiotics (used separately or in combination).

Topical treatments:

- Metronidazole (0.75% gel or cream; 1% cream), once or twice daily.
- Azeleic acid (15% gel), twice daily.
- Erythromycin (2% solution) twice daily.
- Clindamycin (1% lotion) daily.
- Tretinoin (0.025% cream; 0.05% cream; 0.01% gel) daily.
- Permethrin (5% cream) daily for one week.
- Pimecrolimus (1% cream) twice daily.

In the initial clearing phase, the selected preparation should be applied for 6–8 weeks.

Systemic treatments:

- Doxycycline
- Minocycline
- Tetracycline
- Erythromycin
- Azithromycin
- Metronidazole
- Isotretinoin

Systemic treatments	Dosage and duration
Doxycycline	40 mg daily (30 mg immediate release and 10 mg delayed release) for 6–12 weeks; As effective as the 100 mg dose but with less adverse effects
Doxycycline	50–100 mg once or twice daily for 6–12 weeks
Minocycline	50–100 mg twice daily or sustained action formula (1 mg/kg) daily for 6–12 weeks
Tetracycline	250–500 mg twice daily for 6–12 weeks
Erythromycin	250–500 mg once or twice daily for 6–12 weeks
Azithromycin	250–500 mg (5–10 mg/kg) thrice weekly
Metronidazole	200 mg once or twice daily for 4–6 weeks
Isotretinoin	10–40 mg daily

Table 9.1 Systemic treatment of rosacea

Relapses occur in approximately one fourth of patients after 1 month off tetracycline, and in over one-half of patients at 6 months off therapy.

Many patients with PPR require repeated courses of systemic antibiotic therapy.
Sometimes, successful treatment of the inflammatory lesions of PPR reveals background telangiectasias**.**

PHYMATOUS ROSACEA:

- Isotretinoin
- Surgical excision
- Electrosurgery
- CO2 laser

OCULAR ROSACEA:

- Eyelid hygiene and artificial tears
- Fuscidic acid
- Metronidazole gel
- Cyclosporine 0.5% ophthalmic emulsion
- Systemic antibiotics
- Referral to ophthalmologist for specialist care

Summary

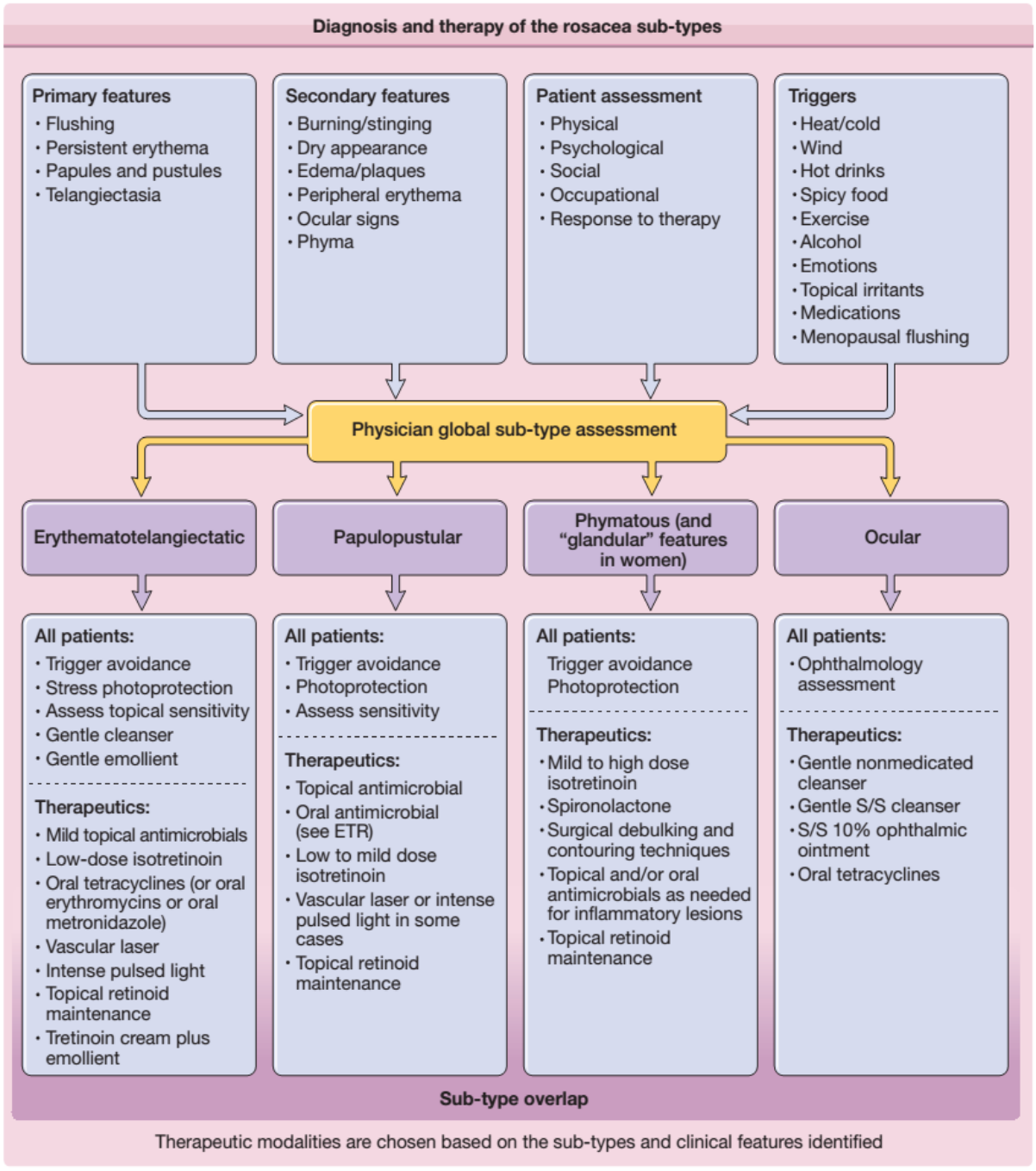


Table 9.4 Summary: Approach to patient, diagnosis and therapy of rosacea subtypes.

Periorifical Dermatitis

Introduction

Inflammatory skin disorder of young women and children.

Comprises two facial dermatoses that are strongly linked to prolonged potent topical corticosteroid use.

- **perioral dermatitis**
- **periocular dermatitis**

Characterized by small, discrete papules and pustules in a periorificial distribution, predominantly around the mouth.

Termed perioral dermatitis by Mihan and Ayres in 1964.

Recently the term periorificial dermatitis has been used.

Epidemiology

Commonly affect young women & children.

Perioral dermatitis can occur as early as 6 months of age.

The granulomatous form of perioral dermatitis reported mostly in children of prepubertal age.

Etiology & pathogenesis

Topical steroid therapy is known to be an important etiological factor.

Periocular dermatitis usually results from the use of steroid-containing ophthalmic preparations.

Perioral dermatitis is not always linked to topical corticosteroids; the exact cause in these other cases is unclear.

Clinical Features

The skin Lesions are discrete and grouped erythematous papules, vesicles, and pustules(monomorphic) and they are often symmetric but may be unilateral.

With the Background erythema and/or scale may be present.

A distinct 5-mm clear zone at the vermilion edge is well described.

Site: perioral, perinasal, and/or periocular regions.

Burning sensation or itching is reported & intolerance to moisturizers & other products.

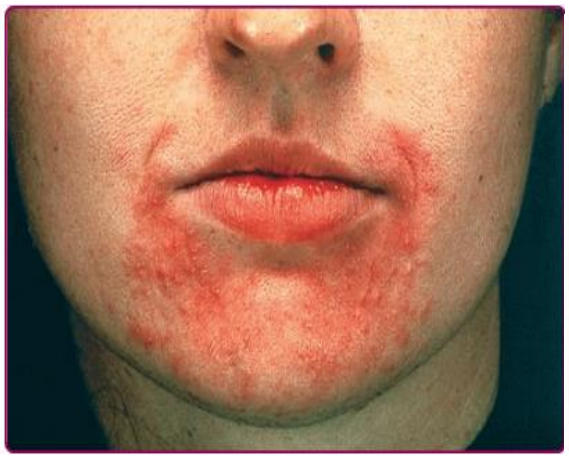


Fig9.8Periorificial Dermatitis

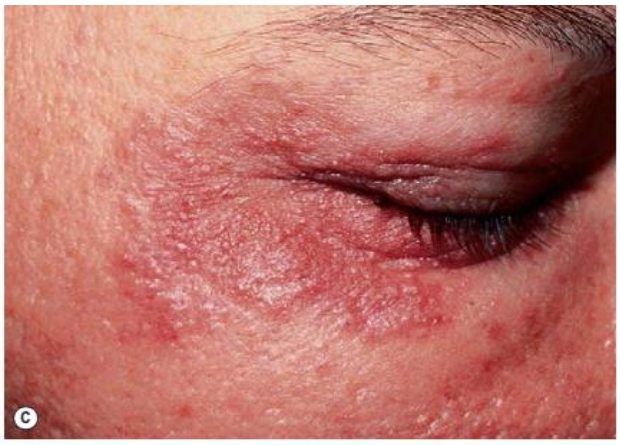


Fig 9.9 Periorifical Dermatitis

Granulomatous periorificial dermatitis

- Prepubertal children of African descent .
- Eruption of asymptomatic, flesh-coloured, erythematous, or yellow–brown dome-shaped papules.
- Shares the distribution of POD in adults.
- Lesions have been also reported to appear on the ears, neck, scalp, trunk, labia majora, and extremities.
- In a few cases an associated blepharitis or conjunctivitis has been reported.
- Biopsy shows non-caseating epithelioid granulomas and a perivascular inflammatory infiltrate.

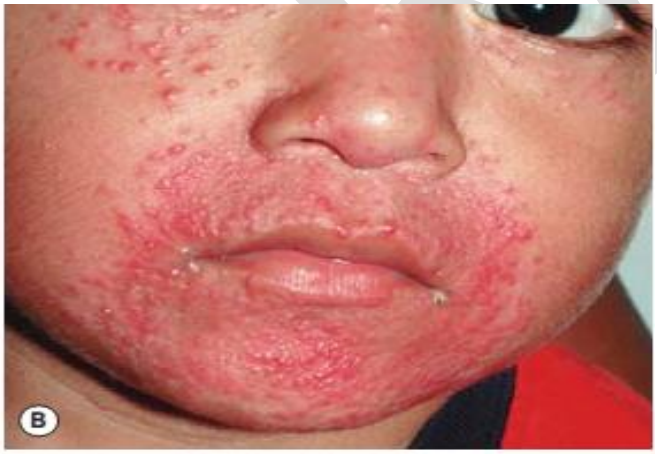


Fig 9.10 Granulomatous Periorifical Dermatitis

Differential Diagnosis of POD

- Rosacea
- Granulomatous rosacea
- Granulomatous perioral dermatitis in child

- Seborrhoeic dermatitis
- Allergic contact Dermatitis
- Acne vulgaris

Prognosis

- Perioral dermatitis is usually a self-limited disorder that evolves over a few weeks and resolves over months or rarely years.
- May take on a waxing and waning course, often with a tendency to progress (granulomatous form).
- Most patients experience permanent remission after a fairly short course of broad-spectrum antibiotics.
- However, if untreated and especially if the provoking topical steroids are continued, it can persist for years.
- Resolves without sequelae ; rare reports of scarring

Management

- The most important measure is to discontinue application of topical corticosteroids.
- The patient must be warned that an initial flare is to be expected up on discontinuation of topical steroids.
- When potent preparations are stopped, it should be substituted with milder topical steroid.
- Other applications, including cosmetics, should be avoided.

For milder cases, topical metronidazole alone may suffice.

Course of 8 to 10 weeks of systemic antibiotics, with a taper over the last 2 to 4 weeks for severe cases.Topical antibiotic therapy, most commonly with topical metronidazole, should be initiated concurrently with the systemic antibiotic.

Response is generally noted within 2–3 months.In recalcitrant cases, isotretinoin may be considered.

Summary

	Topical	Dose	Systemic	Adult dose
First line	Metronidazole	Apply bid	Tetracycline Doxycycline Minocycline	250-500 mg po bid 50-100 mg po bid 50-100 mg po bid
Second line	Erythromycin or clindamycin	Apply bid	Erythromycin	400 mg po bid or
	Sulfur preparations Azelaic acid	Apply bid Apply bid		30-50 mg/kg/day po divided tid (pediatric dose)

Table 9.5 Treatment for Perioral Dermatitis

Chapter 10: Leprosy

Chapter description: This chapter describes the clinical diagnosis and management of leprosy.

Learning objectives:

- Discuss the sign and symptoms of leprosy
- Describe the differential diagnosis of leprosy
- Discuss the treatment of leprosy
- Discuss about leprosy reaction

Outline:

Introduction

Epidmology

Pathogensis

Clinical examination of leprosy suspected case

Treatment of Leprosy

Summary

Introduction

Leprosy is a chronic infectious disease caused by Mycobacterium leprae, an acid-fast bacillus. The disease mainly affects skin, peripheral nerves, mucosa of the upper respiratory tract and the eyes. It affects persons in all age groups and both sexes. The age group mainly affected is between 15 and 45 years. Factors related to poverty increase the risk of developing the disease.

Epidemiology

Globally, 213,899 new cases of leprosy were detected during 2014 and the registered prevalence at the beginning of 2015 was 175,554. Thirteen countries globally (five in Africa including Ethiopia) accounted for 94% of all new cases detected during 2014. The proportion of cases with MB leprosy among new cases in the Africa region ranges from 47.2% to 94.7%. The proportion of children among new cases of leprosy in the African region ranges from 1.4% to 34.5%. Similarly the proportion of disability grade 2 ranged from 0% to 28%. In the region the proportion of females among newly detected cases of leprosy was in the range of 16.2% to 62% during 2014.

In Ethiopia, a total of 3758 (74% MB) new leprosy cases were registered in 2015 with 10.2% Grade II disability rate at time of diagnosis. The proportion of children among new cases was 12.8%. During the same period, the treatment completion rate was 94% for Pauci-bacillary and 93% for Multi-bacillary leprosy.

Mode of transmssion

Leprosy is transmitted through air-borne spread of droplets from the nasal mucosa and mouth, containing the bacilli expelled by untreated leprosy patients and inhaled by healthy persons. Persons living in the same household and in close contact with an infectious person have the greatest risk to get infected and develop the disease.

Natural evolution of leprosy

Under normal circumstances, only a very small proportion (less than 5%) of all individuals who are infected by the leprosy bacilli will develop the disease during their lifetime. In the majority of people, the immunological defence kills the bacilli. The disease slowly progressed with an average incubation period of 3 to 5 years, but it may vary from 6 months to more than 20 years. If not treated, leprosy can cause severe disability, mainly as a result of peripheral nerve damage.

Pathogensis

M.leprae bacilli enter into human body through the upper air way (nasal mucosa) then it is engulfed by schwan cells (nerve cells) because the bacilli has predliction to peripheral nerves.

The clinical manifestation correlate with the host immune response to the pathogen M.lepare. Hosts that mount high cell mediated immune response (Th 1 response) in skin and nerves

,displaying a delayed type hypersensitivity response to M.Leprae antigen then limiting the number of bacilli and skin lesion ,this strong cell mediated immune response accounts for the prominent impairment of the peripheral nerves. However if the host immune response exhibit specific cell immune unresponsiveness to M.Leprae antigen associated with Th 2 immune response results in high mycobacterial loads in the skin ,peripheral nerves and other body structures such as the mucosa of upper respiratory tract,testes,the eyes and internal body parts.

Case Identification of Leprosy

Leprosy should be considered in an individual who presents with:

- Pale or reddish patches (skin patch with discoloration) on the skin.
- Painless swelling or lumps in the face and earlobes.
- Loss of or decreased sensation on the skin.
- Numbness or tingling of the hands and/or the feet.
- Weakness of eyelids, hands or feet.
- Painful and/or tender nerves.
- Burning sensation in the skin.
- Painless wounds or burns on the hands or feet.

N.B. Pale or reddish discoloration of the skin is the most common & early symptom of Leprosy.

Patient Evaluation to Diagnose Leprosy

Over 95% of leprosy cases can be diagnosed on clinical grounds. Laboratory investigation is indicated only in doubtful cases for confirmation and for patient classification.

Evaluate your patient for leprosy as follows:

1.Take Detail Clinical History

- General information: socio-demographic information of the patient.
- History of onset, duration of symptoms.
- Presence of painless wounds/burns.
- Ask for burning sensation; any noticed weakness upon picking or holding objects or closing eyelids; unusual sensation in hands and feet (numbness, tingling).
- Ask presence of itching sensation .
- History of previous leprosy treatment.
- History of prolonged household or other close contact history with leprosy patient .

2. Conduct Physical Examination

Examine the patient thoroughly with focus to the skin, nerves and eyes as follow:

2.1.Examination of the Skin

Examination for skin lesion must always be carried out with adequate light (preferably natural light):

Inform client about purpose of the examination

Request the client to remove all garments

Examine systematically from head to toes, including the front and back sides.

- Check for presence of skin patches or nodules
- Count the number of skin lesions

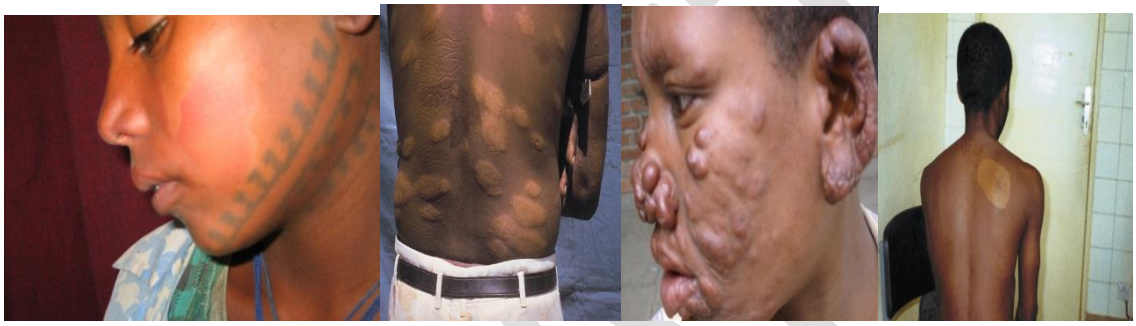


Fig10.1Leprosy patchand nodules

If a skin lesion is identified, check for sensation over the lesion.

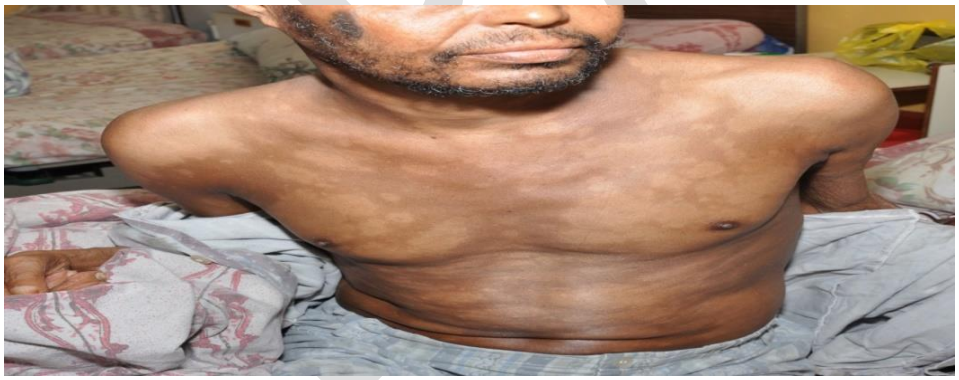


Fig10.2 hypopigmented skin patches in the presence of leprosy

Checking SensationOver the skin lesion

Any skin lesions should be checked for sensory loss using a "wisp of cotton wool" as follows:

Explain the patient on the purpose of the test and what is expected from him.

Prepare a wisp of cotton wool by rolling its end into a fine point.

Demonstrate patient how to respond to the examination and practice the test first while the patient's eyes opened by pressing the cotton wisp gently on the skin till it bends.

Check for definite loss of sensation over the skin lesion by repeating the same procedure with the patient's eyes closed, check first on the normal skin and then on the skin patch.

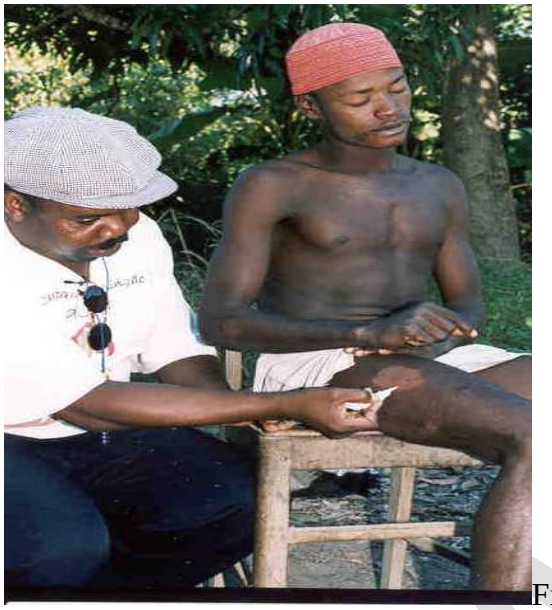


Fig10.3 Sensory test on leprosy patch

- Definite loss of sensation in the skin patch is indicative of leprosy.

2.2.Examination of the Nerves

Leprosy may affect most peripheral nerves including greater auricular, ulnar, median, radial cutaneous, peroneal and posterior tibial nerve .

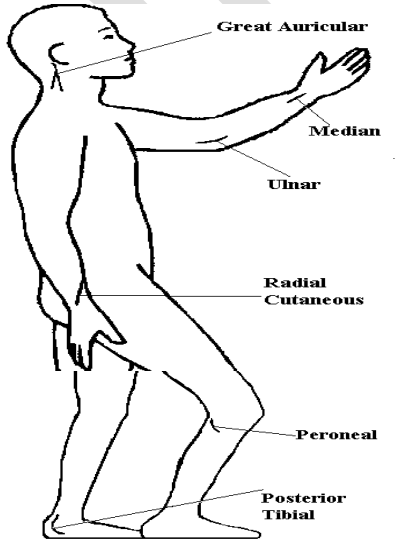


Figure 10.4 Peripheral Nerves affected by leprosy

Nerves are palpated to check for enlargement and/or tenderness.

- Palpate the nerves starting from the head and going down to the feet.
- Compare the right and left sides.
- When palpating a nerve, always use the pulp of two or three fingers; the nerves should be rolled over the underlying bone.
- The ulnar and peroneal nerves are most commonly enlarged and can be felt quite easily.
- A definite enlargement of one or more Peripheral Nerves is indicative of Leprosy.

3.Examination of Skin Smears

Bacteriological examination of skin smear is recommended only for doubtful cases to confirm the diagnosis and for classification of leprosy.

Slit skin is done at least from three sites: ear lobes, forehead and from the skin lesion.

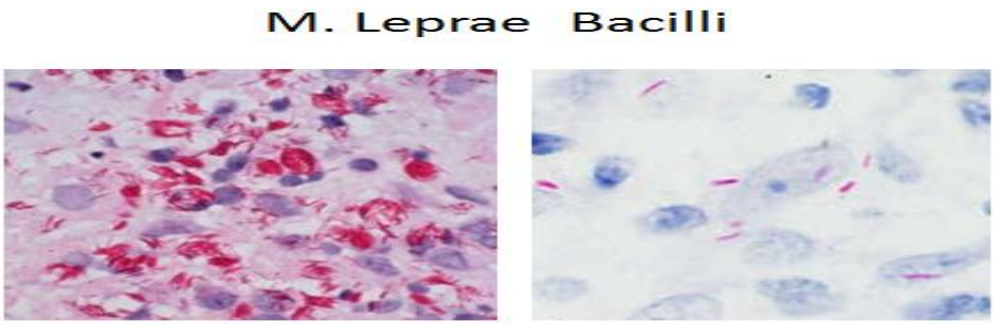


Fig10.5 Mycobacterium Leprae bacilli

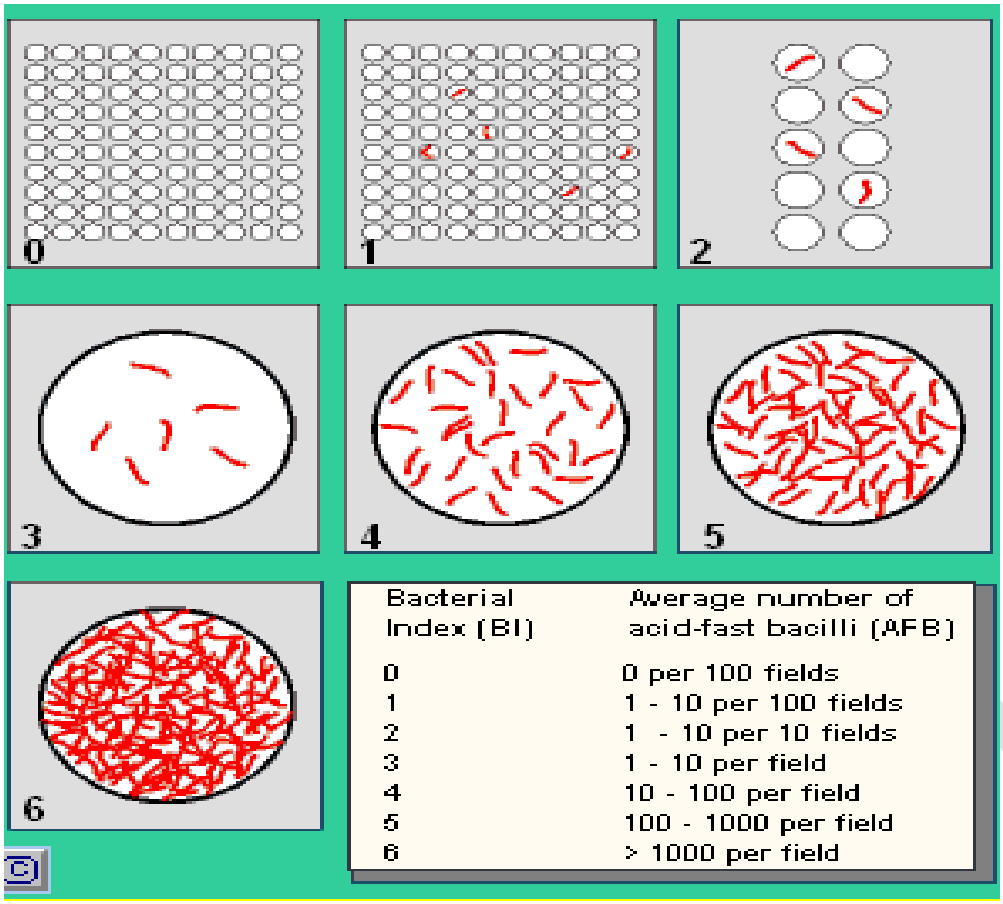


Fig10.6 Bacterial index grading

One positive-smear result confirms the diagnosis of leprosy.

Note that negative smear AFB result doesn't rule out leprosy.

If diagnosis of Leprosy remains doubtful do the following:

- Consider other skin disease and treat accordingly
- Consult an experienced health workers or a dermatologist, or
- Re-evaluate the patient after three- months

Establishing theDiagnosis of Leprosy

The cardinal signs of leprosy are:

1. Definite loss of sensation in a pale (hypo-pigmented) or reddish skin lesion.
2. Thickened or enlarged peripheral nerve with or without tenderness.
3. The presence of acid-fast bacilli in a slit skin smear.

Criteria: Presence of one or more of the three cardinal signs is confirmatory to the diagnosis of Leprosy.

Examination of nerves, Eyes and Hands & feet

After diagnosis of leprosy is made, the health workers need to examine the peripheral nerves, eyes, hands and feet for loss function and disability.

Conducting Nerve Function Testing

The following nerve functions tests must be carried out:

- Voluntary Muscle Testing (VMT)
- Sensory Testing (ST)

Autonomic nerve function test for dryness of palms and soles

Voluntary Muscle Testing

VMT is done to check Muscle strength of eye, hands and feet.

The strength should be graded from 0 up to 5.

1.Voluntary muscle testing (VMT) of the eyes: eye closure

Ask the patient to close his eyes as firmly as possible.

Observe whether or not the closure on both eyes is complete.

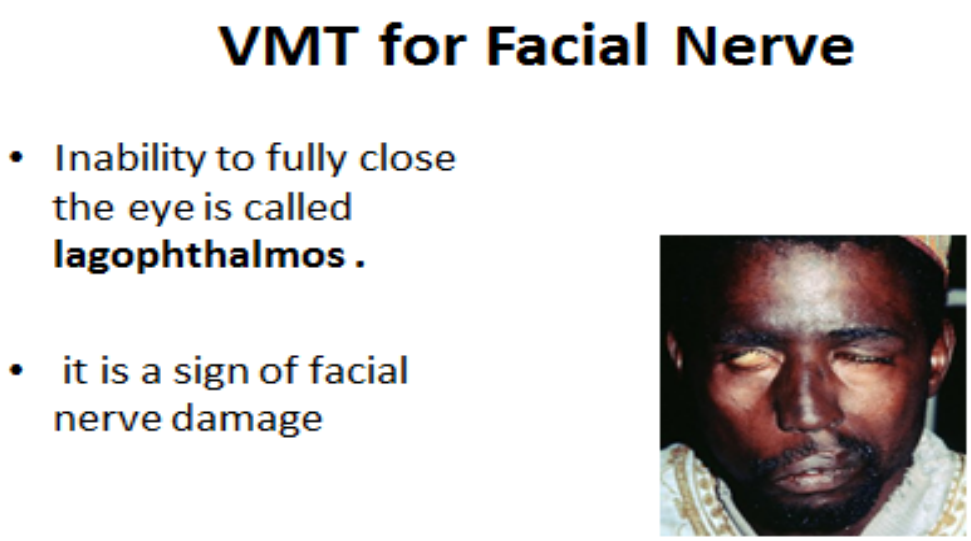


Fig10.7 Lagopthalmus and facial palsy

If the patient is able to fully close his/her eyes, then ask the patient to close his eyes firmly, gently try to open the eyelids using the pulp of your thumbs to check for strength.

 Fig 10.9 VMT on the eye lid muscle

Grade the eye muscle strength as weak (W) if the eyelids open easily; or strong (S) if it is difficult to open the lids.

2. Voluntary Muscle testing (VMT) of the hands

2.1.Check for range of movement on the fifth finger:

ASK patient to abduct 5th finger (move finger away from the rest). If the patient cannot move the finger, record as paralysis (P), an indication of ULNAR nerve damage.

 Fig. 10.10 VMT for ulnar nerve

If movement is normal, test for resistance by pressing gently over the proximal phalanx of the 5th finger using your index finger , holding the other 4 fingers steady and ask the patient to maintain the position and RESIST the pressure of the examiner's index finger as strongly as possible.

Press gradually more firmly and judge whether resistance is strong (S) or weak (W).

Compare the right hand with the left hand always.

2.2.Check for range of movement of the thumb finger:

Ask the patient to first flex to straighten up the thumb finger and later point the thumb to his/her nose while you hold the remaining 4 fingers.If patient cannot move the thumb, record as paralysis (P), an indication of MEDIAN nerve damage.

If movement is normal, test for resistance by pressing gently over the proximal phalanx of the thumb using your (examiner') index finger then holding the other 4 fingers steady and ask the patient to maintain the position and resist the pressure of the examiner's index finger as strongly as possible.


Fig. 10.11 VMT for Median Nerve

Press gradually more firmly and judge whether resistance is strong (S) or weak (W).

Compare the right hand with the left hand always.

2.3.Check for the range of movement of the wrist:

Ask the patient to make a fist then ask him to extend the wrist.

If patient cannot extend the wrist, record as paralysis (P), an indication of RADIAL nerve damage called WRIST DROP.

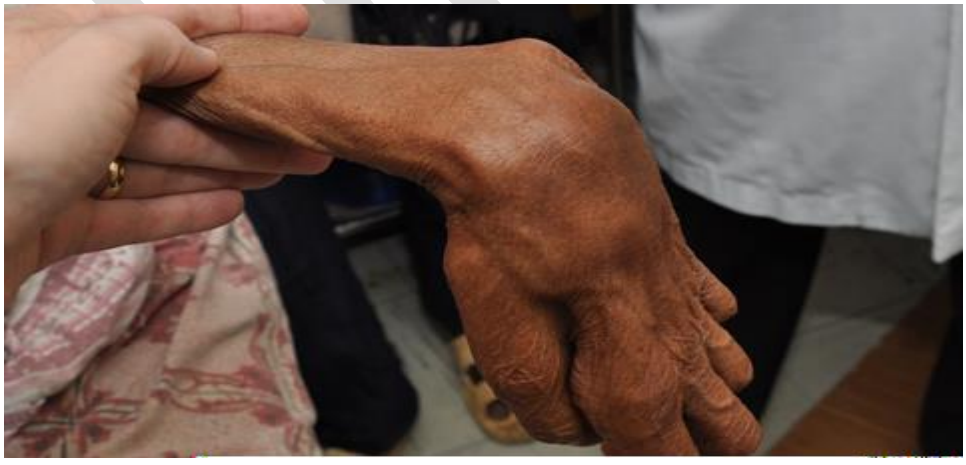


Fig10.13wrist drop

If movement is normal, test for resistance by pressing gently over the dorsum of the hand as shown in the diagram below, whilst you (examiner) hold the wrist with your other hand. And ask the patient to maintain the position and resist the pressure as strongly as possible.

Gradually, press more firmly and judge whether resistance is strong (S) or weak (W).

Compare the right hand with the left hand always.

3.Voluntary Muscle Testing for the Feet:

Check the movement of the feet

Ask patient to dorsi-flex his foot (move up his foot at the ankle).

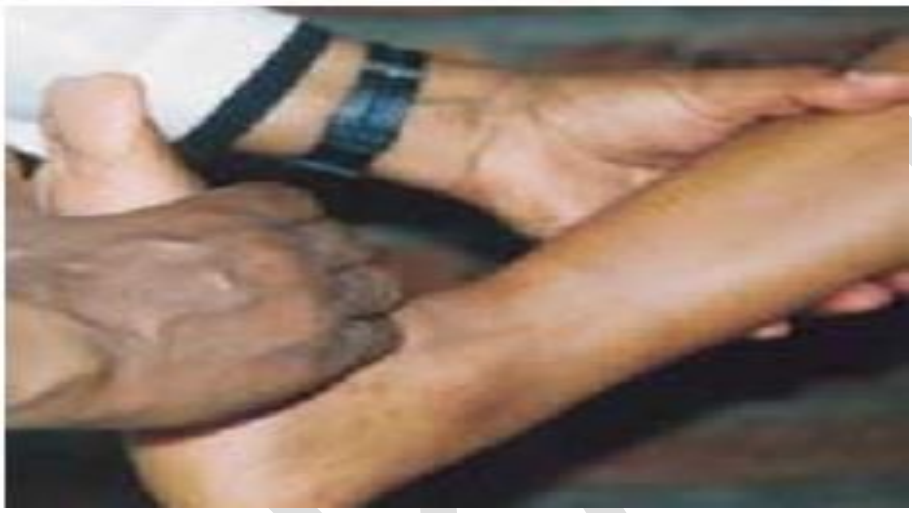


Fig10.14 VMT for Common Peroneal Nerve

If patient cannot dorsi-flex the foot, record as paralysis (P), an indication of peroneal nerve damage called FOOT DROP.

If movement is normal, test for resistance by pressig gently over the dorsum of the foot , whilst you (examiner) hold the leg with your other hand. And ask the patient to maintain the position and resist the pressure as strongly as possible.

Gradually, press more firmly and judge whether resistance is strong (S) or weak (W).

Compare the right foot with the left foot always.

Sensory Testing (ST)

Sensory testing is done to check the presence of sensation in the eyes, hands and feet. The sensation of eyes, hands and feet is tested as follows:

Sensation of the eyes (cornea)

Ask the patient to blink his/her eyes.

Observe the patient's spontaneous blinking while talking to him/her. If there is a blink, corneal sensation is normal. If there is no blink, the eye is at risk.

Sensation on the palms and soles

Sensation test on palms and soles should be done with a ball-point pen.

Fig10.15 Sensation test on the palm using ball point pen

The sensation tests on palms and soles are done on ten standard points.

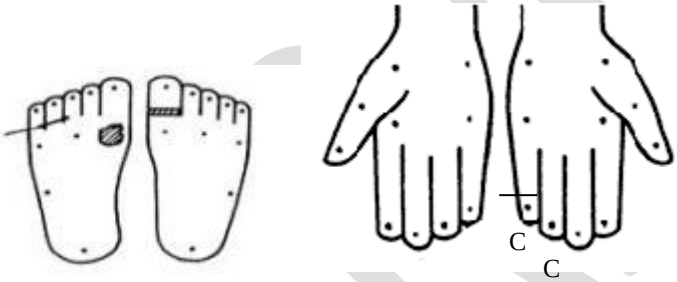


Fig10.16 Standard points for sensory testing

Examination of the Eye

Look for eye problems/complications such as injury of cornea and loss of vision due to incomplete blink and difficulty of eye closure.

Examination of Hands and Feet

Look for skin cracks,ulcer ,claw fingers ,wrist drop,foot drop or absorption of the fingers/toes as a result of peripheral nerve damage.

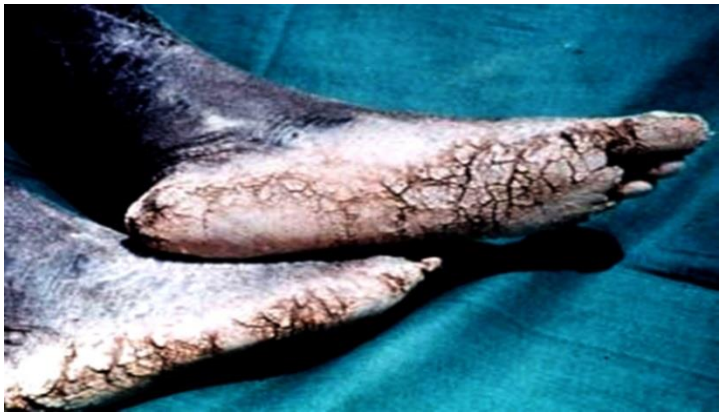


Fig 10.18 leprosy causes dryness of the palms and soles that results in fissuring of the soles

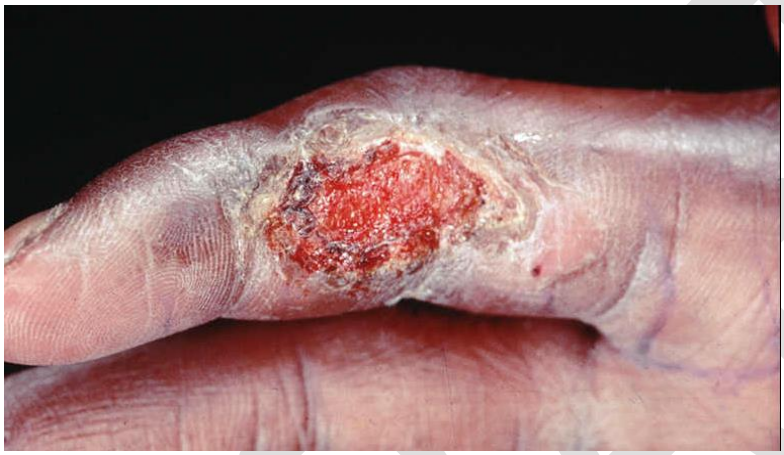


Figure 10.19 chronic ulcer on the Palm due to burn injury (the patient had insensitive hand)

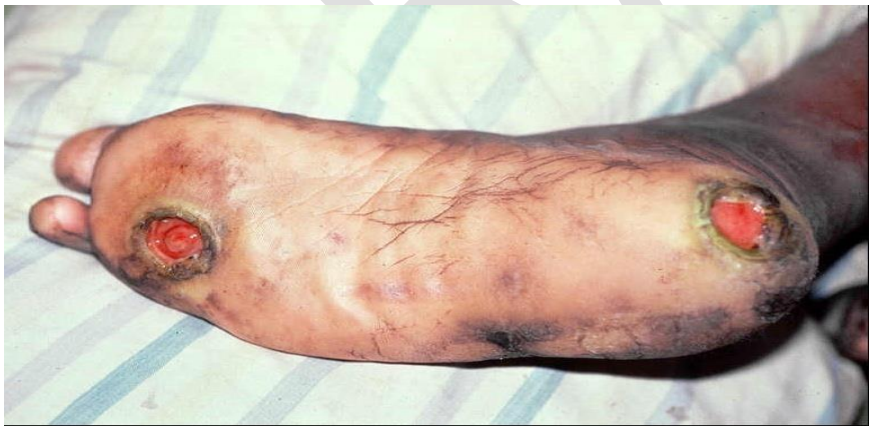


Fig10.20 Ulcer on the sole of the foot (the patient has insensitive foot)

Leprosy Classification

Upon confirming the diagnosis of leprosy: Count the number of skin lesions, and check for number of nerve enlargement and do skin smear for AFB then Classify as: Paucibacillary (PB) or Multibacillary (MB) Leprosy.

1. **Paucibacillary (PB) leprosy**
   - One to five leprosy skin lesions.
   - Only one nerve trunk enlarged
2. **Multibacillary (MB) leprosy:**
   - Six or more skin lesions.
   - Less than six skin lesions, which have a positive slit skin smear result.
   - If there is involvement (enlargement) of more than one nerve

Pure neural leprosy

- These are patients who do not have any skin lesion, but who have clearly thickened nerves with or without signs of nerve damage.
- Patients with pure neural leprosy should be reported and treated as a MB case.

Note:

Leprosy cases that are doubtful to be classified should be taken as a Multi-bacillary case of leprosy.

Patients with pure neural leprosy should also be classified and treated as a MB case.

Category of Leprosy Patient Registration

Leprosy patients who need treatment MDT should be registered as follows:

Patient registration	Definition	Management
New Case	A patient with MB or PB leprosy who has never had treatment for leprosy before	Treat according to the clinical assessment (and/or laboratory diagnosis).
Relapse	A patient declared "treatment completed" after a course of MDT, but who reports back to the HF and found to have active leprosy.	Treat according to the new clinical assessment (and/or laboratory diagnosis) independent of the previous category of treatment.
Return after LTFU	An MB or PB who returns for treatment after having missed more than 3 months' doses of MDT (both cumulative and consecutive).	Treat MB according to the new clinical assessment (and/or laboratory diagnosis) independently from the previous treatment category.

Transfer in	A patient received from another HF to continue treatment.	Treat according to the previous classification assessed in the original health facility.
Other	Any leprosy patient who relapse after treatment with dapsone mono-therapy in the past.	Treat according to the clinical assessment (and/or laboratory diagnosis).

Table 10.1 Category of leprosy patient registration who needs MDT

Disability Grading in Leprosy

Disability is the inability to perform the daily routine activity.

Every new case of leprosy must be assigned a "Disability Grade", which depicts the condition of the patient at diagnosis. The grade is on a scale of 0, 1 or 2. Each eye, each hand and each foot is given its own grade, so the patient actually has six grades, but the highest grade given is used as the Disability Grade for that patient.

Disabilities grading criteria for Leprosy

Eyes	**Description**
Grade 0	No disability found. This means there is no eye problem due to leprosy and no loss of vision.
Grade 1	The eyes are not given a grade of 1.
Grade 2	Visible damage or disability is noted. This includes the inability to close the eye fully (lagophthalmos) or obvious redness of the eye (typically caused by a corneal ulcer or uveitis). Visual impairment or blindness (vision less than 6/60 or inability to count fingers at 6 meters) due to leprosy should be graded as grade 2.
Hands and Feet	**Description**
Grade 0	No disability found. This means there is no loss of sensation or visible deformity or damage.
Grade 1	There is loss of sensation in the palm of the hand or sole of the foot, but no visible deformity or damage.
Grade 2	There is visible damage or disability due to leprosy. This includes weakness or paralysis of muscles on the hands and feet, wounds and ulcers as well as visible deformities such as a foot drop or a claw hand or absorption of fingers.

Interpretation:

The highest grade in one of the six sites (eyes, hands or feet) is the overall disability grade for that patient.

Differential Diagnosis of Leprosy

Disease	**Clinical Features**
Tinea versicolor	The lesions are hypo-pigmented, but without loss of sensation. They often itch. When an anti-fungal ointment is applied they usually clear up within 6 weeks.
Ringworm (Tinea Corporis)	The lesions are well-defined areas of hypo-pigmentation with white scales and without loss of sensation. They usually clear up within 6 weeks when an anti-fungal ointment is applied.
Vitiligo	There are usually completely white areas of skin. The skin texture is normal and there is no loss of sensation
Birthmarks	Lightly or deeply pigmented areas of different sizes, which are present since birth or shortly afterwards without undergoing any change.
Psoriasis	Well demarcated plaque lesion with whitish or silvery scales, which itch and bleed easily on scratching (pin point bleeding). There is no loss of sensation.
molluscumcontagosum	Nodular lesions with a depression in the centre. Firm squeezing results in the appearance of a creamy substance.
Onchocerciasis	Hypopigmented macules are often one of the manifestations. There is itching and no loss of sensation. In a later stage there are mottled lesions, in particular on the shin area.
Localized Cutaneous leishmaniasis	Erythematous indurated plaque lesion appearing after bite of sand fly and later changing to dry crusted lesions.
Diffuse cutaneous leishmaniasis	Wide spread nodular lesions which usually are located on the face , extrimities and other body sites.

Syphilis	Secondary syphilis presents with a considerable variety of lesions, e.g. papular and nodular lesions. Skin smears are negative for AFB. Positive serology for treponematosis.
Pityriasis alba	The lesions are often restricted to the face making differentiation from leprosy difficult since loss of sensation in the face is not easy to demonstrate. The lesions subside spontaneously, leaving hypopigmented macules.
Nutritional deficiencies	Usually over the cheek, single or multiple, ill-defined, hypopigmented patches with other features of vitamin deficiencies such as glossitis and stomatitis. The patches will clear after the administration of vitamins.

Table 10.2 List of differential diagnosis of leprosy

Treatment of Leprosy

The objective of treatment is to:

Cure leprosy by rapidly eliminating the bacilli;

Prevent the emergence of drug resistance;

Prevent relapse and prevent disability.

Multi Drug Therapy

Multi-drug Therapy (MDT) is a combination of drugs that is very safe and effective in treating leprosy and preventing the emergence of drug resistance.

Patients are considered no longer infectious after taking the first dose of MDT.

Virtually no relapses or recurrences of leprosy should occur after completion of MDT.

MDT is provided free of charge .

Never treat a case of leprosy with a single drug.

All drugs are taken by mouth.

The MDT are supplied in special blister packs for both MB and PB cases.

Each blister pack contains supplies for 4 weeks (28 days).

Pauci-bacillary (PB) MDT blister pack contains Rifampicin and Dapsone.

Multi-bacillary (MB) blister pack contains Rifampicin, Clofazimine and Dapsone.

Drugs used inMDT: Formulations

Rifampicin(R): supplied as 150mg and 300mg tables to be administered once in a month.

Clofazimine(C): supplied as 50mg and 100mg tablets to be administered orally.

Dapsone(DDS): supplied as 50mg and 100mg tables to be administered daily.

MDT Regimen

There are two types of MDT regimens. The Paucibacillary (PB)-MDT and Multibacillary (MB)-MDT:

PB-MDT Regimen: This regimen consists of Rifampicin and Dapsone for a total duration of 6 months. It is to be prescribed to all cases classified as Paucibacillary (PB) Leprosy.

Drugs	0-5 yrs old	6-14 yrs old	≥ 15 yrs old
Rifampicin (4-weekly supervised)	300 mg	450 mg	600 mg
Dapsone (daily, unsupervised)	25 mg	50 mg	100 mg

Table 10.3 PB-MDT regimen dose according to age group of leprosy cases.

MB-MDT regimen: This regimen consists of Rifampicin, Dapsone and Clofazimine to be taken for 12 months. It is to be prescribed to all cases classified as Multibacillary (MB) Leprosy.

Drugs	0-5 yrs old	6-14 yrs old	≥ 15 yrs old
Rifampicin (4-weekly supervised)	300 mg	450 mg	600 mg
Clofazimine (4-weekly supervised)	100 mg	150 mg	300 mg
Clofazimine (unsupervised)	50 mg twice a week	50 mg every other day	50 mg daily
Dapsone (daily, unsupervised)	25 mg	50 mg	100 mg

Table 10.4MB-MDT regimen dosage according to age group of leprosy case

MDT drugs are provided in blister calendar packs, each containing drugs a four weeks (one month) supply except for children below 10 years. The appropriate dose for children under 10 years of age can be decided on the basis of body weight. [Rifampicin: 10 mg per kilogram body weight (mg/kg); Clofazimine: 1 mg/kg daily and 6 mg/kg monthly; Dapsone: 2 mg/kg daily. The standard child blister pack may be broken up so that the appropriate dose is given to children under ten years of age. Clofazimine administration can be spaced out as required.

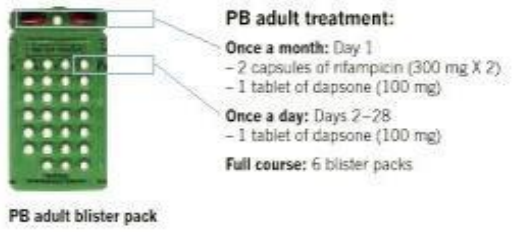


Fig 10.21 MDT blister packs for adults

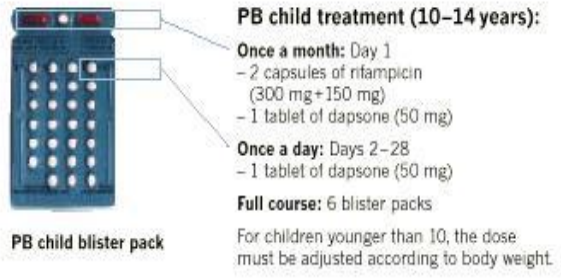


Fig 10.22 MDT Blister Packs for Children

Duration of MDT

Pauci bacillary leprosy is treated for 6 months and the full course of treatment must be completed within 9 months after initiation of treatment.

Multi bacillary leprosy is treated for 12 months and the full course of treatment must be completed within 15 months after initiation of treatment.

Administration of MDT

For PBcases

The monthly supervised dose is Rifampicin &Dapsone (R & DDS) and is taken under DOT at the start of treatment (day 1) and every 28th day of the month for 6 consecutive months.

The daily self-administered dose is Dapsone and is taken every day for 6 months. The full course of treatment must be completed within 9 months after initiation of treatment.

For MB cases

The monthly supervised dose is with Rifampicin, Clofazimine&Dapsone (R, C & DDS) and is taken under DOT at the start of treatment (day 1) and then every 28th day of the month for 12 consecutive months.

The daily self-administered dose is with Clofazimine and Dapsone and is taken every day for 12 months. The full course of treatment must be completed within 15 months.

Treatment in Special Conditions

Pregnancy and Breast-feeding	The standard MDT regimens are safe, both for the mother, the foetus and the neonate. It is therefore can be administered during pregnancy and breast-feeding.
Patients Co-infected with HIV	Patients infected with HIV usually respond equally well to leprosy treatment as those without HIV infection.
Patients Co-infected with TB	Skip the monthly dose of the Rifampicin in the leprosy MDT regimen as Rifampicin is used over the course of TB treatment. Once the TB treatment is completed, the patients should continue their MDT.

During follow-up of the treatment the following should be done:

- Provide regular adherence counselling to the patient.
- Conduct nerve function tests to detect nerve function damage early .
- Advice the patient to report if they notice any problem/complication .

This should be done regularly every month as long as the patient is on MDT and just before Release from Treatment (RFT).

Remember to examine the eyes, hands and feet (including VMT-ST) at any time if the patient complains loss of sensation and/or change in muscle strength or problem with vision.

Nerve function assessment at the end of treatment should be compared with that of the start of treatment. This includes comparing disability grades and VMT-ST status at the start and completion of treatment. The assessment should be scored as improved (I), same (S) or deteriorated (D) and be recorded in the patient record card and unit leprosy register.

Treatment Outcome

Pauci-bacillary (PB) cases should complete 6 month doses of MDT within a maximum of 9 months period.

Multibacillary (MB) cases should complete a total of 12 month doses of MDT within a maximum period of 15 months.

After completion of the 12 month doses of MDT, the patient should be released from treatment (RFT) and recorded as treatment completed.

If a patient misses some treatment, the number of doses missed should be added on at the end to compensate for the missed doses. If the patient fails to complete their treatment within 15 months after initiation in total, should be recorded as "Lost to follow up" (:previously called default).

If a MB patient who is reported as LTFU (: previously called "defaulter") reports back to the clinic, the patient should be registered in current open cohort as "return after LTFU" with a new registration number and MDT should be restarted. If a patient fails to complete the second course of MDT, she/he should not be given a third chance. Such patients must be recorded as LTFU immediately after they have missed the 4th month doses of MDT. They should be advised to report immediately if they notice recurring signs of active disease.

Assign "dead", If the patient dies for any cause during the course of MDT

Assign "not evaluated" (: previously called "Transfer out"), if no information can be obtained for transferred out or any other patients for whom outcome information cannot be obtained.

Assign "dead", if the patient dies for any cause during the course of MDT.

Assign "not evaluated" (: previously called "Transfer out"), if no information can be obtained for transferred out or any other patients for whom outcome information cannot be obtained.

Follow-up and Care after Release from Treatment (RFT)

Upon release from treatment, Advice the patient on key messages:

- After completing MDT treatment, relapse is rare.
- The skin patches from leprosy may not disappear completely.
- Loss of sensation, muscle weakness and other nerve damage may persist.
- Leprosy reaction can still develop after RFT, hence advice to report immediately if the patient experience any unusual symptoms.
- Return to the health facility annually for 2 years after release from treatment to identify any late reaction or nerve function damage.
- Visit or report to the nearby health facility whenever they have complaints.
- If some disability is already present, teach the patient on how to practice self-care at home.

Care to leprosy patients after release from treatment include:

- Management of neuritis
- Provision of protective foot wears
- Provision of Vaseline ointment
- Basic medications such as analgesics, antibiotics, eye ointments have to be provided.

Complications of Leprosy

Complications of leprosy may occur or may have already occurred at the time of treatment. These include the following:

- Adverse drug reaction
- Leprosy reaction
- Complications of advanced disease, and
- Psychosocial problems.

Adverse Effects of drugs used in MDT

Drugs used in MDT are generally well tolerated .

Educate the patient on common side effects:

If the patient develops minor adverse effect =>Reassure the patient

If the patient develops major adverse effect => Refer to higher centre for appropriate management.

Adverse effects of MDT drugs

Side Effects		Responsible Drug (s)	Action
Minor	Itching and skin rash	Rifampicin	Reassurance
	Loss of appetite, nausea and abdominal pain	Rifampicin	Give drugs with food
	Orange/red urine, faeces, saliva and sputum	Rifampicin	Reassurance (harmless and will disappear after cessation of MDT)
	Brown discoloration of skin lesions and pigmentation of the conjunctiva	Clofazimine	Reassurance (harmless and will disappear after cessation of MDT)

	Dryness of the skin and ichthiosis (thick, rough and scaly skin)	Clofazimine	Apply Vaseline ointment
	Insomnia (sleeping difficulties and disturbances)	Dapsone	Give the drug in the morning
	Anaemia	Dapsone	Give iron and folic acid
Major	Jaundice (Yellowish discoloration of the sclera, skin and mucous membranes)	Rifampicin Dapsone	Stop treatment and refer
	Skin rashes, severe itching and urticaria (pale red, raised itchy bumps)	Dapsone& Rifampicin	Stop treatment and refer

Table 10.6 Minor and major adverse effects of MDT

Leprosy Reaction

Leprosy reaction is an immunological response against the bacilli that result in inflammation of the tissues.
It is the sudden appearance of inflammation at different body sites.
It can occur before ,during or after MDT.
Leprosy reaction occurs in borderline leprosy cases.
There are two types of leprosy reaction:

- Type 1 (Reversal) reaction
- Type 2 reaction (ENL)

Type 1 (Reversal) reaction

Reversal reaction occurs both in PB & MB patients.

It is due to high cell mediated immune response (over activity of CD4 T lymphocytes)against the bacilli.

Clinically it manifest with acute onset of redness, swelling and sometimes tenderness of the existing skin lesions or with appearance of even new skin lesions.

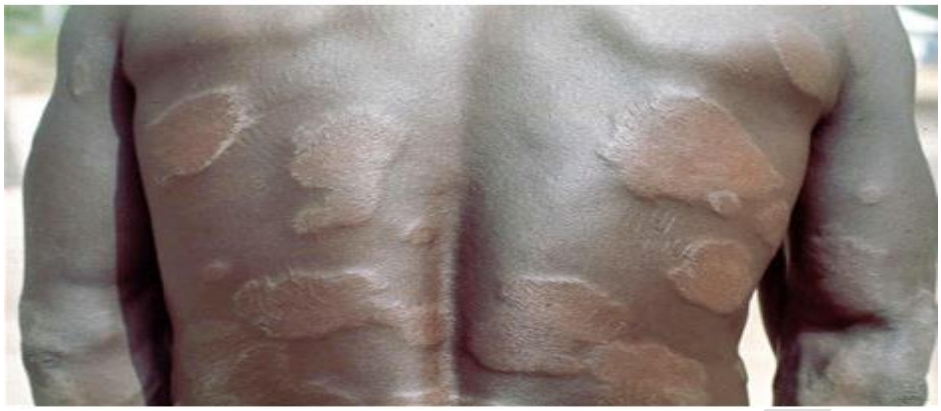


Figure 10.23Type 1 leprosy reaction:erythematous plaque lesions

There may be also swelling, pain and tenderness of nerves, often accompanied by loss of function. Early detection and adequate managementof reactions is very important to prevent nerve damage.

Reversal reaction could be mild or severe .

Mild Reversal Reaction

Mild reaction is one that appears only on the skin which manifest with redness and swelling of the pre-existing skin lesion.

Patient with mild reversal reaction should be treated with analgesics acetyl-salicylic acid (Aspirin 600 mg up to 6 times a day [adult dosage]. Evaluate the patient after 2 weeks and if the signs persist and if there is any new nerve damage then manage the patient as severe reaction.

Severe Reversal Reaction

To make a diagnosis of severe reversal reaction look for the presence one or more of the following signs:

- Pain or tenderness on palpation in one or more nerves, with loss of nerve function.
- Change in voluntary muscle testing of less than six months duration. The change can be from strong to weak, weak to paralysis, or strong to paralysis.
- Change in Sensory test of less than six months duration. A change is considered to be significant when any hand or foot has increased loss of sensation at two or more points.
- A raised, red swollen patch overlying a nerve trunk or around an eye.
- Red, raised and ulcerating skin lesions.
- Edema of face, hands or feet.
- A mild reaction persisting for a period longer than 4 weeks.

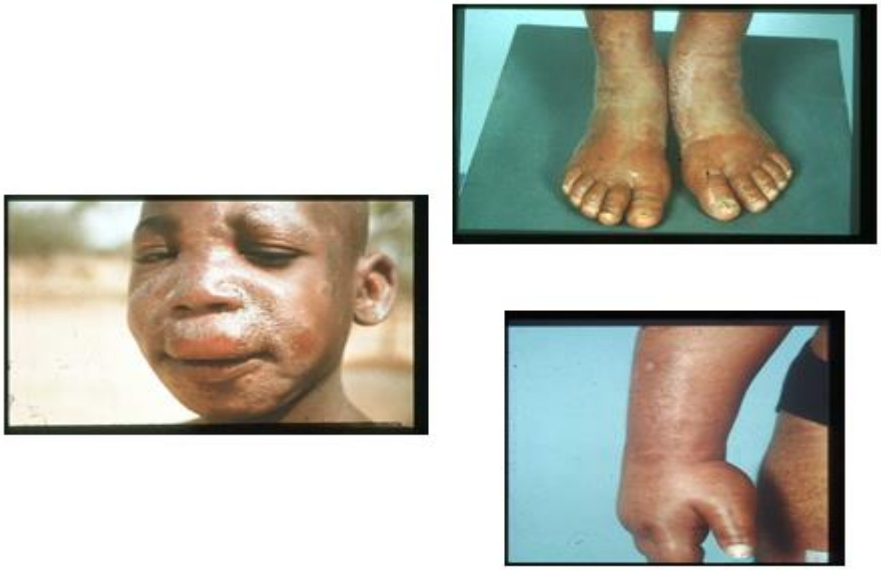


Fig 10.24Severe Type 1 Leprosy reaction: Oedema of the face ,hands and foot

Management of severe reversal reaction

Severe reactions often affect the nerves and require corticosteroids treatment.

Rest the affected limb if there is evidence of nerve involvement

Ambulatory treatment of severe reversal reaction with Prednisolone

Duration of Treatment		Daily Dose (Do not exceed 1 mg per kg of body weight)
MB	PB	
4 weeks	2 weeks	40 mg
4 weeks	2 weeks	30 mg
4 weeks	2 weeks	20 mg
4 weeks	2 weeks	15 mg
4 weeks	2 weeks	10 mg
4 weeks	2 weeks	5 mg
Total: 24 weeks	Total: 12 weeks	

Table 10.7 Treatement of type 1 leprosy reaction with predinsolone for MB and PB case

Follow up of patients on prednisolone isevery 2 weeks.

Assess the patient condition and do VMT and ST at each visit.

Refer any patient in whom nerve function deteriorates during the standard course or those not showing adequate improvement after 4 weeks of prednisolone.

Type II Reaction (Erythema NodosumLeprosum(ENL)

It is a severe form due to increased humoral response against the bacilli.

It occurs due to an immune complex reaction as a result of antibody production against the presence of high bacillary load (M. Lepra) in patients with BL or LL.
It is recurrent in nature and has multiple episodes of attacks ,each episodes lasts 1 to weeks and affects multiple organs .
Severe ENL patients are acutely sick looking and present with high grade fever.
Clinical signs and symptoms of Type II reaction are one or more of the following:

- Appearance of multiple Erythematous sub-cutaneous nodular lesions with or without ulceration.
- Nerve Tenderness on palpation.
- Loss of muscle strength and/or loss of sensation in eyes, hands or feet for < 6 months.
- Painful eyes, with redness (irido-cyclitis).
- Painful testicular swelling (orchitis).
- Painful swollen fingers (dactylitis).
- General condition: fever and malaise.

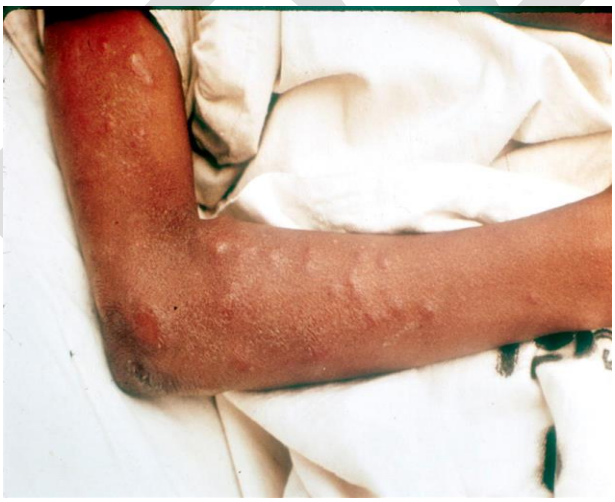


Figure 10.25 multiple painful erythematous nodules on the arms

Management of patients with severe ENL needs immediate referral and must be managed at higher level preferably at leprosy specialized hospital.

Management

- **Mild ENL**

  Advise the patiet to rest and treat with analgesia

- **Severe ENL**

  It should be admitted in the the hopspital and predinsolone 0.5 to 1mg/kg per day

  60mg po/d one week

  50mg po/d one week

  40mg po/d two weeks

  30mg po/d two weeks

  20 mg po/d two weeks

  10mg po/d two weeks

  5mg po/d two weeks

  Initial dose of steroid may be 60 to 80 mg.

Referral of Leprosy Patients for Special Care

The patient conditions that require referral to an experienced physician or hospital include:

1.patient with Severe reaction with no response to steroid treatment

2.patients who have Chronic reaction.

3.patients with Red and/or painful eye.

4.Patient with deep ulcer.

5.Permanent paralysis who needs reconstructive surgery.

6. patients suscpected with relapse

Relapse in Leprosy

Relapse is defined as the re-occurrence of the disease at any time after the completion of a full course of treatment with MDT.

Relapse is diagnosed by the appearance of definite new skin lesions and/or an increase in the bacterial index (BI) of two or more units at any single site compared to BI taken from the same site at the previous examination.Relapses should be investigated by using skin smears, histopathology and, where possible, for drug sensitivity using recently standardized molecular tests. Hence, such cases should be referred to higher level immediately.

Care should be taken not miss patients suffering from leprosy reactions. MB relapses are generally treated with 12 months' of MB-MDT.Do careful examination of the skin and asses the nerve function in order to identify any signs of a recent reaction.

Arrange for a skin smear test to be done; since relapse is associated with an increase in the bacillary load. Obviously, if no previous smear has been done, it is impossible to identify an increase. In this case, the presence of solid staining bacilli in the smear provides support to the diagnosis of a relapse.

If a full course of treatment has been administered properly, relapse is generally rare.

Most relapses occur long after the treatment was given, sometimes more than 10 years later.

Relapse cases can be treated effectively with the same MDT regimen as there is minimal risk of acquired drug resistance in leprosy.

Criteria	Relapse	Reaction
Development of signs	Slow	Sudden
Duration after treatment completion	> 3 years	< 3 years
Site	New patches	Over old patches
Tenderness/ pain	No (unless also in reaction)	Nerves usually, skin sometimes
Damage	No (unless also in reaction)	Sudden and rapid
General condition	Not affected (unless also in reaction)	Often fever, joint pain etc.
"therapeutic trial" using steroids	No clinical improvement	Rapid clinical improvement

Table 10.8 Differentiation between relapse and reactions

Summary

Leprosy is a chronic granulomatous infectious disease which is caused by mycobacterium leprae.

It occurs more frequently in tropical and subtropical areas.

It mainly affects the skin and peripheral nerves.

Incubation period ranges from 3 to 10 years.

Mycobacterium lerpae is an acid fast bacilli and stained by modified ziehl Neelson stain.

It doesn't grow in culture.

It eneters through upper air way (nasal mucosa) then engulfed by schewan cells and if the host has high cell mediated immunity he develops paucibacillary and if the host has poor cell mediated immunity agains M.leprae he develops multibacillary leprosy.

Leprosy affects mainly ulnar,lateral popliteal and great auricular nerves and nerves become thicknened and tender.

Sensory nerve affection in leprosy results in glove and stock anesthesia (loss of sensation) .

The first loss of sensation is temperature then touch and pain sensation loss.

Nerve damage occurs on facial nerve(facials palsy) ,ulnar nerve(claw hand),median nerve (ape hand) ,lateral popliteal (foot drop).

Leprosy is a curable disease and can be treated by Multi Drug Therapy(MDT) to avoid drug resistance. The patient becomes no more infectious after 2 weeks of MDT.

1. Rifampicin : is bactericidal and is given 600mg once per month.
2. Dapsone : is bacteriostatic and is given 100mg once daily.
3. Clofazamine : is bacteriostatic and anti inflammatory.

Treatment of paucibacillary leprosy is for 6 months :

1. Rifampicin 600mg / month
2. Dapsone : 100mg/day

Treatment of multibacillary leprosy is for 1 year

1. Rifampicine: 600mg and clofazamine 300mg monthly
2. Dapsone 100mg and clofazamine 50 mg po daily.

The immune system always fights against M.leprae bacill and an abnormal immune response againt the bacilli results in tissue inflammation and nerve damage which is called leprosy reaction.

Leprosy reaction causes nerve damage which causes disability. Disablity leads to huge stigma associated with leprosy.Management of leprosy requires comprhensive rehabilitation service which includes the following:

- Counselling and Health education about the disease.
- Provision of MDT
- Leprosy reaction management.
- Self care for the eye, hands and feet to prevent further disability.
- Wound care for patients with chronic ulcer .
- Evaluation by Ophthalmologist for patients with ocular complication
- Reconstructive surgery for patients with deformed hands or feet after management of leprosy reaction.
- Physiotherapy for restoration of function.
- Occupational therapy after leprosy surgery.
- Provision of orthosis and Prosthesis for amputated foot and legs.

Chapter 11: Scabies

Chapter description:this chapter includes introduction, biology of scabies mite, epidemiology of scabies, clinical presentation, diagnosis, management

Learning objective

- Define scabies
- Discuss the clinical feature and diagnosis of scabies
- Discuss the treatment of scabies

Outline:

- Introduction
- Epidemiology
- Pathogensis
- Clinical presentation
- Treatment
- Summary

INTRODUCTION

Scabies is an ectoparasitic infestation of the skin caused by the human itch mite, *Sarcoptes scabiei* var. *hominis*.

- A number of factors influence the extent of scabies transmission within a facility, including the mite load and the required level of care of the source case, as well as the duration of the exposure period.

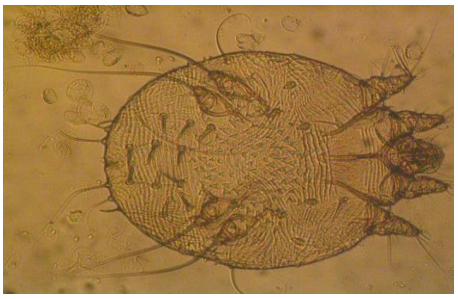


Figure 11.1Sarcoptes Scabiei mite

BIOLOGY OF THE SCABIES MITE

- Infestation begins when one or several pregnant female mites are transferred from the skin of an infested person to the skin of an uninfested person. After transfer from the skin of an infested person, or, rarely, from fomites, to the skin of an uninfested person, the adult female mite travels on the skin surface at the rate of about 1 inch per minute seeking a burrow site.
- After finding a suitable location, she burrows into superficial layers of the skin, forming a slightly elevated narrow tunnel where she deposits 2 to 3 eggs daily during her 4 to 6 week life span. The eggs progress through larval and nymphal stages to form adults in 10 to 17 days.
- The adults migrate to the skin surface and mate. The males die quickly and the females penetrate the skin and repeat the cycle. The mite requires human skin to complete its life cycle and is unable to survive off the host at room temperature for more than 3 to 4 days.

Life Cycle**:**

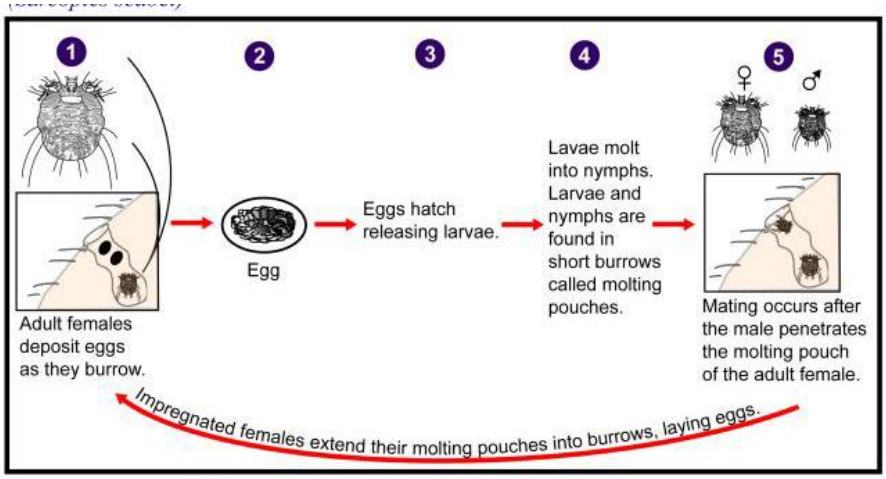


Fig. 11.2 Life cycle of the scabies mite

EPIDEMIOLOGY OF SCABIES

1. ***Transmission***

- Transfer of the mite is usually from one person to another by direct skin-to skin contact. Procedures such as bathing a patient, applying body lotions, back rubs, or any extensive hands-on contact can provide an opportunity for mite transmission. Mites may also be transmitted via clothing, bed linen or other fomites. Fomites play a minor role in situations where the infestation in the source case is typical scabies; the inanimate environment of patients with crusted scabies, however, has been shown to be heavily contaminated with infectious mature and immature mites. In health facilities, scabies may be introduced into the facility by a newly admitted resident with an unrecognized infestation or by visitors or health care workers as a result of contact with an infested person in the home or community.

2. ***Incubation Period***

- In a previously unexposed healthy individual, the interval between exposure and the onset of itching is usually 4-6 weeks. In persons who have been sensitized to the mite by a previous infestation, re-exposure may produce symptoms in 48 hours or less (owing to prior sensitization to the mite and its saliva and feces). Following exposure to a source case with crusted scabies involving extremely large numbers of mites, the incubation period may be reduced from the usual time of 4-6 weeks to as little as a few days.

3. *Period of Communicability*

- Since the scabies mite is an ectoparasite, an exposed individual is potentially immediately infectious to others, even in the absence of symptoms.
- Cases are communicable from the time of infestation until mites and eggs are destroyed by treatment.

4. Scabies outbreak occurs in many parts of Ethiopia as public health problem being beyond sporadic and affecting wider geographic areas and population. Study conducted in Ethiopia, Amhara region indicated that the scabies prevalence in the 68 districts ranged from 2 to 67% with a median prevalence of 33.5. Study conducted in a district South region also indicated a prevalence of 11%.

CLINICAL PRESENTATION

Scabies infestations are generally categorized as typical (classic) and atypical

1. **Typical (classic)Scabies**

- Patients with typical scabies usually have only 10 to 15 live adult female mites on the body at any given time. Usually, only one or two mites, and frequently none, are recovered from skin scrapings. Intense pruritis, usually worse at night,and a papular rash with or without burrows occur.

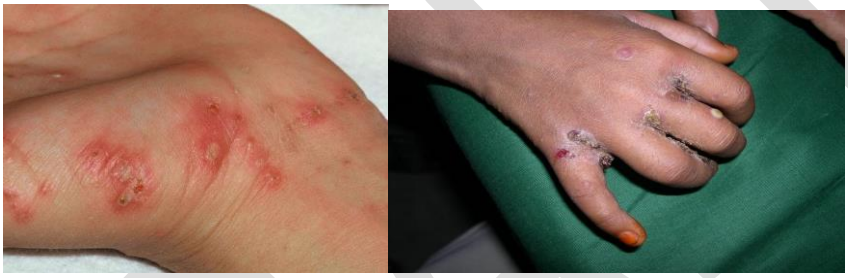


Fig. 11.3 Papules and pustules over wrist and finger web space

- The rash and pruritis result from an immune-mediated delayed hypersensitivity reaction to the mite, its eggs, and fecal material.
- Areas of the body commonly involved are wrists, finger webs, antecubital fossae,anterior axillary folds, breasts, waistline, lower abdomen, genitals, and buttocks.

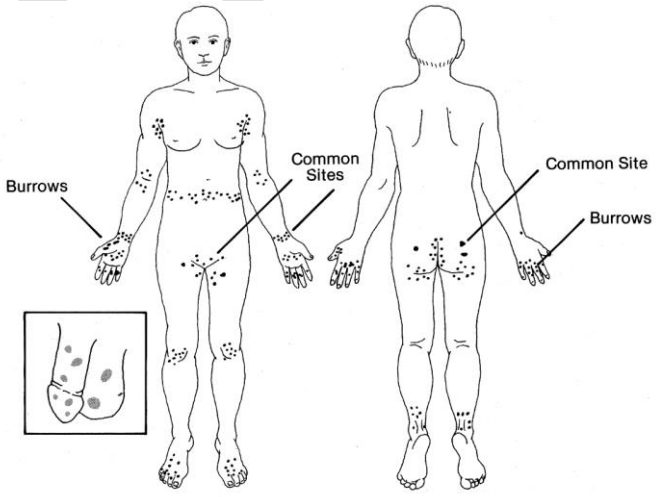


Figure 11.4 common body site involved by scabies

- The scalp and face are rarely involved in adults, but may be observed in young children with scabies.

2) Atypical Scabies

The following are clinical manifestations of special forms:

a) Scabies in infant and very young children often manifests itself as vesicles, papules, and pustules in body areas that are not classically involved in the adult type such as the hands, feet, and body folds. Lesions are also found on the head, palms, and soles, and behind the ears.

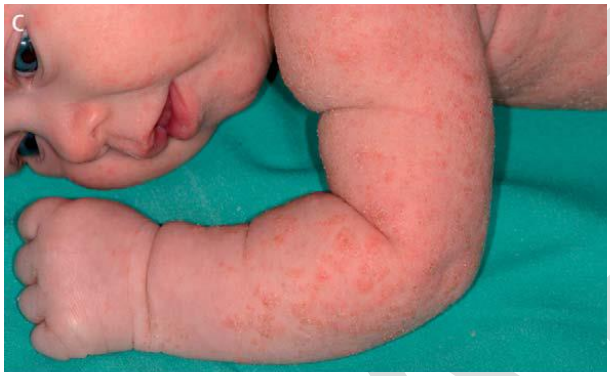


Fig. 11.5 multiple papules involving face, trunk and limbs

b) Crusted scabies (Norwegian scabies) is a psoriasiform dermatosis of the hands and feet, with nail hyperkeratosis and an erythematous scaly eruption on the face, neck, scalp, and trunk.

Predisposing conditions for crusted scabies includes immunocompromised patients such as patients with HIV, organ-transplant recipients, and patients treated with steroids. It is also common among mentally retarded or incapacitated persons and people with human T-lymphotropic virus.

- The number of mites in that form of infestation is extremely large, and they are readily seen under the microscope. Skin samples from patients with crusted scabies can contain up to 4700 mites per gram of skin.

Fig. 11.6 Hyperkeratotic plaque involving hand and scalp

C) Nodular scabies is characterized by few violaceous, firm pruritic nodules on covered body parts, especially on the male genitalia, groin, and axillae. It may represent a hypersensitivity reaction to mite antigens. The nodules can persist for weeks to months after treatment.

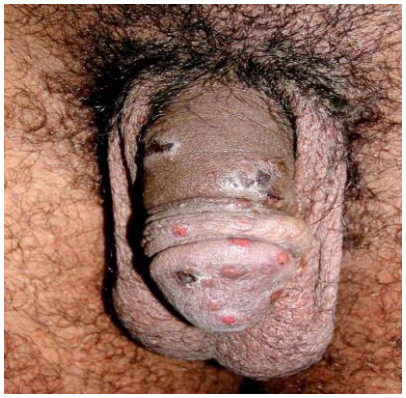


Figure 11.7multiple nodules on the glans penis

d) Scabies in the elderly manifests itself differently because their reaction to the mite is aberrant compared with younger patients. Although pruritus can be severe, the inflammatory reaction may not be as noticeable. Bedridden patients usually show involvement of the back.
e) Bullous scabies can be seen in adults older than 65 years.
There is no linkage to an underlying condition or disease. It can mimic bullous pemphigoid clinically, pathologically, and immunopathologically.

D. DIAGNOSIS

- Definitive diagnosis requires microscopic identification of the mite and/or its eggs or fecal pellets on specimens collected by skin scraping, biopsy or other means.
- The yield from skin scrapings is highly dependent on the experience of the operator and the severity of the infestation.

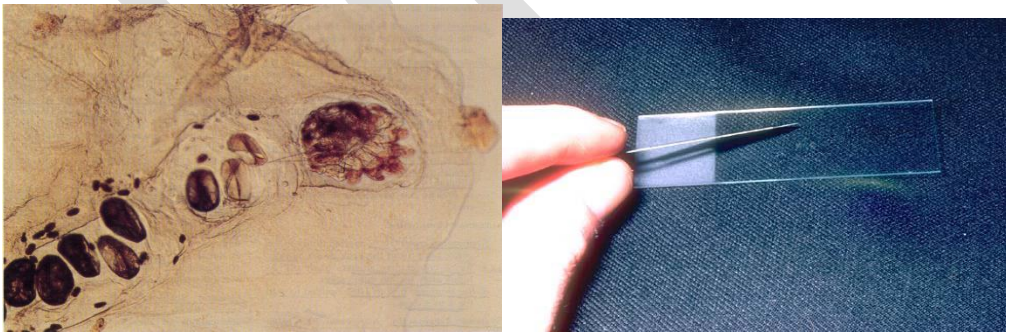


Figure 11.8 microscopic identification of the mite

- A negative skin scraping from a person with typical scabies does not rule out scabies infestation; mites are easily recovered, however, in skin scrapings from persons with crusted scabies.

TREATMENT AND PROPHYLAXIS OF SCABIES

A. Application of Scabicides: General Principles

1. Gowns and gloves are worn when applying scabicides to patients.

2. Bath patients as usual and change bed linens. Allow skin to cool completely.

3. Apply scabicide to every square inch of skin, from the posterior ear folds down over the entire body. Include intergluteal cleft, umbilicus, skin folds, palms and soles, and webs between fingers and toes. If scabicide is washed off during handwashing, toileting, or perineal care, it must be reapplied.

4. In infants and young toddlers, the elderly, and the immunocompromised, the head (forehead, temples, and scalp) requires application of scabicide. Pay close attention to the area behind the ears. Do not get the scabicide near the eyes or mouth. Prior treatment failure may be an indication to include the head upon retreatment.

. Fingernails and toenails should be clipped and scabicide applied under nails.

6. Follow directions and precautions outlined in the package insert accompanying scabicide.

7. A cleansing bath is taken when scabicide is to be removed.

8. Linens and clothing are changed after treatment. Contaminated clothing and linens may be 1) dry-cleaned or 2) washed in the hot cycle of the washing machine and dried in the hot cycle of the dryer for 10-20 minutes.

9. Provide detailed written instructions for scabicide use when dispensing scabicide for home application by employees and household members.

B. Scabicides

1. 5% permethrin cream - currently considered drug of choice.

a) The usual adult dose is 30 grams. A 60 gram tube should treat two adults.

b) For adults and children, the cream should be massaged into the skin from below the chin to the soles of the feet. Scabies rarely infests the scalp of adults, although the hairline, neck, temple, and forehead may be infested infants and geriatric patients. Infants should be treated on the scalp, temple and forehead.

c) The patient should be instructed to remove the medication by thoroughly bathing 8 to 14 hours after application. Repeat after one week.

2) Sulfer ppt (6%-10%)-Apply for three nights and repeat after one week

3) 25%Benzoyl benzoate lotion-Apply for three nights and repeat after one week

4) 10% crotamiton cream or lotion

a. Massage thoroughly into skin once a day for two to five days. Remove by bathing 48 hours after last application.

Treatment of Crusted Scabies

- Typically combination therapy is used in in crusted scabies
  - Given the high mite burden, patients with crusted scabies should be isolated & strict barrier nursing procedures instituted to avoid outbreaks in health-care facilities
  - Multiple doses of oral Ivermectin 200mcg/kg/dose depending on severity of infection
  - Topical permethrin 5% (or benzoyl benzoate 25%) 1-2x weekly, frequently more than two treatments is required

Treatment Failures

1. Treatment failures can result from:

a. Inadequate application of scabicide;

b. Infected, crusted, or keratotic lesions with insufficient penetration of scabicide;

c. Reinfestation from untreated contacts;
d. Resistance of mites to scabicide

SUMMARY

- Scabies is an ectoparasitic infestation of the skin caused by the human itch mite, *Sarcoptes scabiei* var. *hominis*.
  - Transmitted by transfer of the mite is usually from one person to another by direct skin-to skin contact.
    - Scabies infestations are generally categorized as typical or atypical (crusted, keratotic or Norwegian).
  - Definitive diagnosis requires microscopic identification of the mite and/or its eggs or fecal pellets on specimens collected by skin scraping, biopsy or other means.

Scabicides- BBL, Permethrin, sulfer ppt, crotamiton

Chapter 12: Onchocerciasis

Chapter description: this chapter includes introduction, epidemiology, life cycle of onchocerca volvulus, clinical manifestation,diagnosis and management of onchocerciais

Chapter objective:

Describe the epidmology

Discuss the life cycle of onchocerca volvulus

Discuss the clinical manifestation,diagnosis

Explain the management of oncherciasis

Outline:

- Introduction
- Epidemiology
- Life cycle of O.Volvulus
- Clinical manifestation of onchocerciasis
- Management of onchocerciasis
- Summary

Introduction

The disease Onchocerciasis or briver blindness results from infestation by the nematode Onchocerca volvulus and is characterized by eye affections and skin lesions with severe troublesome itching.Onchocerciasis is a chronic and slowly progressive disease.

The initial infestation often occurs in childhood, and many of the affected individuals remain asymptomatic for long periods

Epidemiology

Onchocerciasis occurs in 30 countries of the tropical sub–Saharan Africa, the African onchocercal belt extending from Senegal in the west to Ethiopia in the east.
Onchocerciasis also occurs to a much lesser degree in Central and South America, in Yemen, and in Saudi Arabia.

Life Cycle of Onchocerca Volvulus

The parasite O volvulus is spread by black flies belonging to the genus Simulium, which breed in fast-flowing rivers.

When biting humans living near the rivers, the black flies ingest skindwelling microfilaria, which then go through two additional larval stages in the fly over the next week.

When the black fly bites again a human being, the infective larvae escape through the wound and penetrate the tissues to develop into adult filariae that can be found in subcutaneous nodules scattered around the body.

The nodules, which range from the size of a pea to that of a golf ball, typically contain two to four adult worms that can reach a length of 80 cm.

The female filariae can live for as long as 15 years, during which time they produce many million living embryos of microfilariae (each about 0.3 mm long).

Each day, one female worm releases 500 to 700 microfilariae.

The incubation period is usually 1 to 2 years, but microfilariae can be detected as early as 3 months after exposure in an area where onchocerciasis is endemic.

The microfilariae can survive 2 to 3 years.

Wolbachia bacteria are symbionts of the major pathogenic filarial nematodes of humans, including Onchocerca volvulus

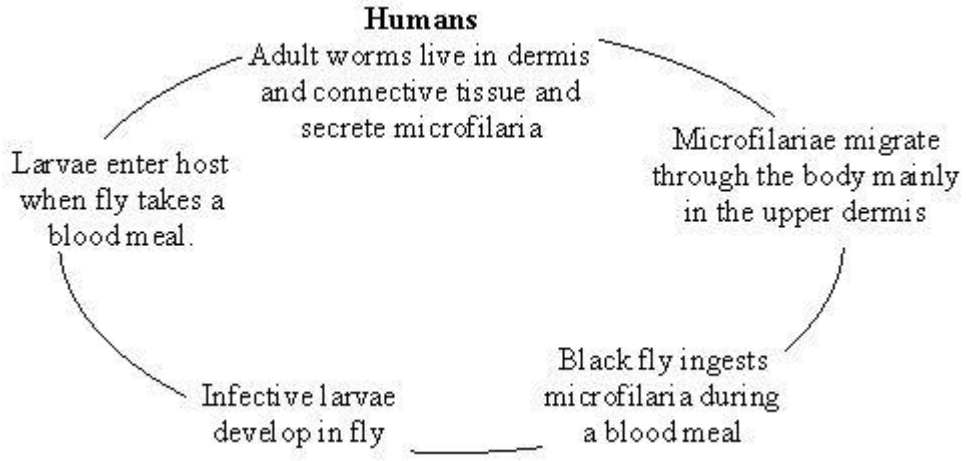


Figure 12.1 Life cycle of onchocerca volvulus

Clinical manifestation

1) The skin

The skin manifestations of onchocerciasis are highly variable. A clinical classification of onchocercal dermatitis defining six different patterns.

- Acute papularonchodermatitis denotes a widespread eczematous rash with multiple small pruritic papules progressing to vesicles and pustules. Acute papularonchodermatitis often affects the face, the trunk, and the extremities.
- Chronic papularonchodermatitis is a severely itching maculopapular rash containing scattered flat-topped papules and hyperpigmented macules, typically affectingthe shoulders, the buttocks, and the extremities

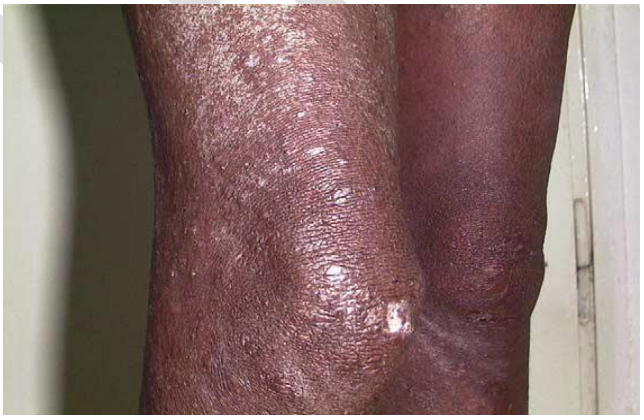


Figure 12.2 multiple pruritic papules

- Lichenifiedonchodermatitis consists of hyperkeratotic and hyperpigmented confluent plaques most often affecting the lower extremities and associated with lymphadenopathy.

- Lizard skin with dry ichthyoses like lesions with a mosaic pattern resembling the scales of a lizard.

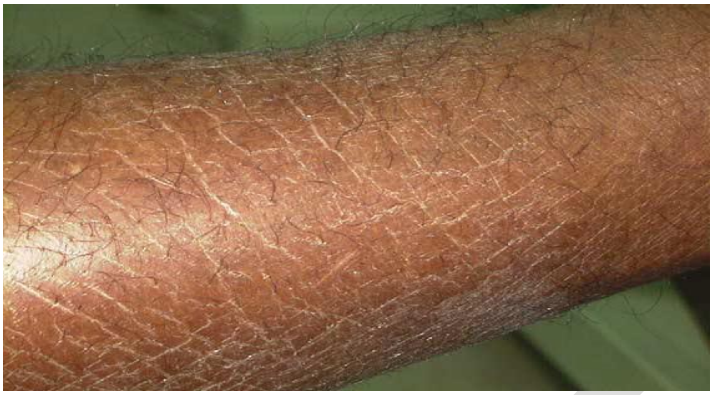


Figure 12.3mosaic pattern hyperkeratotic scales on the lower leg

- Onchocercal atrophy consists of large atrophic plaques with finely wrinkled inelastic skin resembling cigarette paper,typically affecting the buttocks and the lower back .

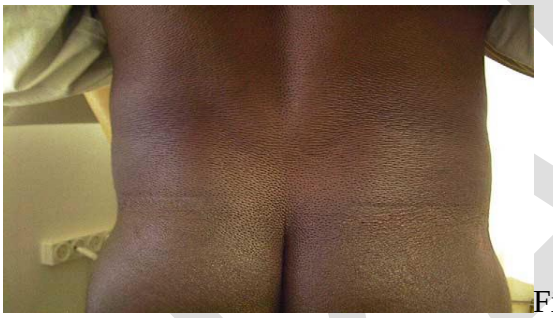


Figure 12.4 atrophic and wrinkled skin

Hanging groin consists of folds of atrophic inelastic skin in the inguinal region associated with lymphadenopathy. In a population where onchodermatitis is endemic, the most common skin manifestation is chronic papularonchodermatitisfollowed by onchocercal depigmentation and onchocercal atrophy.

Onchocercal depigmentation or leopard skin consists of vitiligo-like lesions with hypopigmented patches containing perifollicular spots of normally pigmented skin.

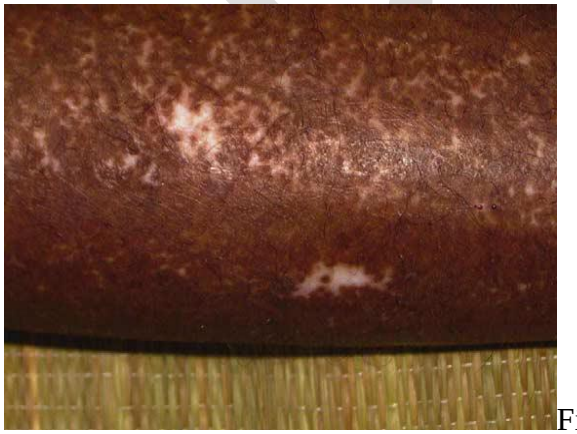


Figure 12.5 Depigemented macules on the leg

- Palpable onchocercal nodules are asymptomatic subcutaneous nodules of variable size located over bony prominence and containing the adult worms.

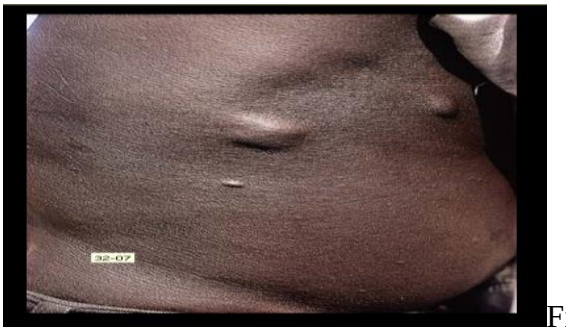


Figure 12.6 Onchocerca nodule

2)The eye

Onchocercal ocular disease covers a wide spectrum, ranging from mild symptoms such as itching, redness, pain, photophobia, diffuse keratitis, and blurring of vision to more severe symptoms of corneal scarring, night blindness, intraocular inflammation, glaucoma, visual field loss, and, eventually, blindness

Diagnosis

The diagnosis of onchocerciasis rests on the demonstration of living microfilaria in skin biopsies. Bloodless shave biopsies or bskinsnipsQ

- Snips are obtained bilaterally from the shins, the buttocks, and the iliac crests.

Microscopic demonstration of microfilariae is 100% specific for onchocerciasis

Treatment

Ivermectin: the drug of choice for the treatment of onchocerciasis, is used in World Health Organization–sponsored multinational health programs.

Ivermectin is an efficient microfilaricidal that does not kill the adult worm

The optimal dose of ivermectin is 150 ug/kg, but the frequency of administration , ranging from once to three times yearly.

Retreatmentthroughout the full length of life of the adult worm (12-15 years) has been suggested

Doxycycline

- Administration of 100 mg/d for 6 weeks led to the depletion of Wolbachia bacteria followed by an interruption of embryogenesis in worms, which lasted for 18 months.

Summary

- The disease Onchocerciasis or briver blindness results from infestation by the nematode Onchocerca volvulus and is characterized by eye affections and skin lesions with severe troublesome itching.
- Onchocerciasis is a chronic and slowly progressive disease. It affects the skin and the eye.
- The skin manifestations of onchocerciasis are highly variable. A clinical classification of onchocercal dermatitis defining six different patterns.
- Onchocercal ocular disease covers a wide spectrum, ranging from mild symptoms such as itching, redness, pain, photophobia, diffuse keratitis, and blurring of vision to more severe symptoms of corneal scarring, night blindness, intraocular inflammation, glaucoma, visual field loss, and, eventually, blindness.
- The diagnosis of onchocerciasis is based on the demonstration of living microfilaria in skin snip or skin biopsy. Bloodless shave biopsy or skin snip should be done.
- Treatment is Ivermectinwhich kills the microfilaria but it doesn't kill the adult worm and Doxycycline is give for the treatment of wolbachia bacteria.

Chapter 13: Lymphoedema

Chapter description: this chapter includes introduction, etiology, clinical manifestation, diagnosis, complication and treatment of lymphedema .

Chapter objective:

Explain epidmology and etiology of lymphoedema

Discuss the clinical manifestation and treatment of lymphoedema

Outline:

- Introduction
- Etiology
- pathogensis
- Clinical manifestation of lymphedema
- Summary

Introduction

Lymphedema is the accumulation of protein-rich fluid in tissues.
The impaired function of lymph vessels interrupts the drainage of lymphatic system that is a part of the circulatory system just like the arterial and venous structures.
Lymph vessels remove excess fluid from tissues and transport it back to the circulation.

Etiology of lymphedema

Primary Lymphoedema is related to developmental abnormalities of the lymphatic system. .

Secondary Lymphoedema is attributed to the impairment of lymphatic vessels due to an acquired condition such as trauma, tumor, surgery or infection.

Primary	Secondary
Congenital	Trauma
Milroy disease	Tumor
Lymphedema praecox	Surgery
Lymphedema tarda	Infection-infestation
	Post-venous thrombosis

Table 13.1 The etiology of lymphedema

Tropical lymphedema

There are two principal causes of elephantiasis, or lymphedema, in the tropics. The most common cause and a significant public health problem is lymphatic filariasis which is due to the parasitic nematode *Wuchereria bancrofti* (and, in Asia,*Brugia malayi* and *B. timori*), which is transmitted by mosquitoes. The second principal cause is podoconiosis.

Epidemiology

Globally, it is estimated that there are at least four million people with podoconiosis. The disease has been reported in more than 20 countries, of which ten countries had high burden of the disease. Countries where podoconiosis is common are mainly found in tropical Africa, central and south America and northern India.
Lymphatic filariasis is endemic in some 72 countries throughout the tropics.
Lymphatic filariasis is one of the 20 neglected tropical diseases .

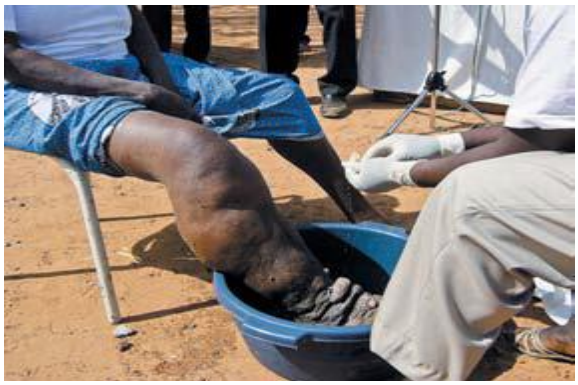
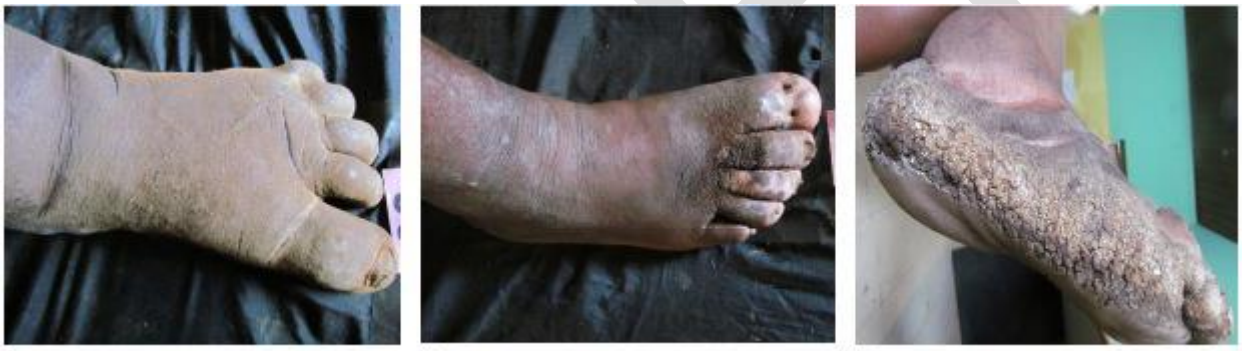


Figure 13.1 Leg of a Man with Lymphatic Filariasis

Podoconiosis is a form of lymphoedema that occurs in tropical highland areas in genetically susceptible individuals who are exposed to irritant volcanic soils. The disease is preventable through consistent use of footwear and attention to foot hygiene; however, in endemic areas there is a strong barefoot tradition, and many cannot afford shoes. Patients with podoconiosis face significant physical disability, psychological comorbidity, reduced quality of life and experience frequent episodes of systemic illness due to acute dermatolymphangioadenitis.



A B C

Figure 13.2(A) Early oedema of the foot (B) Lichenification on the dorsum of the anterior foot. (C) Mossy growth on the lateral part of the foot in slippery distribution.

A B C

Fiure 13.3 Treatment and prevention of podoconiosis. **(A)** Washing. **(B)** Bandaging. **(C)** Shoe wearing from childhood as prevention method.

Clinical manifestation of lymphedema

- Characterized with chronic swelling, localized pain, atrophic skin changes and secondary infections.
- However, the main devastating aspect of lympoedema is the appearance of the affected limb that causes psychological morbidity.

Diagnosis

- Although lymphedema leads to physical and psychological problems and impairs quality of life, it is underrecognized and undertreated.
- The diagnosis of lymphedema is clinical and depends on taking detailed history and comprehensive physical examination.

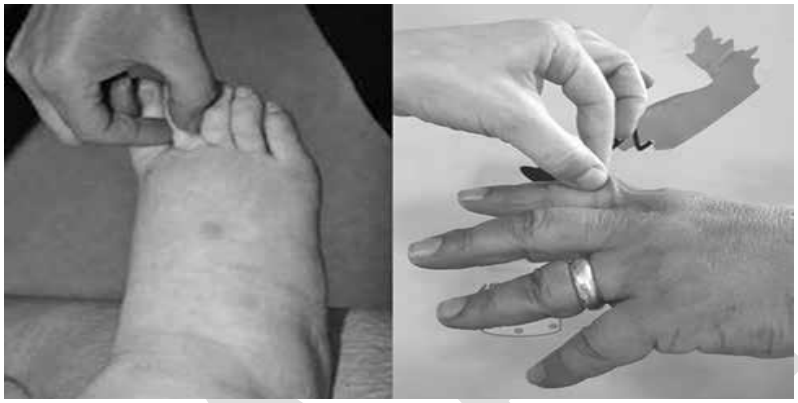


Figure 13.4 (a) Stemmer's sign assessment in lower extremity lymphedema.
(b) Stemmer's sign assessment in upper extremity lymphedema.

Complication of Lymphedema

1) Cellulitis (sudden reddening, increased local temperature, worsening of edema, inflammation, pain,and high fever) is an emergency condition requiring antibiotic therapy.

2)Fungal infections of the skin (i.e., itching, whitish exudate, and moisture between toes) cause deterioration of edema, and pathogenic microorganisms can pass through cracks in the skin, leading to inflammation.

- Anti-fungal therapy and education on skin care is needed.

3)Papillomatosis is the protrusion and wart-like growths on the skin of edematous tissue, caused by chronic congestion of the smallest lymphatic vessels

4)Lymph cysts are lymph fluid-filled blisters or vesicles in the skin of lymphedematous limb, and *lymph fistula* is unnatural orifices from which lymph fluid leaks out

5)Elephantiasis is steadily increasing swelling of the affected extremities with areas of induration and skin changes, caused by untreated lymphedema.

6) Stewart-Treves Syndrome is a rare, but lethal angiosarcoma arising from longstanding lymphedematous extremity and characterized

- by suddenly appeared multiple purplish or purple,painless, macular lesions which may be dismissed
- Diagnosis is made on skin biopsy and leads to the sequence of conditions from swelling to hardening of fibrotic tissues.
- The prognosis is poor, when radical surgery is not performed.

Follow-up

- Both primary and secondary lymphedema are chronic diseases that require constant monitoring.
- Clinical follow-ups by six months need to be scheduled but complications of lymphedema may require close monitoring.
- In each visit, physical examination with circumferential measurements and weight control must be performed.

  The pressure garments need to be renewed by 6-9 month intervals.

  The self-management procedures, exercise interventions and compliance of the patient and/or families should also be addressed.

Chapter 14: Mucocutanous manifestation of HIV

Chapter Description:It desrcribes manifestation of HIV encountered at clinic visit.

Chapter Objective:

- Discuss the mucocutaneous manifestation of HIV at different clinical stages.
- Discuss diagnosis and management of diseases with dermatologic manifestation of HIV.

Outline:

- Introduction
- Epidmology
- Pathogenesis
- Clinical Presentation
- Summary

Introduction to HIV Dermatology

- 80-90% of patients with HIV have dermatologic disease.
- HIV-infected individuals have a defect in cell mediated immunity which predisposes them to certain infections (bacterial, fungal, mycobacterium, viral),many of which have skin findings .
- Some skin diseases are so characteristic of the immunosuppression of HIV-infection that their presence warrants HIV testing such as Oral hairy leukoplakia.
- Typically, antiretroviral therapy improves skin conditions that result from immunodeficiency.

Characteristics of HIV/AIDS Dermatology

- Multiple skin conditions occurring in one patient e.g. severe Seborrheic dermatitis & oral thrush
- Unusual presentations of common conditions
- Conditions may be difficult to recognize
- Conditions may be recalcitrant to treatment

Skin disease played a prominent role in

- the identification of the emerging pandemic
- identifying individuals infected with HIV

WHO Staging of HIV/AIDS

- Primary HIV Infection
- Stage I - asymptomatic
- Stage II - mild disease
- Stage III - moderate disease
- Stage IV - advanced immunocompromised

WHO Stage I

- Asymptomatic or
- Persistent generalized lymphadenopathy (PGL)

WHO Stage II

- Herpes zoster
- Angular cheilitis
- Recurrent oral ulcerations
- Papular pruritic eruptions
- Seborrhoeic dermatitis
- Fungal nail infections of fingers

WHO Stage III

- Oral candidiasis
- Oral hairy leukoplakia
- Acute necrotizing ulcerative stomatitis, gingivitis or periodontitis

WHO Stage IV

- Chronic herpes simplex infection (orolabial, genital or anorectal of >1month duration)
- Oesophageal candidiasis
- Kaposi's sarcoma

Dermatological Manifestations of HIV-infection

- Infectious skin conditions;
  - Molluscum contagiosum, herpes simplex, herpes zoster, Oral Candidiasis, Scabies
- Inflammatory skin conditions;
  - Seborrheic dermatitis, Papular pruritic eruption, Eosinophilic folliculitis
- Neoplastic skin conditions; Kaposi sarcoma

i) Infectious skin conditions

(1.) Molluscum Contagiosum (MC) and HIV

- Mollescum contagiosum is a benign,usually asymptomatic viral infection of the skin.
- It is caused by a DNA poxvirus.
- It spreads through direct skin to skin & sexual contact.
- Skin lesions are commonly found on the face and genitals.
- Usually presents as firm,skin-colored, dome-shaped papules with central umbilication.
- In HIV-positive patients, lesions may be more numerous, more verrucous, larger and much less likely to spontaneously resolve.

Figure 14.1Mollescum Contagiousum

Mollescum contagniousum Evaluation & Treatment

- Diagnosis is often made clinically
- Skin biopsy
- The institution of HAART therapy in HIV-positive patients frequently leads to the resolution of molluscum,so adequate treatment of HIV disease should first be verified & monitored.

2)Varicella Zoster virus (VZV) infection

- VZV infection is commonly seen early in the course of HIV infection, before the onset of other symptoms.
- The initial presentation is usually chicken pox.
- Incidence of zoster among HIV infected adults is >10-fold that of age matched immunocompetent persons.
- Important early finding should raise suspicion of HIV infection in persons at risk.

Herpes Zoster in HIV

- Eruption may be bullous, hemorrhagic, necrotic & particularly painful .
- Blisters & crusts lasts 2-3 weeks .
- Necrotic lesions may last up to 6 weeks and heal with severe scarring .
- Recurrences are common in 25% of African HIV infected persons .
- Chronic disseminated VZV may present as widespread ulcers or hyperkeratotic verrucous lesions.
- Herpes zoster in HIV patients might have Multidermatomal distribution.

3) Herpes simplex virus infection in HIV

- Skin lesion present with atypical chronic ulcers .
- It Occurs with advanced immunosuppression (CD4 < 100) .
- Presence of chronic ulcerative HSV lesions for at least 1 month is AIDS defining condition.

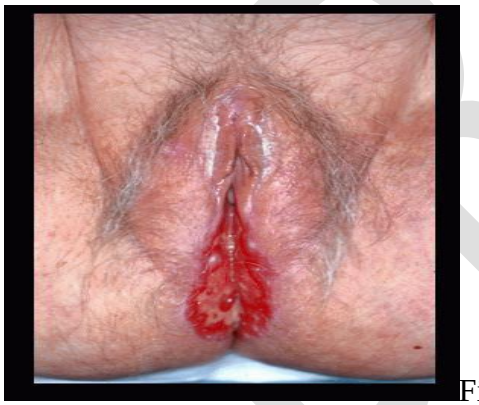


Figure 14.2 Genital Herpes

ii) Fungal Infection in Hiv

Oral Candidiasis

- Candida is a normal inhabitant of the human oropharynx and GI tract.
- Oral candidiasis (thrush) is the most common fungal disease of HIV-positive patients.

- Lesions most characteristically appear as white plaques on the tongue or buccal mucosa that can be scraped off with a tongue blade (or dry gauze), producing bleeding or red macular atrophic patches.

- HIV-infected patients can have all of the following patterns of oral candidiasis:
  - Pseudomembranous (thrush): as white plaques on the tongue or buccal mucosa
  - Erythematous (atrophic): smooth, red atrophic patches

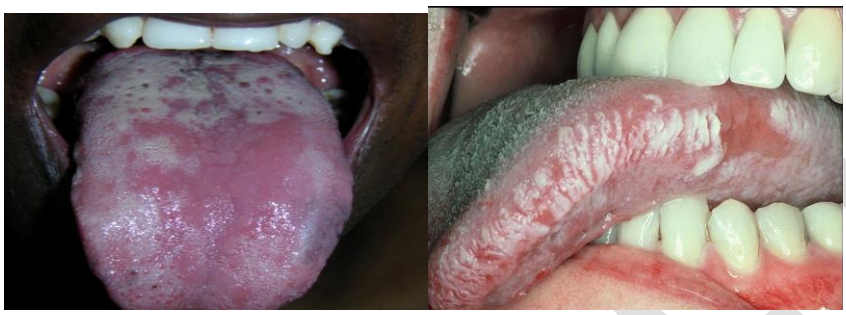


Figure 14.3 Oral Candidasis

- Hyperplastic (leukoplakia): white plaques that cannot be wiped off but regress with prolonged anticandidal therapy

Candidal Infection and HIV

- Oropharyngeal candidiasis may coexist with candidal esophagitis,which is the most common cause of odynophagia & dysphagia in HIV-infected patients
- Patients may also exhibit chronic and refractory vaginal candidiasis,
- Patients may also present with chronic paronychia , onychodystrophy, & Candida intertrigo.
- Culture or microscopic visualization of pseudohyphae & yeast forms can be used to confirm the diagnosis of mucocutaneous candidiasis
- The presence of oral candidiasis in a patient without known risk factors for thrush should raise suspicion for HIV infection
- Risk factors include the use of steroids inhalers,oral antibiotics, systemic steroids,& other forms of immunosuppression

Mucocutaneous Candidiasis Treatment

- Oral candidiasis generally responds to local application of nystatin or clotrimazole
- However, some patients may require oral medications or intravenous medications.
- Systemic agents are recommended for the treatment of esophageal candidiasis

Treat with azoles:

- Fluconazole 100-200mg od 14-21 days
- Nystatin suspension 4-6ml gargle 6 hourly

iii)infestation Scabies & HIV

- Scabies is an infestation of the skin that results in an eruption of pruritic papules & burrows from the mite *sarcoptes scabiei*

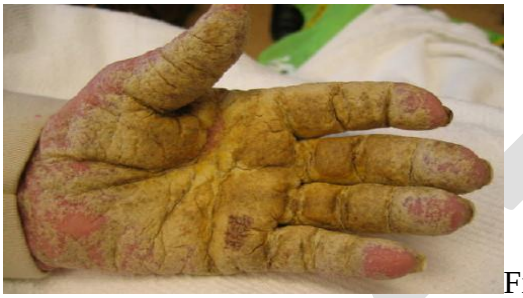


Figure 14.4 Crusted Scabies

- Fig.diffuse hyperkeratotic plaque involving palm

- Typically combination therapy is used in in crusted scabies
    - Multiple doses of oral Ivermectin 200mcg/kg/dose depending on severity of infection
    - Topical permethrin 5% (or benzoyl benzoate 25%) 1-2x weekly, frequently more than two treatments is required
    - Given the high mite burden, patients with crusted scabies should be isolated & strict barrier nursing procedures instituted to avoid outbreaks in health-care facilities

IV)Inflammatory

(1) Seborrheic dermatitis

- Affects 4% of the general population & 85% of HIV positive population.
- Yellow-white greasy scales on erythematous patches affecting sebaceous areas on the face, scalp, chest, back & intertrigenous areas.
- In HIV positive individuals the scalp involvement may be particularly severe .
- In some patients a generalized erythroderma involving trunk & extremities may occur.
- May occur at any CD4 cell count .
- Extent, abruptness of onset, distribution, severity increases with reduced CD4 count
- Response to treatment tends to be more difficult as the CD4 deteriorates
- Management of seborrheic dermatitis is Topical steroids and if no response it should be treated with oral Imidazoles.

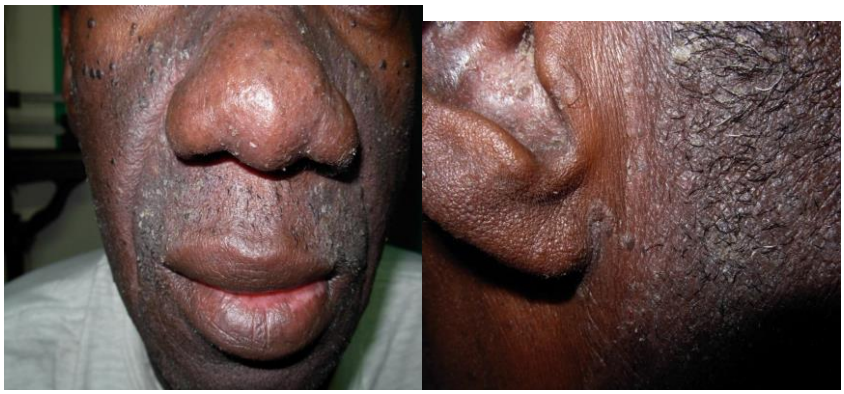


Fig.14.5 Seborrheic Dermatitis: Diffuse greasy scaling involving the face

Pruritic Papular Eruption (PPE)

- **Epidemiology**
  - Substantial cause of HIV-related morbidity in sub-Saharan Africa
  - Uncommon in HIV negative patients
  - Probably related to hypersensitivity to arthropod bites

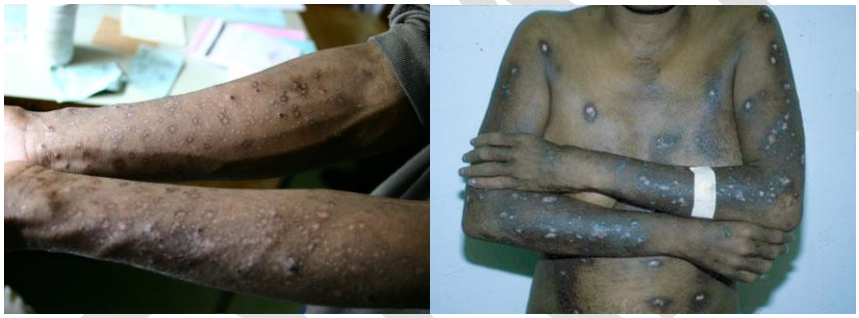


Fig.14.6 multiple excoriated papules involving the trunk and limbs

Clinical Manifestations

- Intensely pruritic, discrete, firm, papules with variable stages of development
- Excoriation results in pigmentation, scarring & nodules
- Predilection for extremities, but may involve trunk & face
- Severity of rash correlates with CD4 count

Treatment

- Topical steroid and oral antihistamines; however often refractory

V.) Neoplastic-

Kaposi's sarcoma

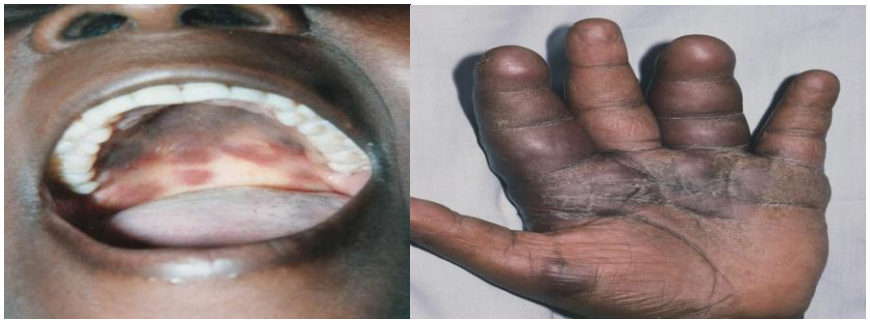


Figure 14.7 Kaposy sarcoma: purplish nodules on the hard palate and hand

- most common AIDS-associated neoplasm
- Epidemic: AIDS-associated type, is characterized by more aggressive & widespread mucocutaneous lesions

Clinical manifestations

- oral lesions: hard palate lesions are most common; seen also on gingiva, tongue, uvula, tonsils, pharynx;
- others sites: lung, GI tract, liver, lymph nodes (lymphedema)

- Treatment will vary depending on extent of KS, immune status & associated systemic illnesses

- Local treatment options include cryotherapy, radiation therapy, intralesional chemotherapy, or
- ART: an essential component of KS management; lesions may regress
- Local irradiation: bulky/obstructive lesions (e.g. oropharyngeal)

- Systemic IFN-alfa: slow progressive disease
- Systemic chemotherapy: rapid, life threatening disease including pulmonary or severe lymphedema.

VI) Adverse cutaneous drug eruptions

The incidence of cutaneous drug eruptions is greatly increased in HIV-disease and correlates with the decline and dysregulation of immune function.

Between 50–60% of patients with AIDS treated with trimethoprim-sulfamethoxazole develop a morbilliform eruption one to two weeks after commencing therapy.

This rash reaches maximal intensity one to two days after its initial appearance, and rapidly resolves with discontinuation of the drug. Other drugs associated with an increased incidence of cutaneous reactions include sulfadiazine and the aminopenicillins.

The incidence of toxic epidermal necrolysis and Stevens-Johnson syndrome is also increased in HIV- disease. The most common causative agents in this population are sulfonamides.

Treatment of cutaneous drug eruptions necessitates discontinuation of the offending agent and supportive and symptomatic treatment.

Summary

- A high percentage of HIV-positive patients have dermatologic disease
- Dermatologic disease common to the general population may have an increased prevalence or severity in HIV positive individuals
- Various skin manifestations of HIV infection can be correlated with levels of immune suppression

Chapter 15: Bullous Disorders

Chapter description: this chapter describes the clinical presentation of the common autoimmune blistering conditions.

Chapter objective:

- The trainee understands common chronic blistering disease
- Be able to prevent complication of the case
- Know how to differentiate among other dermatosis

Outline:

- Introduction
- Epidmology
- pathogensis
- Clinical manifestation
- Management
- Summary

Introduction

- Blisters arise from destruction or separation of epidermal cells by trauma, viral infection, immune reactions, oedema as in eczema or inflammatory causes such as vasculitis.
- In non-inherited chronic blistering (vesicular or bullous) dermatoses, the cause of blistering is usually an autoimmune reaction,
- In autoimmune blistering conditions autoantibodies attack these adhesion structures. The level of the separation of epidermal cells within the epidermis is determined by the specific structure that is the target antigen
- *Loss of adhesion* between the cells may occur within the epidermis (pemphigus) or at the basement membrane (pemphigoid , dermatitis herpetiformis)
- Clinically these splits are visualised as superficial blisters which may be fragile and flaccid (intraepidermal split) or deep mainly intact blisters (subepidermal split).
- In general, immunobullous diseases present with widespread eruptions with frequent mucous membrane involvement.
- Some types of blistering arise rapidly while others have a more gradual onset and follow a chronic course.

Pathophysiology

- ✓ Susceptibility to develop autoimmune disorders may be inherited, but the triggers for the production of these skin-damaging autoantibodies remains unknown.
- ✓ Bullous pemphigoid results from IgG autoantibodies that target the basement membrane cells.
- ✓ Pemphigus vulgaris results from autoantibodies directed against desmosomal cadherin desmoglein 3 (Dsg3) found between epidermal cells in mucous membranes and skin.
- ✓ Dermatitis Herptiformis is caused by IgA deposits in the papillary dermis which results from chronic exposure of the gut to dietary gluten triggering an auto-immunological response in genetically susceptible individuals.

Clinical features

Pemphigus vulgaris

- Seventy percent of patients develop oral lesions in chronic progressive pemphigus vulgaris
- Skin lesions do, however,occur in most patients and are characterised by painful flaccid blisters and erosions arising on normal skin.
- The bullae are easily broken, and even rubbing apparently normal skin causes the superficial epidermis to slough off (Nikolsky sign positive).
- Slow-healing painful erosions occur in the mouth, particularly on the soft/hard palate and buccal mucosae, but the larynx may also be affected.
- The oral cavity lesions may be so severe that patients have difficulty eating, drinking and brushing their teeth.
- Scalp, face, chest, axillae, groin, umbilicus are Predilected sites

- Recognised drug triggers of pemphigus vulgaris include rifampicin, ACE inhibitors and penicillamine.

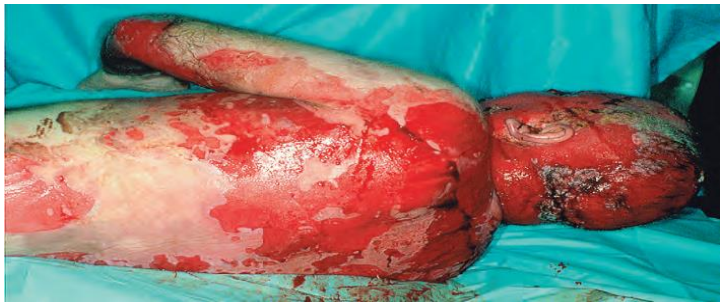


Figure 15.1 Pemphigus vulgaris: sloughing of the superficial epidermis

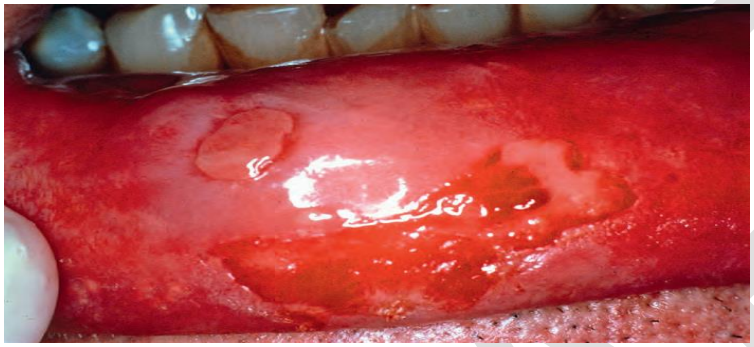


Figure 15.2 Pemphigus vulgaris: multiple erosions in the oral mucosa.

Bullous pemphigoid

- ✓ Usually presents over the age of 65 years with tense blisters and erosions on a background of dermatitis or normal skin.
- ✓ The condition may present acutely or be insidious in onset, but usually enters a chronic intermittent phase.
- ✓ Characteristically, blisters are large and tense have a predilection for flexor surfaces of forearms, trunks ,groin, axilla and thighs that heal spontaneously without scarring.
- ✓ In addition to the bullae, there often are erythematous patches and urticarial plaques
- ✓ In children bullous pemphigoid usually follows vaccination, where the condition characteristically affects the face, palms and soles.

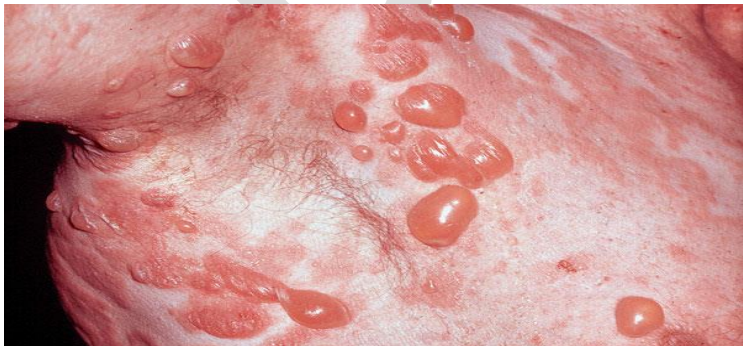


Figure 15.3 Bullous pemphigoid

Chronic bullous disease of childhood (CBDC)

- ✓ The mean age of onset is under 5 years, it is usually acute and the initial attack more severe than subsequent recurrences.
- ✓ Symptoms vary from absent or mild pruritus to severe burning.
- ✓ The lesions comprise urticated plaques and papules, and annular, polycyclic lesions often with blistering around the edge of older lesion *the string of pearls sign*
- ✓ Large blisters may develop and become very extensive, they are occasionally haemorrhagic, and usually arise on previously normal skin.
- ✓ The face and perineum , perioral area, the eyelids,ears and scalp may be affected. Mucosal involvement is common

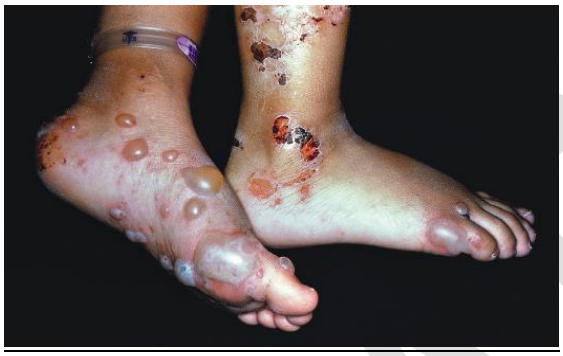


Figure 15.4 Childhood bullous pemphigoid

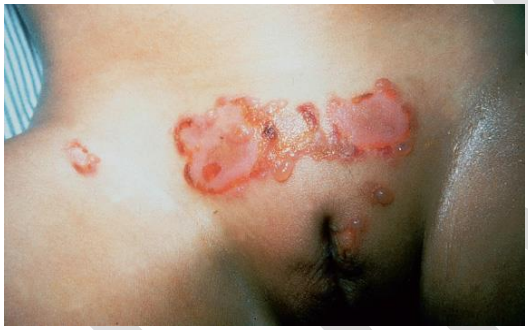


Figure 15.5 Chronic bullous dermatosis of childhood (***string of pearls sign***)

Dermatitis herpetiformis (DH)

- ✓ This is an intensely pruritic autoimmune blistering disorder that affects young/middle-aged adults and is associated with an underlying gluten-sensitive enteropathy.
- ✓ Cutaneous lesions are characteristically intermittent and mainly affect the buttocks, knees and elbows.
- ✓ The intense pruritus leads to excoriation of the small vesicles

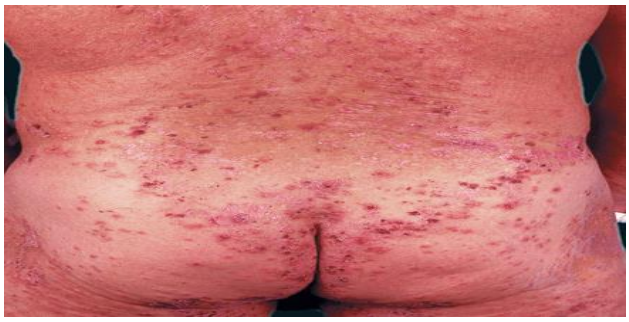


Figure 15.6 Dermatitis Herpetiformis

Management of immunobullous disease

- ✓ Patients should be treated in a specialized unit like burn case,
- ✓ It is a dermatological emergency!
- ✓ Use of non-adherent dressings or a body suit can be used to cover painful cutaneous erosions.
- ✓ Liquid paraffin should be applied regularly to eroded areas to help retain fluid and prevent secondary infection.
- ✓ Immunosuppressive treatments are required.
- ✓ Gluten free diet recommended for Dermatits Herpetiformis.
- ✓ **Dapsone** 100–150 mg daily /po for Dermatitis Herpetiformis cases.
- ✓ High dose oral prednisolone is recommended in combination with Dapsone for the treatment of Bulous pemphigoid.

Summary

- Chronic blisters can be localized in intra epidermal (fragail blisters) or sub epidermal space (tense blisters).
- In Pemphigus vulgaris,mucous membrane affection is common, skin lesions are characterised by painful flaccid blisters and erosions arising on normal skin.
- Bullous pemphigoid usually presents with tense blisters and erosions on a background of dermatitis or normal skin ,it may present acutely or be insidious in onset, but usually enters a chronic intermittent phase.
- Itching and gluten sensitivity enteropathy are the commonest clinical manifestations of Dermatitis herpetiformis.

Chapter 16: Autoimmune connective tissue disorders

Chapter description:this chapter describes the pathogensis and clinical manifestation of lupus erythematosus,systemic scleroderma and dermatomyocisitis.

Chapter objective:

At the end of the course the trainee will be able to diagnose and differentiate autoimmune connective tissue skin disorders.

Be able to manage and refer as early as possible

Outline:

- Introduction
- Epidmology
- Pathogensis
- Clinical feature
- Summary

Introduction

Disorders that involve tissues connecting and surrounding organs with an autoimmune basis, many of which have distinctive clinical features and patterns in laboratory investigations. Connective tissues include the extracellular matrix and support proteins such as collagen and elastin.

Pathogensis

What triggers dysregulation of the immune system is usually unknown;

Some recognized trigering factors include :

- Sunlight,
- Infections
- Medication.
- Underlying hereditary susceptibility to develop autoimmune diseases marked by specific HLA (human lymphocyte antigen) types in some cases.

Classification

❖Will focus on the clinical significance of the various autoantibodies (aAb) associated with autoimmune connective tissue diseases have expression in the skin:

- lupus erythematosus **[LE**]
- Dermatomyositis[**DM**]
- Systemic sclerosis **[SScl**).

Lupus erythematosus

- ❖ A multi system disorder that prominently affects the skin. Cutaneous lesions are a source of disability and on many occasions an indicator of internal disease.
- ❖ It is usually divided into two main types: Discoid Lupus Erythematous (DLE) and Systemic Lupus Erythematous (SLE)
- ❖ Significant overlap occurs and chronic skin lesions do not equate with purely cutaneous disease. Chronic discoid lesions may be seen in patients with severe systemic lupus erythematous (SLE).
- ❖ Occurs more commonly in women (male to female ratio 1: 9)
- ❖ Systemic lupus ranges from life-threatening manifestations of acute systemic LE (SLE) to the limited and exclusive skin involvement in chronic cutaneous LE (CCLE).

Classification of cutaneous manifestations of lupus erythematosus (LE)

I. Chronic cutaneous LE

A. Discoid LE
1. Localized
2. Disseminated
B. Verrucous (hypertrophic) LE (Behçet): usually acral and often lichenoid
C. Lupus erythematosus–lichen planus overlap
D. Chilblain LE
E. Tumid lupus
F. Lupus panniculitis (LE profundus)
1. With no other involvement
2. With overlying discoid LE
3. With systemic LE

II. Subacute cutaneous LE

A. Papulosquamous
B. Annular
C. Syndromes commonly exhibiting similar morphology
1. Neonatal LE
2. Complement deficiency syndromes
3. Drug-induced

III. Acute cutaneous LE: localized or generalized erythema or bullae, generally associated with SLE

Chronic discoid LE (CDLE)

- A benign disorder of the skin, most frequently involving the face, and characterized by well-defined, red scaly patches of variable size, which heal with atrophy, scarring and pigmentary changes.
- Age of onset in the fourth decade in females and slightly later in males, it can occur at any age.
- Generally occurs in young adults, with women outnumbering men 2:1
- The cause is also unknown but UVR is one factor.
- The course of DLE is variable, but 95% of cases confined to the skin
- Progression from purely cutaneous DLE to SLE is uncommon.
- In darker-skinned individuals, lesions typically demonstrate areas of both hyper pigmentation and depigmentation.

Clinical features

- Most patients have disease limited to the head and neck (localized DLE), few have much more extensive disease, potentially affecting any area of the skin (disseminated DLE).
- Bright red papules evolving into plaques, sharply marginated, with adherent scaling difficult to remove.

- Plaques are round or oval, annular or polycyclic, with irregular borders and expand in the periphery and regress in the center, resulting in depression of lesions, atrophy, and eventually scarring. (*Fig:1)*
- Scarring alopecia with residual inflammation and follicular plugging

- <5% of patients have lip involvement (hyperkeratosis,hypermelanotic scarring, erythema) and atrophic erythematous or whitish areas. (*Fig:2)*
- Chilblain-like lesions chiefly on the toes and fingers, but also on the heels, calves, knees, knuckles.

Diagnosis

- ✓ Patients with discoid LE remain well
- ✓ Clinical manifestation
- ✓ **Blood tests** are usually normal but occasionally serum contains antinuclear antibodies
- ✓ **Direct immunofluorescence** shows deposits of IgG, IgM, IgA and C3 at the basement membrane zone.
- ✓ **Dermatopathology** : Hyperkeratosis, atrophy of the epidermis, follicular plugging, liquefaction degeneration of the basal cell layer. Edema, dilatation of small blood vessels and perifollicular and periappendageal lymphocytic inflammatory infiltrate.

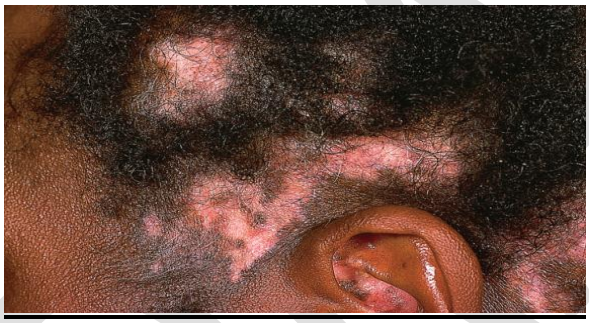


Figure 16.1 Discoid lupus erythematosus

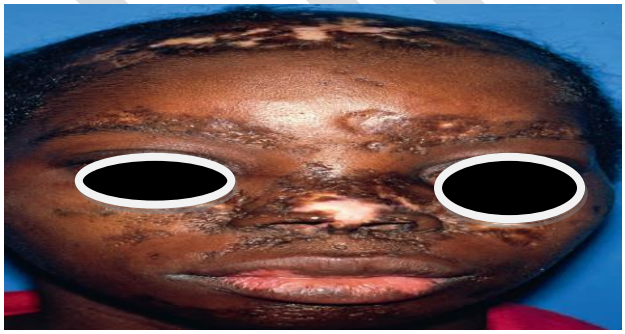


Figure 16.2 Extensive scarring from discoid lupus erythematosus

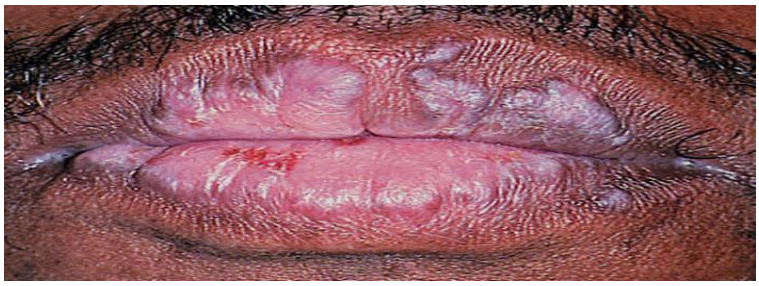


Figure 16.3Lip involvement in hypertrophic lupus erythematosus.

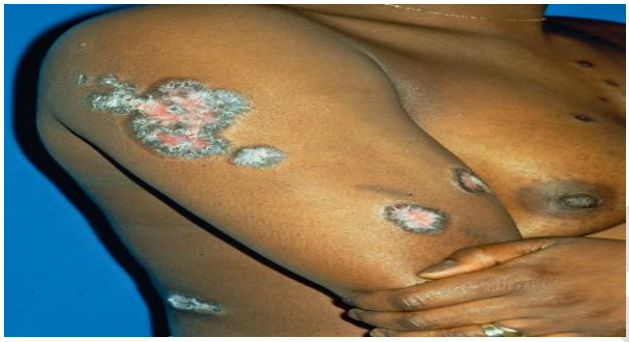


Figure 16.4 Generalized discoid lupus Erythematous.

Differential Diagnosis

- Seborrheic dermatitis,
- Rosacea
- lupus vulgaris
- Actinic keratosis
- lichen planus
- Bowen's disease
- Psoriasis

COURSE AND PROGNOSIS

- With localized lesions, complete remission occurs in 50%
- Only 1–5% may develop SLE
- Chronic cutaneous lupus erythematous lesions may be the presenting cutaneous sign of SLE

MANAGEMENT

Goal: improve the patient's appearance

- control existing lesions, limit scarring
- prevent the development of further lesions.

Prevention:- avoid excess sun exposure

-Use of sun-protective measures

-Smoking should also be avoided

- Topical sunscreens (SPF >30) routinely
- Local Glucocorticoids and Calcineurin Inhibitors
- Early referral to dermatologist.

Systemic lupus erythematosus (SLE)

Introduction: is a multisystem an autoimmune disorder characterised by the presence of antibodies against various components of the cell nucleus, skin involvement occurs in 80% of case.

Cause:is unknown, family history of connective tissue disease

- complement deficiency and certain HLA types increase susceptibility
- have autoantibodies to DNA, nuclear proteins and to other normal antigens
- exposure to sunlight and artificial ultraviolet radiation (UVR)
- Pregnancy and infection may precipitate the disease or lead to flare-ups.
- Some drugs, such as hydralazine and procainamide trigger SLE in a dose-dependent.

Cutaneous manifestations

- Butterflyfacial erythema on the malar area and the bridge of the nose.
- Groupedvesicles or bullae, often widespread, with a predilection for sun-exposed areas
- Fingertipsor toes show edema, erythema, or telangiectasia.
- Diffuse, non -scarring hair loss
- Oral mucosal hemorrhages, erosions, shallow angular ulcerations

Systemic manifestations

- transitory or migratory arthralgia, often with periarticular inflammation
- Fever,weight loss, pleuritis, adenopathy, or acute abdominal pain
- chronic renal insufficiency with proteinuria and azotemia
- Pericarditis (the most frequent cardiac manifestation) and endocarditis
- Raynaud phenomenon: recurrent reversible vasospasm of peripheral arterioles secondary to cold exposure leads to transient ischaemia of the digits.

Diagnostic criteria for SLE

- malar rash
- discoid rash
- photosensitivity
- oral ulcers (21%)
- arthritis
- proteinuria >0.5 g/day or casts
- neurologic disorders (seizures or psychosis in the absence of other known causes)
- pleuritis/pericarditis

- blood abnormalities (including hemolytic anemia leukopenia, thrombocytopenia)
- immunologic disorder
- positive ANA blood test

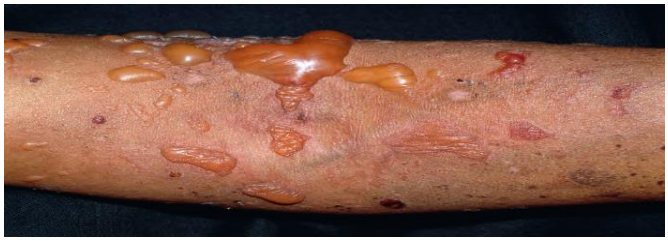


Figure 16.5 Bullous lupus erythematosus

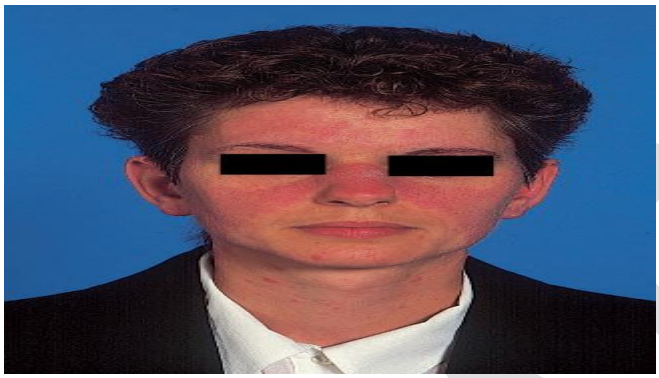


Figure 16.6 Erythema in the butterfly area, suggestive of SLE

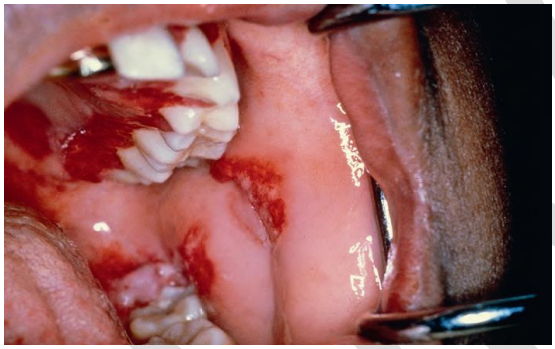


Figure 16.7 Oral lesions of systemic lupus erythematosus

Differential Diagnosis

- Dermatomyositis,
- Erythema multiforme,
- Pellagra
- Drug eruptions
- Rheumatoid arthritis
- Pemphigus erythematosus

Treatment

- Exposure to sunlight must be avoided
- High sun protection factor (SPF) sunscreen should be used daily

- Avoid exposure to excessive cold, to heat, and to localized trauma.
- REFER !

Dermato myositis

- ❖ Is a rare disorder that affects the skin, muscle and blood vessels.
- ❖ The cause is unknown but an autoimmune mechanism seems likely
- ❖ Dermatomyositismay be mediated by damage to blood vessel walls triggered by a change in the humoral immune system, which leads to cytotoxicT-cell damage to skin and muscle.
- ❖ There is deposition of IgG, IgM and C3 at the dermoepidermal junction as well as a lymphocytic infiltrate with CD4+ cells and macrophages.
- ❖ There are adult and juvenile types
- ❖ In adults may precede the diagnosis of an underlying tumour(most commonly breast, lung, ovary or gastrointestinal tract), and therefore patients should be investigated thoroughly.
- ❖ Affect women twice as often as men ,occur throughout the world

Clinical features

- Erythema and edema of theface and eyelids
- Eyelid pruritic and scaly pink patches, edema, and pinkish violet (heliotrope) discoloration or bullae (*Fig7)*
- Erythema, scaling, and swelling of the upper face, often with involvement of the hairline and eyebrows.
- Extensor surfaces of the extremities are often pink, red or violaceous with an atrophic appearance or overlying scale.
- Firm, slightly pitting edema may be seen over the shoulder girdle, arms, and neck.
- Photosensitivity to natural sunlight, pruritus may be severe
- Characteristic areas include nape of the neck, upper chest (V) pattern, and upper back, neck, and shoulder (shawl) pattern (*Fig;8)*
- slightly atrophic papules over the knuckles of their fingers (Gottron's) papules (fig;8)
- Proximal muscles weakness: difficult for Climbing stairs, getting up fromchairs and combing the hair.

Diagnostic criteria

- Skin lesions
- Heliotrope rash (red–purple edematous erythema on the upper palpebra)
- Gottron's papules or sign (red–purple flat-topped papules, atrophy, or erythema on the extensor surfaces and finger joints)
- Proximal muscle weakness (upper or lower extremity and trunk)
- Elevated serum creatine kinase or aldolase level
- Muscle pain on grasping or spontaneous pain

- Myogenic changes on EMG (short-duration, polyphasic motor unit potentials with spontaneous fibrillation potentials)

Differential diagnosis

- Erysipelas
- SLE
- Angioedema,
- Drug eruptions,
- Trichinosis
- Erythema multiforme

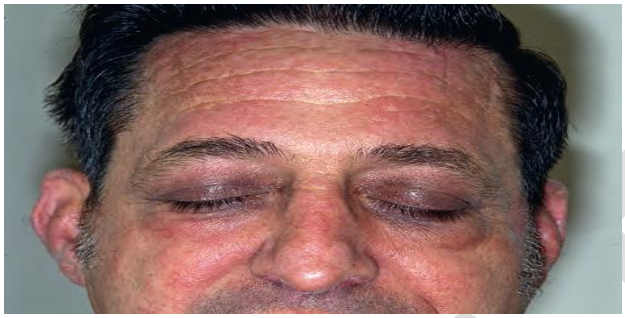


Figure 16.8 Heliotrope rash in a patient with dermatomyositis

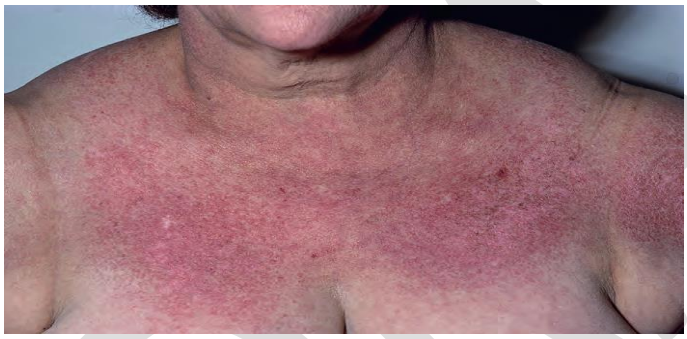


Figure 16.8 "V" of neck with poikiloderma in dermatomyositis

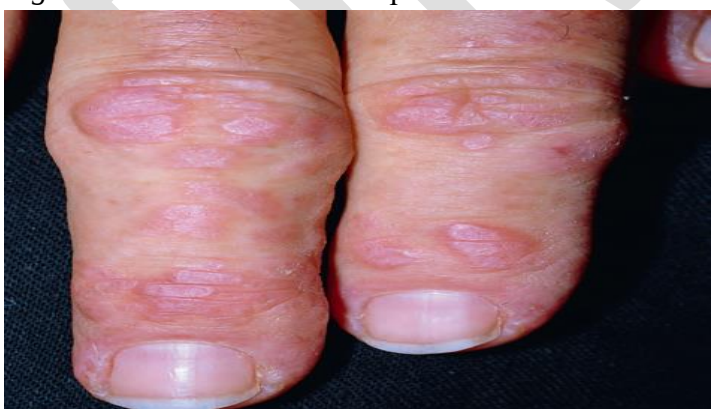


Figure 16.9 Gottron's papules of dermatomyositis involving the knuckles

Management

- Reduce the mortality rates
- Better prognosis if treated early
- Treatment of any underlying malignancy

- High dose systemic corticosteroids (60–100mg daily) need strict follow-up
- Refer

Systemic Sclerosis (SScl)

- An autoimmune connective tissue disease of unknown etiology
- Characterized by symmetric hardening of the skin of the fingers, hands and face that may generalize
- Raynaud's phenomenon is common and digital ulcers often develop
- Internal organ involvement is frequent and may affect the esophagus, heart and kidneys; lung involvement is the leading cause of death
- SSc has a worldwide distribution and affects all races
- Women are affected three to four times as often as men.
- Black patients have an earlier mean age of onset and a higher likelihood of diffuse disease
- The onset is typically between the ages of 30 and 50 years
- Abnormalities in the skin and internal organs are microvascular dysfunction and damage,
- Immune activation with autoantibody production, and tissue fibrosis characterized by deposition of collagen and other extracellular matrix proteins

Clinical Features

- Characterized by the appearance of circumscribed or diffuse, hard, smooth, ivory-colored areas that are immobile and give the appearance of hidebound skin.
- It occurs in both localized and systemic forms.
- ***Cutaneous types*** ;categorized as morphea is a benign form of localized systemic sclerosis in which there is localized sclerosis with very slight inflammation it can be (localized, generalized) (fig10, 11)
- Immobile fingers, hard and shiny some become hyper pigmented and itchy early in the course
- Peri-ungual telangiectasia is common

Progressive systemic sclerosis; there is thickening of dermal collagen bundles, as well as fibrosis and vascular abnormalities in internal organs,***CREST syndrome(***calcinosis cutis, Raynaud phenomenon, esophageal dysmotility, sclerodactyly,and telangiectasia) (fig12)

- The nose becomes beak-like, and wrinkles radiate around the mouth (fig13)
- Multidisciplinary team approach to management is usually needed, including psychological support.

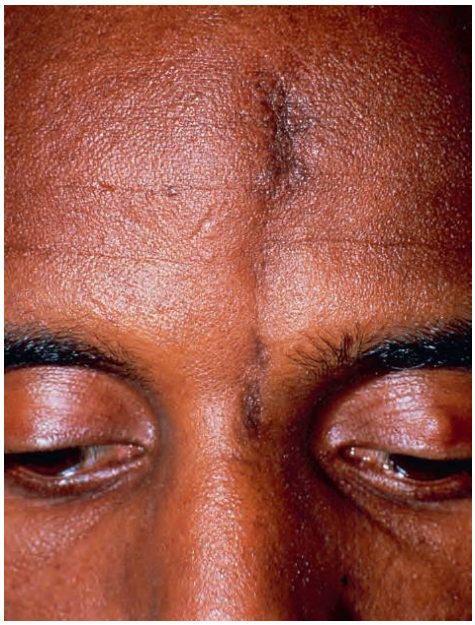


Figure 16.10 localized morphea - En coup de sabre.

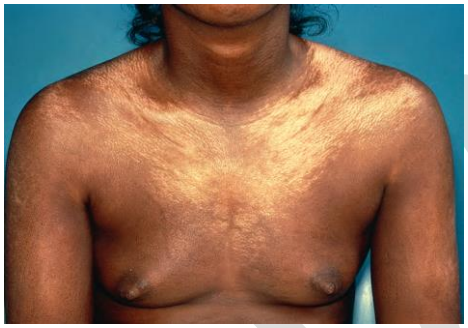


Figure 16.11 Generalized morphea

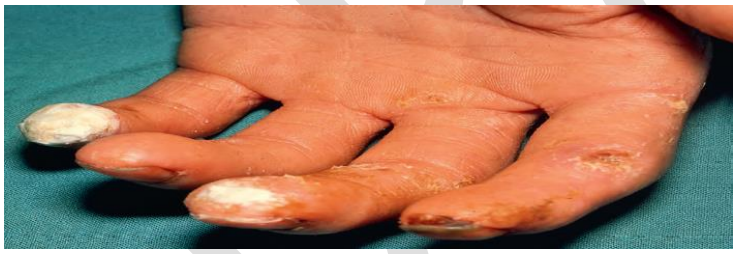


Figure 16.12 Calcinosis in CREST syndrome

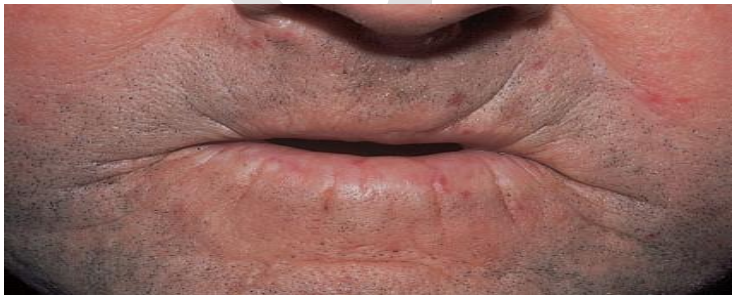


Figure 16.13 Systemic sclerosis: radial furrowing around the mouth.

Summary

- Autoimmune connective tissue diseases (AI-CTDs) are a group of polygenic clinical disorders often having heterogeneous and overlapping clinical features;
- There are 3 forms of Lupus erythematosus,namely : DLE,SCLE and SLE.

- Discoid lesions of lupus involve the epidermis, upper and lower dermis, and adnexal structures, and they are characterized by well defined erythematous plaques covered with adherent scales often leaving atrophic scars; the majority of patients do not have significant systemic disease.
- Dermatomyositis manifests with photo distributed, violaceous poikiloderma favoring scalp, periocular, and extensor skin sites with nailfold telangiectasias
- Systemic sclerosis (SSc) is an (AI-CTD) of unknown etiology that affects the skin, blood vessels and internal organs.

Chapter 17: Leishmaniasis

Chapter description: this chapter describes how to diagnose and treat cutaneous leishmaniasis.

Chapter objectives:

- Discuss the different types of Cutaneous leishmaniasis (CL)
- Define and describe the clinical presentations of CL
- Discuss the clinical and laboratory diagnosis of CL
- Discuss treatment of Cutaneous leishmaniasis

Outline:

- Introduction
- Epidemiology
- EtioPathogenesis
- Clinical feature
- Diagnosis
- Treatment
- Summary

Introduction

Leishmaniasis is a disease caused by a heterogeneous group of protozoan parasites belonging to the genus Leishmania transmitted by phlebotomine fly. It results in a variety of different clinical syndromes, often referred to as a group of diseases because of the varied spectrum of clinical manifestations. These range from small cutaneous nodules to gross mucosal tissue destruction, mild self-healing cutaneous lesions to fatal visceral disease. The World Health Organization (WHO) considers leishmaniasis to belong among the so-called Neglected Tropical Disease (NTD). Neglected tropical diseases are poverty-associated infectious diseases that are primarily prevalent in subtropical and tropical regions, and for which there is little to no public interest, little research activity, high morbidity and mortality, and no safe and long-lasting therapies.

Epidemiology

Leishmaniasis has a worldwide distribution, in 5 continents including Africa, Asia, Europe, North & South America but New Zealand, Antarctica, and the Pacific islands are leishmania-free. It is endemic in 88 countries, of which 66 are in the old world (OW) & 22 in the new world (NW). From the 88, 72 of them are developing countries. The New World includes Central and South America and the Old World includes Mediterranean basin, southern Europe, central Africa, and parts of southern and central Asia.

Cutaneous leishmaniasis (CL) is widely distributed, with approximately one-third of cases occurring in each of 3 epidemiologic regions: the Americas, the Mediterranean basin, and western Asia from the Middle East to Central Asia. The 10 countries with the highest case counts are Afghanistan, Algeria, Brazil, Colombia, Costa Rica, Ethiopia, Iran, Peru, Sudan, and Syria. Together these 10 countries account for 70% to 75% of all CL cases. More than 90% of global visceral leishmaniasis (VL) cases occur in 6 countries: Bangladesh, Brazil, Ethiopia, India, South Sudan, and Sudan. Close to 90% of mucocutaneous leishmaniasis (MCL) cases occur in Bolivia, Brazil, and Peru. The distribution of disease is strongly associated with the distribution of its vector, the sand fly. Outside of endemic regions, the disease is very often only recognized by travelers after their return home. In recent years, coinfections of *Leishmania* with HIV have become a major concern.

CL in Ethiopia has been well known since 1913 and is endemic in most regions, and is common in children, with the highest prevalence occurring between 10 and 15 years of age. It is caused mainly by *L. aethiopica* and occasionally by *L. tropica* and *L. major, t*here are three clinical forms: LCL,MCL and DCL.

Etiology

Leishmaniaare dimorphic parasitic protozoa, in the genus Leishmania consists of parasitic protozoa of the phylum Sarcomastigophora, order Kinetoplastida, and family Trypanosomatidae. Approximately 20 species are pathogenic for humans and all are transmitted by the bite of an infected female phlebotomine sand fly.

Promastigote is the flagellated, motile extra-cellular form of leishmania, found in the alimentary tract of Phlebotomine sandflies and in culture medium. It has a long and slender body (about 15-30μm by 2-3μm), with a central nucleus, a kinetoplast and a long, free, anterior flagellum.

Amastigotes are obligate intracellular form of leishmania, found in the phagolysosomes of mammalian (vertebrate) host macrophages. They have round or oval body, aflagellated, about 2 to 6 μm in diameter containing a nucleus, a kinetoplast, and an internal flagellum.

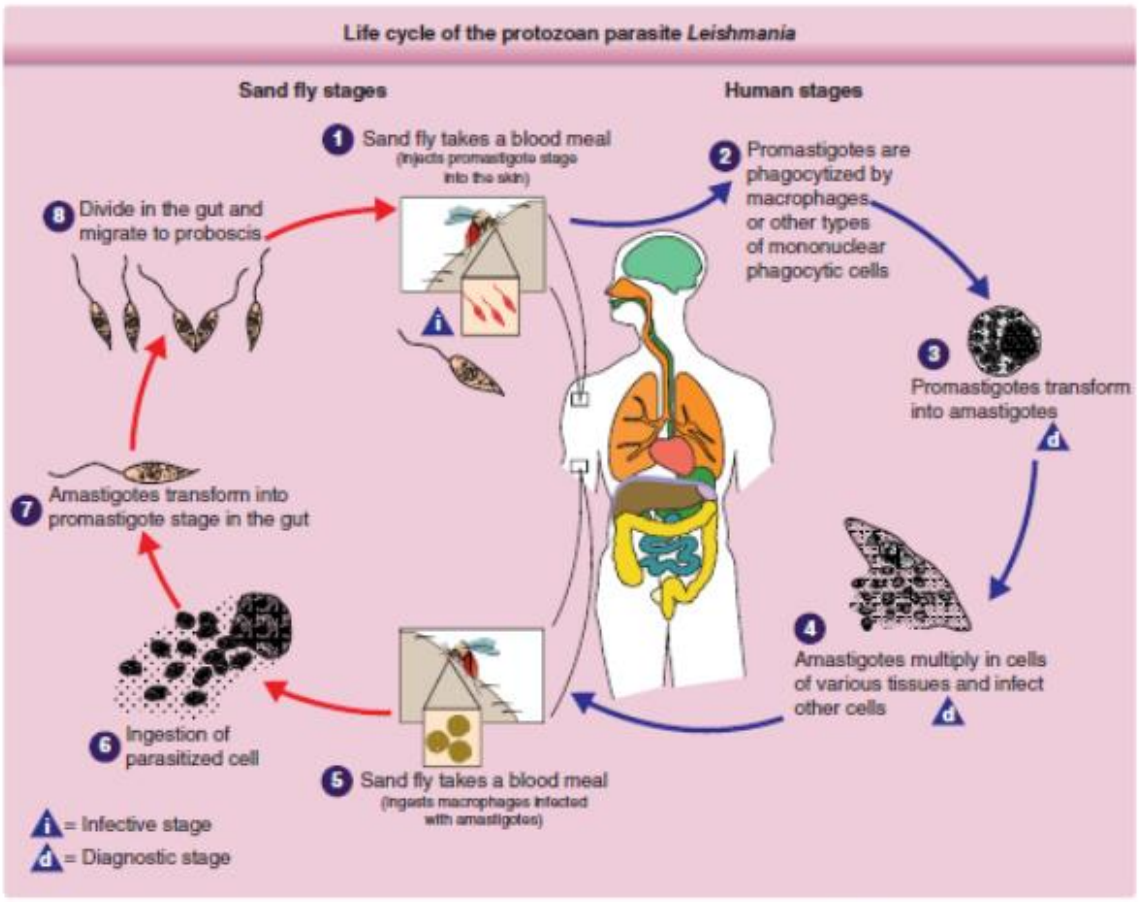
Cutaneous leishmaniasis is caused in Americas by L.tropica mexicana, L.braziliensis, and L.amazonensis but in the Old World by L.tropica, L. major, L infantum (Europe), and L. aethiopica(Ethiopia & kenya)

Mucocutaneous leishmaniasis is caused in Americas by L braziliensis, L.mexicana, L. amazonensis, L.guyanensis, and L.panamensis. In Old World -L aethiopica

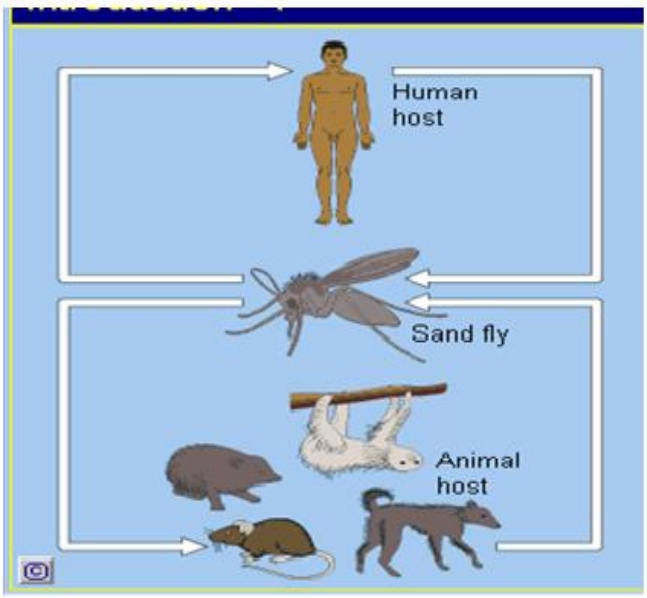
Visceral leishmaniasis in India and Kenya is caused by L. donovani, in South Europe and North Africa by L. infantum, in Americas by L. chagasi

Vector

Leishmania parasites are transmitted by sandflies of the genus phlebotomus in the old world andthe genus lutzomyia in the new world. Sand flies are small in size and are mosquito like insects of 1.5-4mm in size. Only the females are blood sucking.



Life cycle of the protozoan parasite *Leishmania*. (From the Centers for Disease Control and Prevention [CDC].)



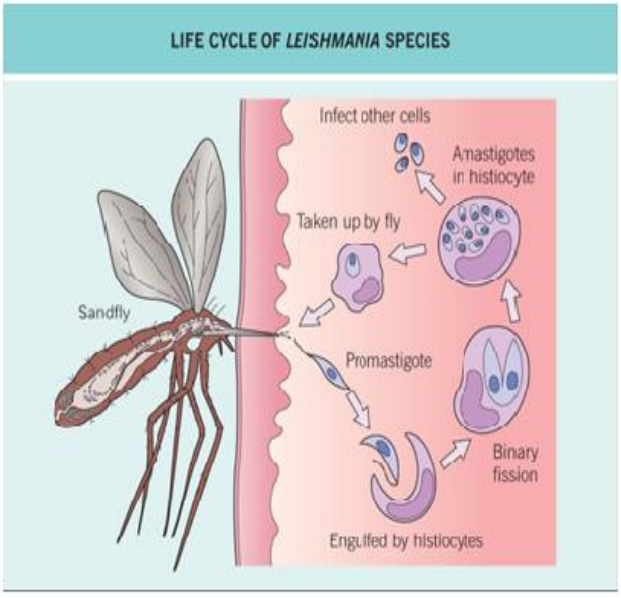


Figure 17.1 Life cycle of leishmania species

PATHOGENESIS

The clinical spectrum is determined by the virulence of the leishmania species and the host's immune response. Localized cutaneous disease demonstrates a vigorous cell mediated immune response &diffuse cutaneous leishmaniasis and visceral leishmaniasis express poor cell mediated immune response.

Clinical Feature

The clinical spectrum includes cryptic infection, localized cutaneous leishmaniasis (CL) &disseminated infection (DCL, MCL, and VL). Leishmaniasis can be divided in to

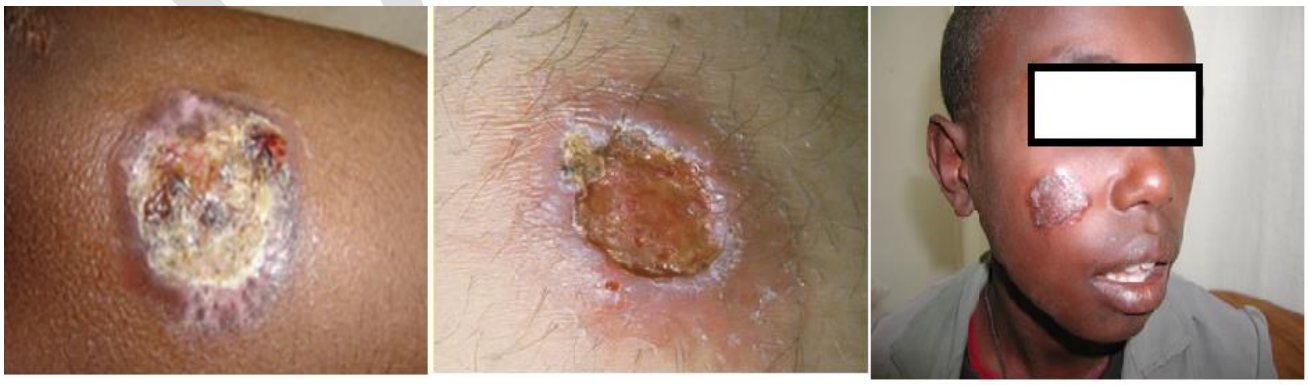
- ❑ Cutaneous leishmaniasis (CL)
- ❑ Mucocutaneous leishmaniasis (MCL)
- ❑ Visceral leishmaniasis(VL)

- Cutaneous leishmaniasis can be further subdivided in to

- ❑ Localized CL (LCL)
- ❑ Diffuse CL (DCL)
- ❑ Leishmaniasis recidivans (LR) and
- ❑ Post Kala-Azar Dermal Leishmaniasis (PKDL)

LOCALIZED CL

- Localized CL initially start as a small red papule, over several weeks, papules increase in size and it becomes nodule or plaque with central crust formation or it finally forms an ulcer with exudative discharge. Lesions usually appear on exposed areas of the skin, especially the face and extremities. Lesions occur few weeks to few months after the sand fly bite.



A **B** **C**

Figure 17.2 LCL: A. Crusted erytmatous plaque lesion on the arm B.Well demarcated ulcer with indurated base C. indurated erythematous plaque lesion on the right cheek.

Diffuse Cutaneous Leishmaniasis (DCL)

DCL is caused by L.aethiopica & L.brazilinesis in the old and new world respectively, it is found in 20% of leishmaniasis pts in Ethiopia and Sudan. Clinically a single nodule spreads locally then by metastasis becomes wide spread with non-ulcerating nodules over the face and trunk.It resembles Lepromatous leprosy.

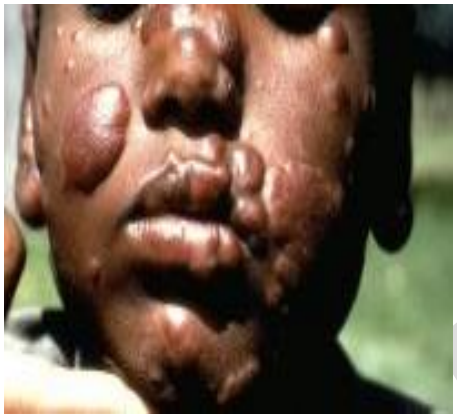


Figure 17.3 DCL : multiple nodules having widespread body involvment

MUCOCUTANEOUS LEISHMANIASIS (MCL)

MCL is involvement of both skin & mucus membrane of the upper respiratory tract. It is causedby L.brazelinesis &L.aethiopica,

- Sometimes untreated cutaneous leishmaniasis may lead to mucosal involvement
- A small red papule develops at the site of a sandfly bite
- Graduallyenlarges,ulcerates and the infections extends to the mucus of the mouth,nose,pharynx(cartillages of the upper respiratory tract)
- Oedema &inflamations occur →destruction of the cartilagenous structures(nasal septum,floor of the mouth)→to marked disfigurement.

Figure 17.4 Mucocutaneous Leishmaniasis: indurated crusted plaque lesion on the upper lip

VISCERAL LEISHMANIASIS (VL)

VL Mainly affects the reticulo-endothelial systems (spleen, BM, liver and lymphnodes). Patients will have splenomegally,pancytopenia, anaemia, fever and wasting. It is a Common opportunistic infection in HIV. It is Caused by L.DONOVANI,L.CHAGASI&L.INFANTUM.Diagnosissmears,cultures from BM, biopsy, spleen aspirates and serology tests are important. It is Caused by L.DONOVANI,L.CHAGASI &L.INFANTUM.The disease is present in china, India, Middle East, East Africa and S.America.

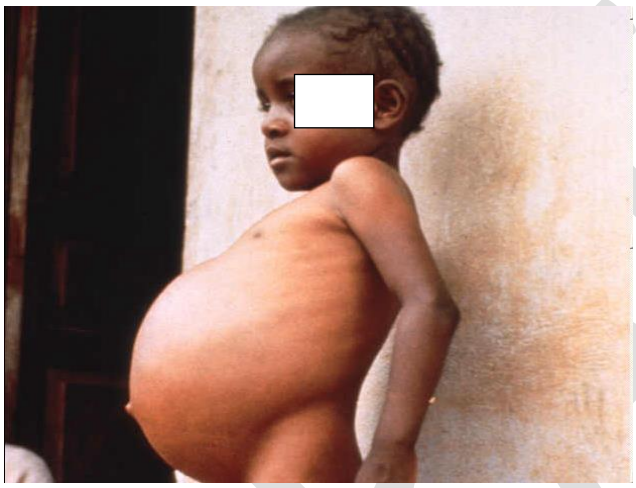


Figure 17.5 Visceral Leishmaniasis: Splenomegaly ,wasting of exterimities and anemia

PKDL

Lesions usually appear with in a year after a course of therapy, consists of macular, papular, nodular lesions on the face,trunk and extremities. PKDL has been reported to develop in 20% of Indian & in more than 50% of patients in the Sudan patients who are treated for VL.

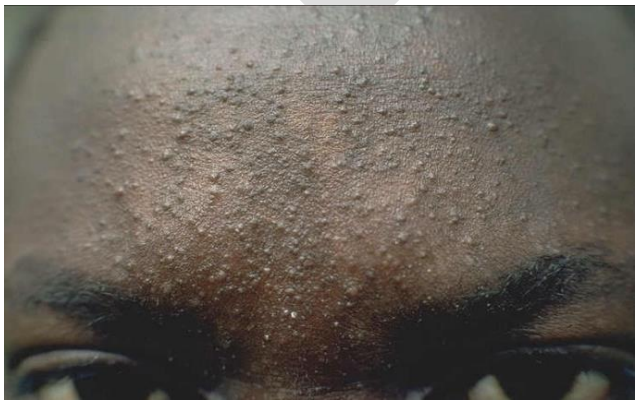


Figure 17.6 PKDL: multiple papules ,macules on the face

LABORATORY

Slit skin smear - take samples from the edge of the lesion and then do giemsa stain, Culture, Biopsy, PCR

TREATMENT

Most cases of cutaneous leishmaniasis resolve spontaneously without treatment, but it takes many years, Lesions often cause disfiguring scars if not treated.

Local therapies

- Cryotherapy
- Intralesional SSG treament: <1 mg/kg intralesional once weekly.
- heat therapy with 40-42°C for 12 hours.
- Topical paromomycin preparations 15% with 10% urea

SYSTEMIC TREATMENT

- Pentavalent antimony (sodium stibogluconate or meglumine antimonate).
- The dose is 20 mg/kg/d IV/IM for 20 to 28Days

Amphotericin B

- Cure rates near 100%, except in HIV infection
- **Dose** Amphotericin B: 1 mg/kg IV for 20 d
- liposomal amphotericin B has been found to be effective in treating visceral leishmaniasis

Pentamidine (Pentam-300, Pentacarinat, NebuPent)

- It is a second line treament.
- Inhibits growth of leishmania parasite.
- Cutaneous disease: 2 mg/kg IV (4 doses)
- Resistance common in India; high relapse rates reported.

Other treatment options

- Azole antifungal drugs: itraconazole, fluconazole, ketoconazole
- Zinc sulfate

**These drugs are not effective for leishmania aethiopica.

Prevention

Infection can be prevented by avoidance of sandfly bites, because there are currently no vaccines or drugs for preventing infection.Precaution measures include avoiding outdoor activities, especially from dusk to dawn when sandflies are the most active, wear long-sleeved clothes.

Summary

- Leishmaniasis is a complex of diseases caused by the protozoa *Leishmania* and transmitted by the bite of infected phlebotomine sandflies. Four major human diseases: (a) localized cutaneous leishmaniasis, (b) diffuse cutaneous leishmaniasis, (c) mucocutaneous leishmaniasis, and (d) visceral leishmaniasis.
- Which of the 4 diseases results depends mainly on the interaction between *Leishmania* species and the immunologic status of the host.
- Diagnosis is by organism isolation or serology, but species identification is only possible with isoenzyme analysis and new molecular techniques.
- Management ranges from observation to systemic therapy, primarily with antimonials,

Chapter 18: Cutaneous Manifestation of Tuberculosis

Chapter description: this chapter describe the different clinical features of the different types of cutaneous tuberculosis.

Primary objective: To be able to DIAGNOSE AND TREAT the different clinical types of cutaneous TB

Enabling Objectives

- Discuss the different types of CTB
- Define and describe the clinical presentation of CTB
- Discuss the clinical and laboratory diagnosis of CTB
- Discuss treatment of CTB

Outline

- Introduction
- Epidemiology
- Pathophysiology
- Clinicalfeature
- Treatment
- Summary

INTRODUCTION

Tuberculosis (TB) is a major public health problem worldwide and especially in developing countries. TB is the ninth leading cause of death worldwide and the leading cause from a single infectious agent, ranking above HIV/AIDS(World Health Organization, 2017).

Tuberculosis has been recognized as major public health problem in Ethiopia more than half a century ago, and control efforts began in the early 1960s. A recent report by WHO(World Health Organization, 2017) puts Ethiopia among the world's 20 high-burden TB countries with an estimated TB prevalence of 224/100,000 population.

Extrapulmonary TB (EPTB) is a significant health problem, as is pulmonary TB (PTB), in both developing and developed countries. The incidence of extrapulmonary TB in the Ethiopian population is higher than that observed in other high-burden countries, accounting for 33% of newly diagnosed tuberculosis cases in Ethiopia(World Health Organization, 2011).The same report indicated that extrapulmonary TB is also more common in HIV-coinfected patients.

Cutaneous tuberculosis (CTB) is one of the extra pulmonary TB's and its infection is due to M.tuberculosis, M.bovis or an attenuated strain of M.bovis (BCG) with a wide spectrum of clinical findings. CTB patients comprises only a small proportion (1–2%) of all cases of TB, nevertheless, in consideration of the high prevalence of TB in Ethiopia these numbers become significant .

Cutaneous TB incidence parallels that of pulmonary TB and developing countries still account for the majority of cases in the world. The emergence of resistant strains and the AIDS epidemic have led to an increase in all forms of TB.

HIV-positive people are approximately 20 times more likely than HIV-negative people to develop TB in countries with a generalized HIV epidemic, and between 26 and 37 times more likely to develop TB incountries where HIV prevalence is lower.

EPIDEMIOLOGY

Tuberculosis of the skin has a worldwide distribution.Once more prevalent in regions with a cold and humid climate, it now occurs mostly in the tropics.Cutaneous TB incidence parallels that of pulmonary TB and developing countries still account for the majority of cases in the world. The emergence of resistant strains and the AIDS epidemic have led to an increase in

all forms of TB. The two most frequent forms of skin tuberculosis are lupus vulgaris (LV) and scrofuloderma, In the tropics, LV is rare, whereas scrofuloderma and verrucous lesions predominate, LV is more than twice as common in women than in men, whereas tuberculosis verrucosa cutis is more often found in men. Generalized miliary tuberculosis is seen in infants and adults with severe immunosuppression or AIDS, as is primary inoculation tuberculosis.Scrofuloderma usually occurs in adolescents and the elderly, whereas LV mayaffect all age groups.

Recent explosion in the incidence of tuberculosis and hence resurgence of cutaneous TB globally is associated with different factors

1. Rapid pandemic spread of HIV
2. Emergence of resistant strains (MDR, XDR)
3. Rise in immunosuppressive therapy
4. Ease of migration people
5. Superimposed poverty and malnutrition.

Classification of Cutaneous Tuberculosis

	Host Immune Status	Clinical Disease
Exogenous infection	Naive	Primary inoculation tuberculosis
	Immune	Tuberculosis verrucosa cutis
Endogenous spread	High	Lupus vulgaris
		Scrofuloderma
	Low	Acute miliary tuberculosis
		Orificial tuberculosis
		Metastatic tuberculous abscess (tuberculous gumma)
Tuberculosis due to bacille Calmette-Guérin	Naive	Normal primary complex–like reaction
		Perforating regional adenitis
		Postvaccination lupus vulgaris
Tuberculids	Not clear	Tuberculids:
		Lichen scrofulosorum
		Papulonecrotic tuberculid
		Facultative tuberculids:
		Nodular vasculitis
		Erythema nodosum

Figure 18.1 Classification of Cutaneous Tuberculosis

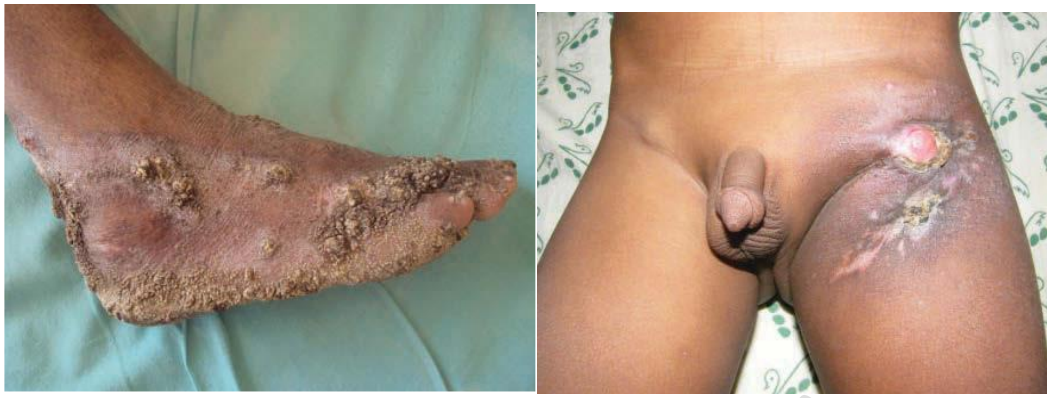


Figure 18.2 Cutanous Tuberclosis

ETIOLOGY

M. tuberculosis, M. bovis, and, under certain conditions, the attenuated BCG cause all forms of skin tuberculosis. These are found in Order- actinomycetales, Family- mycobacteriaceae, and Genus- mycobacteria. The genus Mycobacterium contains more than 80 species, most of which are harmless environmental saprophytes. In AIDS patients it is frequently caused by mycobacteria other than M.tuberculosis(MOTT).

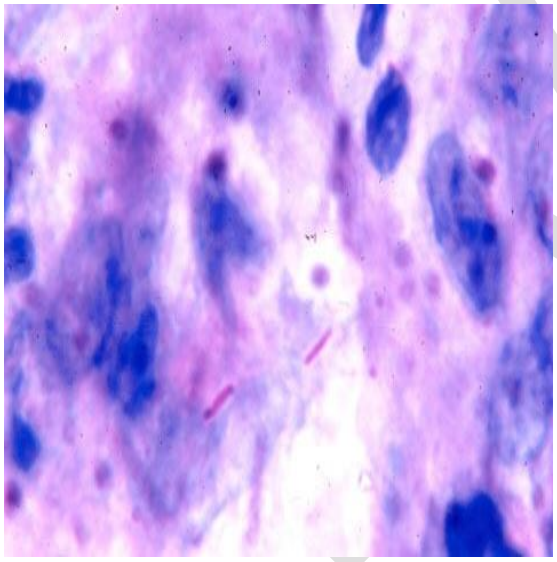


Figure 18.3 Mycobacterium Tuberclosis bacilli

Mycobacteriumare all curved rods , non-motile, non- spore forming, intracellular aerobe, 0.5 ×0.3µm in Ǿ , an acid- and alcohol-fast bacillus, and has a waxy coating with a high lipid content that makes it resistant to most stains and lysosomal attack.

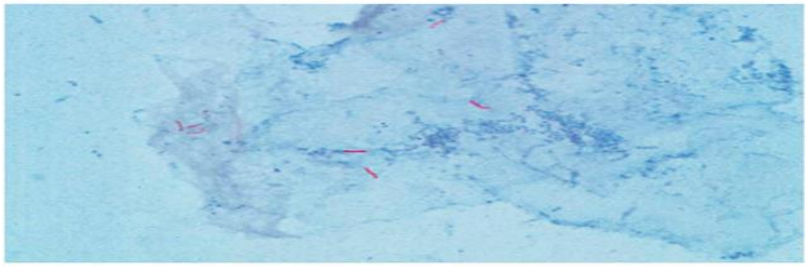


Figure 18.4 Mycobacterium Bacili: rod shaped bacilli

The cell wall has a complex structure, with peptidoglycan, arabinogalactan, mycolic acid and lipoarabinomannan.

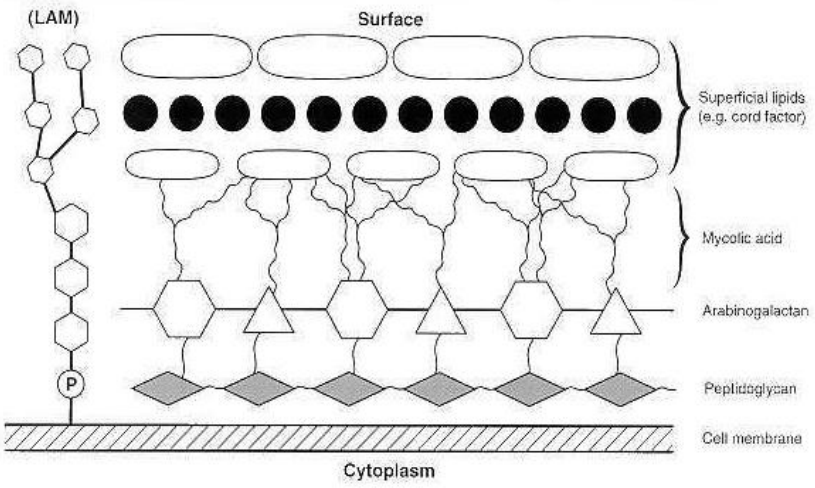


Figure18.5 The cell wall structure of mycobacterium tuberclosis

Route of INFECTION

1. **Inoculation from an exogenous source**
    - Primary inoculation tuberculosis
    - Tuberculosis verrucosa Cutis
    - Lupus vulgaris occasionally
2. **Endogenous cutaneous spread contiguously or by autoinoculation**
    - Scrofuloderma
    - Tuberculosis cutis oroficialis
    - Lupus vulgaris
3. **Hematogenous spread to the skin**
    - Lupus vulgaris
    - Acute miliary tuberculosis
    - Tuberculous gumma

4- **Tuberculids**:- is cutaneous immune reactions to M.tuberculosis

- Erythema induratum of Bazin
- Papulonecrotictuberculid
- Lichen scrofulosorum

Cutaneous tuberculosis		
Multibacillary forms	• By direct inoculation	Primary inoculation TB
	• By continuity	Scrofuloderma
		Tuberculosis Perionificialis
	• By hematogenous spreading	Acute Miliary Tuberculosis
		Gumma (cold abscess)
Paucibacillary forms	• By direct inoculation (re-exposure)	Tuberculosis Verrucosa Cutis
		Lupus Vulgaris (occasionally)
	• By hematogenous spreading	Lupus Vulgaris

Figure 18.6 Cutaneous tuberculosis : route of transmission

CLINICAL FEATURE

1- Exogenously Acquired Disease

A- Primary inoculation tuberculosis (PITB)

Synonyms:Tuberculous chancre, Tuberculous primary complex

Primary inoculation tuberculosis**i**s the result of the inoculation of M. tuberculosis into the skin of an individual without natural or artificially acquired immunity to this organism. It is caused by M.tuberculosis, and M.bovisin HIV infected individuals.

Epidemiology

Common in Asia, accounts for 1.5% of cutaneous TB cases, it is common on the face, hands and lower extremities and children are most often affected.

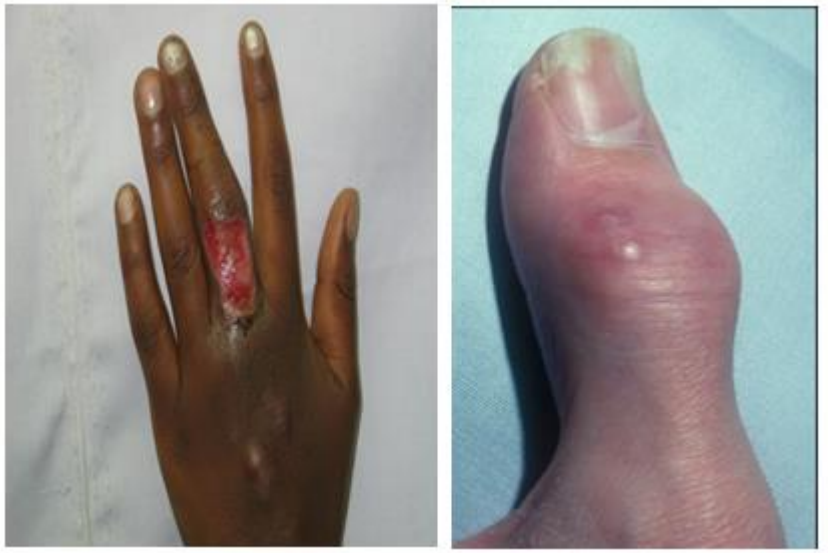
Pathogenesis

Bacilli enters the skin trough minor injuries or abrasions or following ingestion of unpasteurized milk, or mucosal trauma or tooth extraction or after BCG vaccination in

tuberculin negatives.Initial lesion is multibacillary but later become paucibacillary as immunity develops.

Clinical feature

Primary inoculation tuberculosis occurs 2 to 4 weeks following inoculation, with reddish-brown papulonodular lesion which rapidly enlarges and erodes. A painless, well demarcated ulceration, with an indurated granular base and edges which may be red or blueseen and regional lymphadenopathy often develops after 4 to 8 weeks. Sometimes acute course; with fever, pain and swelling can be seen.



A B

Figure 18.7 CTb A: well demaracated ulcer with indurated base Figure 18.7 B: reedish nodular sweeling on the thumb figure

Course--If untreated the chancre will heal slowly over many months (12 months) , or lupus vulgaris may develop at healed ulcer or hematogenous spread (Acute miliary tuberculosis) and erythema nodosum developed in 10% of Primary inoculation tuberculosis patients. The enlarged lymph nodes usually subside slowly, often calcifying; less often, cold abscesses and sinuses develop.

Diagnosis

Clinically any painless, non-healing ulcer or lesion with localized lymphadenopathy, especially in a child is more likely to be primary inoculation tuberculosis, AFB, Culture or

skin biopsy can be used for diagnosis. PPD initially negative, but converts to positive later in the course of the disease.

In the differential diagnosis of primary inoculation tuberculosis, we should consider Syphilis, Sporotrichosis, Actinomycosis, Bartonellosis, Tularaemia, and other mycobacterioses.

B-Tuberculosis verrucosa cutis

Synonym: Warty tuberculosis

Tuberculosis verrucosa cutis is an indolent, warty, plaque-like form of tuberculosis occurring as a result of exogenous re-infection of organisms into the skin of a previously sensitized patients who usually has a moderate or high degree of immunity. A patient who is BCG-sensitized is not protected. It is paucibacillary type.The tuberculin skin test is usually positive.

Epidemiology

Common sites are hands, feet and buttocks but in children (knees and buttocks) and young adults (dorsa of fingers and hands) affected.

Pathogenesis - Inoculation occurs at sites of minor wounds by **3 ways**

1. By accidental super infection from extraneous sources (‘anatomist’s warts’)
2. By autoinoculation with sputum in a patient with active Tb.
3. By sitting on the ground or walking barefoot where the organism is present (children and young adults)

Clinical features:

Tuberculosis verrucosa cutis is usually solitary but multiple lesions may occur, starts as a small, symptomless, indurated, slow-growing red-brown warty papule with a slight inflammatory areola. It enlarges to form a verrucous plaque with clefts and fissures of its surface.

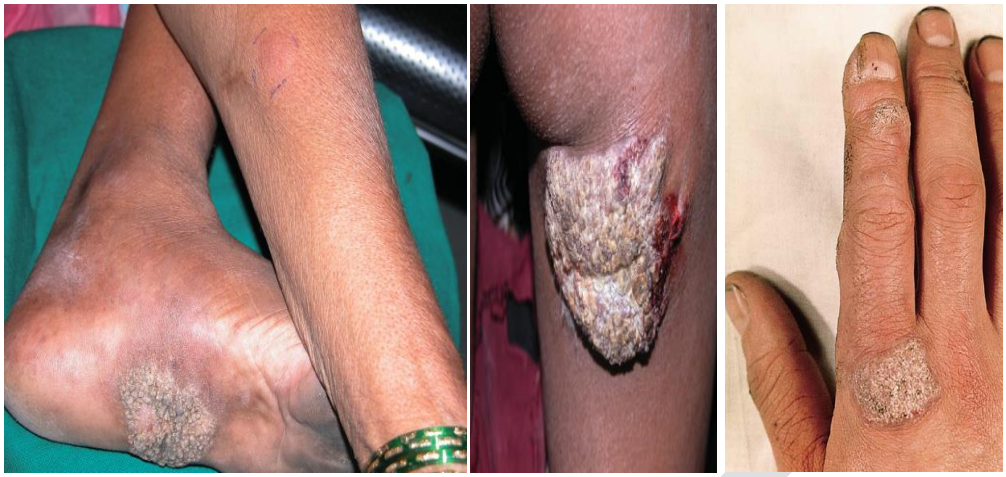
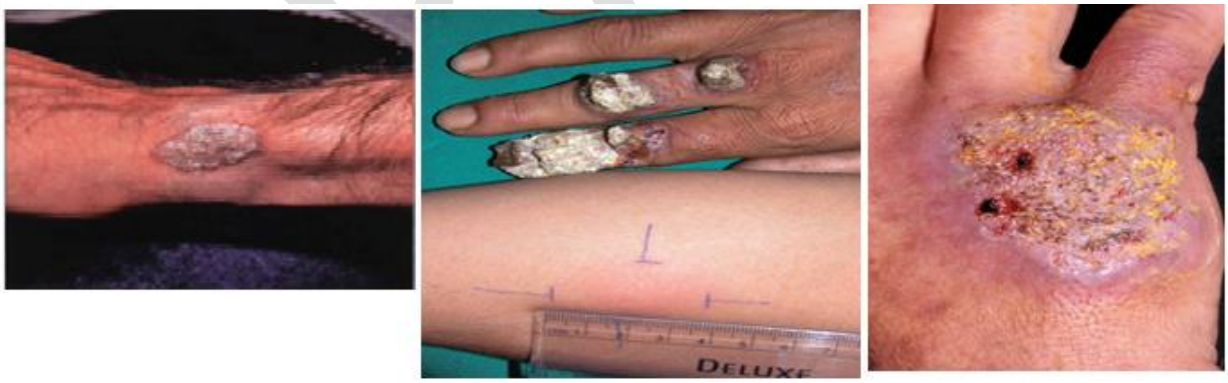


Figure 18.8 : Tuberclosis Verrucosa Cutis

The periphery is firm with finger-like projections, but the center is soft, and may express pus from its fissures, the center may involute, leaving a white atrophic scar, or the whole lesion may form a massive, infiltrated papillomatous excrescence.

The lesions may resemble lupus vulgaris, but the sites are different, the appearance may be psoriasiform or keloidal., occasionally, exudative and crusted features are predominant, but Very rarely, sporotrichoid spread can occure.

Deeply destructive papillomatous and sclerotic forms may cause deformity of the limbs.Normally, there is adenopathy only if the lesion becomes secondarily infected.



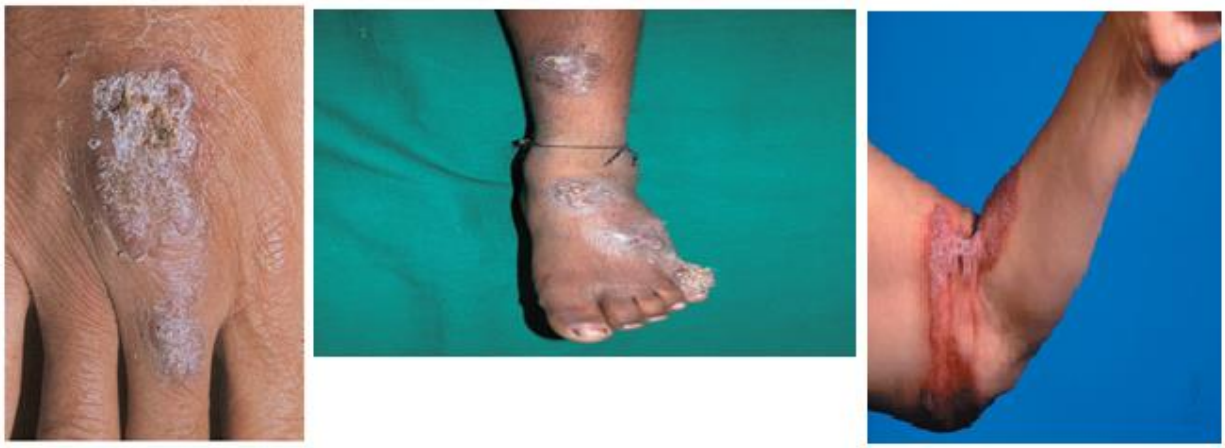


Figure 18.9 Tuberclosis Verrucosa Cutis involving the hand ,feet ,lower leg and arm

Course-- If untreated tuberculous verrucosa cutis remain inactive for years, sometimes spontaneous involution with an atrophic scar or Acute miliary tuberculosis can happen.

DDx includes Verruca vulgaris, syphilis, pyoderma, Blastomycosis, chromoblastomycosis, Actinomycosis, Sporotrichosis, Leishmaniasis

2-Endogenous Infection

A- Lupus vulgaris (LV)

Synonym- Tuberculosis luposa

LV is a chronic, progressive, post-primary, paucibacillary form of cutaneous tuberculosis, occurring in a person with a moderate or high degree of immunity.High tuberculin skin sensitivity(PPD +ve).

Epidemiology

LV is the most common form in India, South Africa and Pakistan and is the second most common next to scrofuloderma in UK and Ethiopia.All age groups affected equally.F:M 2-3:1

Pathogenesis

It originates from an endogenous focus of tuberculosis, typically in a bone, joint or lymph node, in which spread is through hematogenous, Lymphatic, or Contiguous extension. Less commonly, it is acquired exogenously following primary inoculation tuberculosis or BCG vaccination. Approximately 50% of cases of lupus vulgaris have evidence of tuberculosis elsewhere, sometimes the underlying focus is not clinically apparent (reactivation of a latent cutaneous focus).

Clinical features:

LV commonly appears as a solitary lesion, from distant initial focus but also it can arise at the site of a primary inoculation TB, in the scar of scrofuloderma or at the site of a BCG vaccination. Multiple lesions may appear simultaneously in different regions due to; transient impairment of immunity. In 90% of LV patients, the head and neck particularly the nose affects, arms and legs next. When mucous membranes are involved the lesions become papillomatous or ulcerative.

Initial lesion of LV is a small, reddish-brown, flat plaque of soft consistency, On diascopy, the diagnostic applejelly nodules may be demonstrated.Gradually the LV lesions become elevated, infiltrated and brown and grows by slow peripheral extension to become discoid inshape withareas of atrophy.

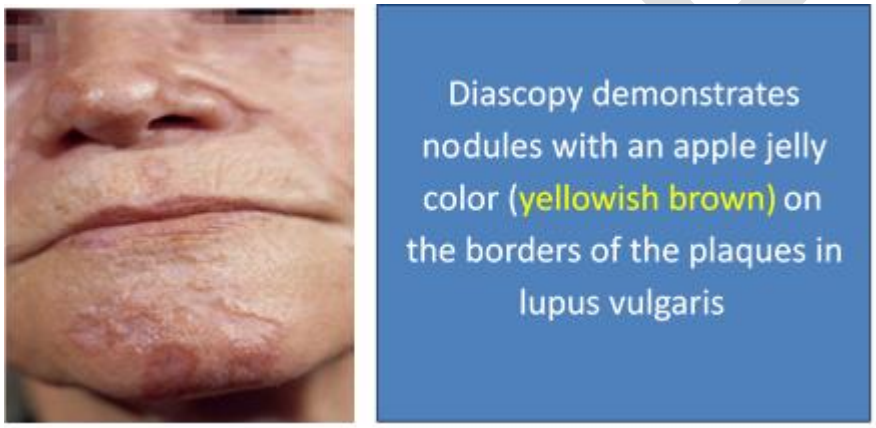


Figure 18.10 Lupus Vulgaris

There are 5 clinical forms of LV (Depending on local tissue response to infection) - Plaque form, Ulcerative and mutilating form, Vegetating form, Tumour-like form and Papular and nodular form

- Plaque form of LV presents with flat plaque with irregular edge, smooth surface or covered with psoriasiform scale, large areas show irregular scarring with islands of active lupus tissue. the edge usually becomes thickened and hyperkeratotic.

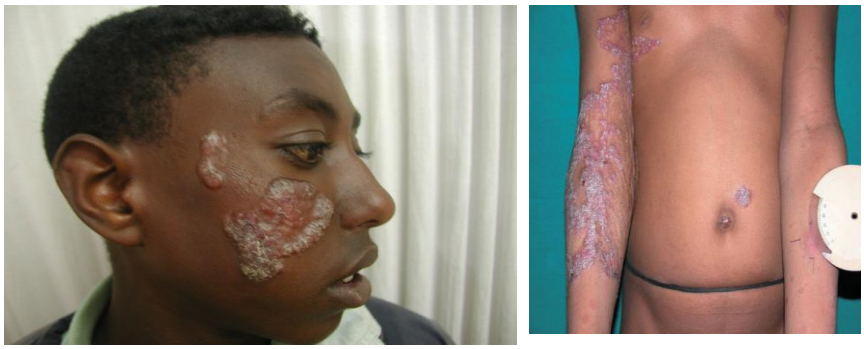


Figure 18.11 Plaque form lupus vulgaris

2- Ulcerative and mutilating form of LV – in this form **s**carring and ulceration predominate, crusts form over necrotic areas, with slow scar formation. Deep tissues and cartilage are invaded and deformities & contractures develop.

3- Vegetating form of LV will have marked infiltration, ulceration and necrosis with minimal scarring. Mucous membranes are invaded and cartilageare slowly destroyed.Nasal and auricular cartilage involvement leads to extensive destruction and disfigurement.

4- Tumour-like formorthehypertrophic form presents either as soft tumour-like nodules or as epithelial hyperplasia with the production of hyperkeratoticmasses. In the 'myxomatous' form: huge soft tumours occur predominantly on the ear lobes, which become grossly enlarged.

5- Papular and nodular formpresents with multiple lesions which occur simultaneously as in disseminated lupus, occurs after temporary immunosuppression as post-exanthematousfollowing measles.

Course--LV is a long-term disorder Without therapy, it progresses to functional impairment and disfigurement.40% of patients had associated TB lymphadenitis, 10-20% had active pulmonary tuberculosis or tuberculosis of bones and joints. The risk of pulmonary tuberculosis in lupus vulgaris patients is 4-10% greater than that of the general population.

Complicationsinclude **s**carring, contractures and tissue destruction. Active lupus reappears in scar tissue, SCC & less commonlyBCC or sarcomas mayoccurin up to 8%.

Diagnosis

Histologically classic tubercles are the hallmark of lupus vulgaris and Caseation within the tubercles is seen in about half of cases and is rarely marked.AFB are found in 10%, PCR may

identify mycobacterial DNA, Cultures of the skin lesions grow mycobacterium in about half of cases.

DDx of LV includes **t**ertiary syphilis, Discoid lupus erythematosus, Leprosy, Sarcoidosis, Lupoid leishmaniasis, Deep mycotic infections

B- Scrofuloderma

Synonym: Tuberculosis colliquativa cutis,

Scrofulodermaresults from breakdown and spread of a skin overlying a contiguous tuberculosis foci, usually lymph gland, an infected bone or joint, lacrimal gland or tuberculous epididymitis.The face and neck are most frequently affected. Prevalence is higher in children, young adults and elderly.

Clinical features:

Scrofulodermapresent with firm subcutaneous nodule, usually welldefined, freely movable, and it is asymptomatic, later lesion enlarges, softens, liquefaction with perforation occurs causingulcerswith reddish granulation at the base and **sinuses.**It heals with typical cordlike scarring /puckered scarring.

Course-- Spontaneous healing with cord-like scars, lymphoedema and elephantiasis due to scarring and fibrosis of LN, Lupus vulgaris may occur at or near the site of scorfuloderma.

Diagnosis

Scrofulodermadiagnosis is not difficult, if there is underlying TB lymphadenitis, bone or joint disease, Culture can confirm the diagnosis, FNAC and tuberculin skin test can be done.

DDx of Scrofuloderma includes M. avium-intracellulare lymphadenitis, M. scrofulaceum infection, Syphilitic gummas, Sporotrichosis, Actinomycosis, Hidradenitis suppurativa and Severe forms of acne conglobate could be considered.

C- Orificial Tuberculosis

Synonyms: Tuberculosis cutis orificialis, Acute tuberculous ulcer

Orificial Tuberculosisis tuberculosis of the mucosa and the skin of the orifices that is caused by autoinoculation of mycobacteria from progression of advanced tuberculosis of internal organ.Most of affected patients are males, it is now very rare, and it is a multibacillary form.

Pathogenesis

Patients with Orificial Tuberculosis usually are severely ill adult with advanced visceral tuberculosis, from which large numbers of mycobacteria are shed and inoculated into the mucous membranes of orifices, local trauma determines the site of the lesions.

Clinical features

Orificial Tuberculosisis most commonly in the mouth, with associated granulomatous enlargement of the lips. Other, locations adjacent to an orifice draining an active tuberculous infection, around the anus (in patients with intestinal TB), vulvar ulcer occurs (in Genito Urinary TB).

Orificial Tuberculosisstarts with small reddish nodule appears on the mucosa which rapidly break down to shallow ulcers, which is extremely painful, seldom exceeds 2 cm, show no tendency to heal spontaneously.

Course: Orifical TB is a symptom of advanced internal disease, usually has fatal outcome.

Diagnosis

Pain is the cardinal feature of orificial tuberculosis, there is usually evidence of disease elsewhere (79% associated PTB), Tuberculin skin test, Bacteriologic tests, PCR confirms the diagnosis.

DDx of Orifical TB includes Syphilitic lesions, Aphtous ulcers, and Squamous cell carcinoma.

D- Acute Disseminated Miliary Tuberculosis ofskin

Synonyms: Tuberculosis cutis miliaris Disseminata

Acute Disseminated Miliary Tuberculosis of skin is due to haematogenous dissemination of mycobacteria into the skin from a focus of infection usually the lung and meninges.It occurs in association with generalized miliary tuberculosis, is rare and usually affects young children or immunosuppressed patients.

Clinical features

Generally patients with acute disseminated miliary tuberculosis of skin have other signs of severe miliary tuberculosis, and profuse crops of minute bluish papules, vesicles, pustules or

hemorrhagic lesions.The vesicles become necrotic to form ulcers and erythematous nodules, lesions are disseminated throughout the body particularly the trunk.

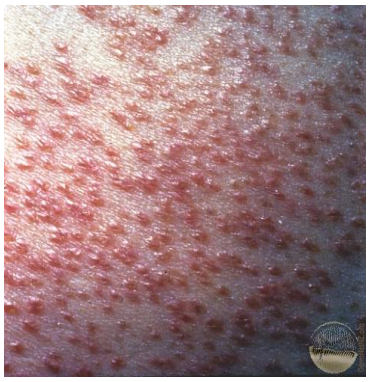


Figure 18.12 Dissiminated miliary tuberculosis

Course of Acute Disseminated Miliary Tuberculosis of skin is poor.

Diagnosis

The development of an unusual exanthematic rash in an ill person with known tuberculosis or tuberculous contacts suggests the diagnosis of acute disseminated miliary tuberculosis of skin, biopsy confirms the diagnosis.

E- Tuberculous Gumma

Synonyms: Metastatic tuberculous abscess

Tuberculous gumma is the result of haematogenous dissemination from a primary focus during periods of lowered resistance.It is seen particularly in malnourished children, inter current illness or immunosuppressed patients.

Clinical features

Tuberculous gumma presents either as a firm subcutaneous nodule or as a fluctuant, non tender abscess, the overlying skin break down to form an undermined ulcer with sinuses, lesions may be single or multiple, Extremities are more often affected than the trunk.Lesions may cause carpal tunnel syndrome.

Diagnosis

- The diagnosis of tuberculous gumma is confirmed by culture.

DDx of Tuberculous gumma includes panniculitis, Invasive fungal infections, Hidradenitis suppurativa, and Tertiary syphilis

The Tuberculids

Tuberculids:- is a hypersensitivity reaction induced from toxins of tubercle bacilli after it spreads hematogenously from a focus of infection.Usually occur in a patient with strong immunity to mycobacteria.They are found in the paucibacillary pole.

The main features of tuberculids are:A positive tuberculin test, Evidence of manifest or past tuberculosis , Response to antituberculous therapy, PCR has detected mycobacterial DNA in (25-50%) EIB/papulonecrotictuberculid. When the incidence of tuberculosis declined, so too did the incidence of tuberculids.

- Two groups:
    1. The true tuberculids
    2. The facultative tuberculids

Tuberculids

TERMINOLOGY/RELATIONSHIP TO TUBERCULOSIS	ENTITIES
Tuberculids: conditions in which *Mycobacterium tuberculosis/bovis* appears to play a significant role	Lichen scrofulosorum Papulonecrotic tuberculid
Facultative tuberculids: conditions in which *M. tuberculosis/bovis* may be one of several pathogenic factors	Nodular vasculitis/erythema induratum of Bazin Erythema nodosum
Non-tuberculids (conditions formerly designated as tuberculids; there is no relationship to tuberculosis)	Lupus miliaris disseminatus faciei Rosacea-like tuberculid Lichenoid tuberculid

Figure 18.13 Clinical types of tuberculids

- True tuberculids can be grouped as follows:
    1. Micropapular: Lichen Scrofulosorum
    2. Papular: Papulonecrotictuberculide
    3. Nodular: Erythema induratum of Bazin, nodular tuberculid.

1- Lichen scrofulosorum

Synonyms: Tuberculosis cutis lichenoides

Lichen Scrofulosorum is a lichenoid eruption of minute papules occurring predominantly in children and adolescents with tuberculosis.It occurs as a result of an immune response to haematological spread of M.tuberculosis. Patients show a strong positive reaction to PPD.

Clinical features

Lichen Scrofulosorum is symptomless, follicular or perifollicular closely grouped lichenoid papules (0.5–3.0 mm)in an annular arrangement or plaques. The papules may have an adherent crust or small pustule. The lesions are usually skin-coloured, but may be yellowish or reddish-brown.They are mainly found on the abdomen, chest and back, and proximal limbs.

Course: Lichen Scrofulosorum persist for months and eventually spontaneous involution, With specific antituberculous treatment, the lesions usually clear within 4–8 weeks without scarring.

Diagnosis

High index of suspicion is important. As most patients will have a focus of tuberculosiselsewhere, they should be extensively screened.

DDx of Lichen Scrofulosorum includes Lichen nitidus, Keratosis pilaris, papular or lichenoid sarcoidosis, secondary syphilis and Drug eruptions

2- Papulonecrotic tuberculid

Papulonecrotic tuberculid is an eruption of necrotizing papules, mainly affecting the extensor aspects of the extremities, associated focus of TB in 38-75% of cases. Young adults are predominantly affected. A transition to, and coexistence with, lupus vulgaris has been described, and also an association with erythema induratum.M. tuberculosis DNA has been demonstrated in PCR.

Clinical features

Papulonecrotic tuberculid presents with recurring symmetrical crops of symptomless, hard, dusky-red papules, central ulceration and necrosis results in umblicated appearance.Heals with atrophic, varioliform scars in few weeks but new crops may continue over months or years and can result chronic open ulcer, more on the trunk and extremities.

DDx of Papulonecrotic tuberculid are pityriasis lichenoides, leukocytoclastic vasculitis and Nodular prurigo.

3- Erythema Induratum of Bazin/Nodular vasculitis

Erythema Induratum of Bazinappear with recurrent nodular and ulcerative lesions, occur secondary to tuberculosis elsewhere in the body, usually localized to the posterior aspect of the lower legs, but can affect the upper limbs, thighs, buttocks and trunk.Common in middle-aged women.

Pathogenesis

- Past or active foci of tuberculosis are usually present
- PPD-specific T cells capable of producing IFN-γ may be involved in the formation of erythema induratum as a type of delayed hypersensitivity response to mycobacterial antigens at the site of skin lesions.
- Mycobacterial DNA can be found in up to 77%

Clinical features

Erythema Induratum of Bazin starts with indolent eruption of ill-defined nodules, then it ulcerate, and the ulcers are irregular and shallow, with a bluish edge, precipitated by cold weather.

Course: Resolution may be slow, even with adequate therapy, if there are associated erythrocyanotic features.

Diagnosis of cutaneous TB

- History, Clinical, and Laboratory
  Laboratory studies include AFB microscopy, Culture, PCR, and skin biopsy
- Other investigations used for the diagnosis of initial focus of infection are routinely done (CBC,CXR,ESR….)

Treatment of cutaneous TB

General measures include careful search for underlying disease, improving general health & nutrition, tracing sources & limit the spread of TB.

Drug therapy: the aim is to cure, prevent relapse, and avoid resistant strains

For all forms of cutaneous tuberculosis, multidrug chemotherapy is recommended. A clinical response expected within 4-6weeks. Lupus vulgaris showing a faster response than scrofuloderma.

Agent	Class of compound	Spectrum of activity
First-line agents		
Rifampin	Antibiotic	Broad
Isoniazid	Synthetic	Tubercle bacilli
Pyrazinamide	Synthetic	Tubercle bacilli
Ethambutol	Synthetic	Tubercle bacilli
Rifapentine	Antibiotic	Broad
Rifabutin	Antibiotic	Broad
Second-line agents		
Cycloserine	Synthetic	Broad
Ethionamide, prothionamide	Synthetic	Tubercle bacilli
Thiacetazone	Synthetic	Tubercle bacilli
para-Aminosalicylic acid	Synthetic	Tubercle bacilli
Capreomycin, viomycin	Antibiotic	Tubercle bacilli
Streptomycin, amikacin, kanamycin	Antibiotic	Broad
Levofloxacin, gatifloxacin, moxifloxacin	Antibiotic	Broad

Table 18.1 Treatment of cutaneous tuberculosis

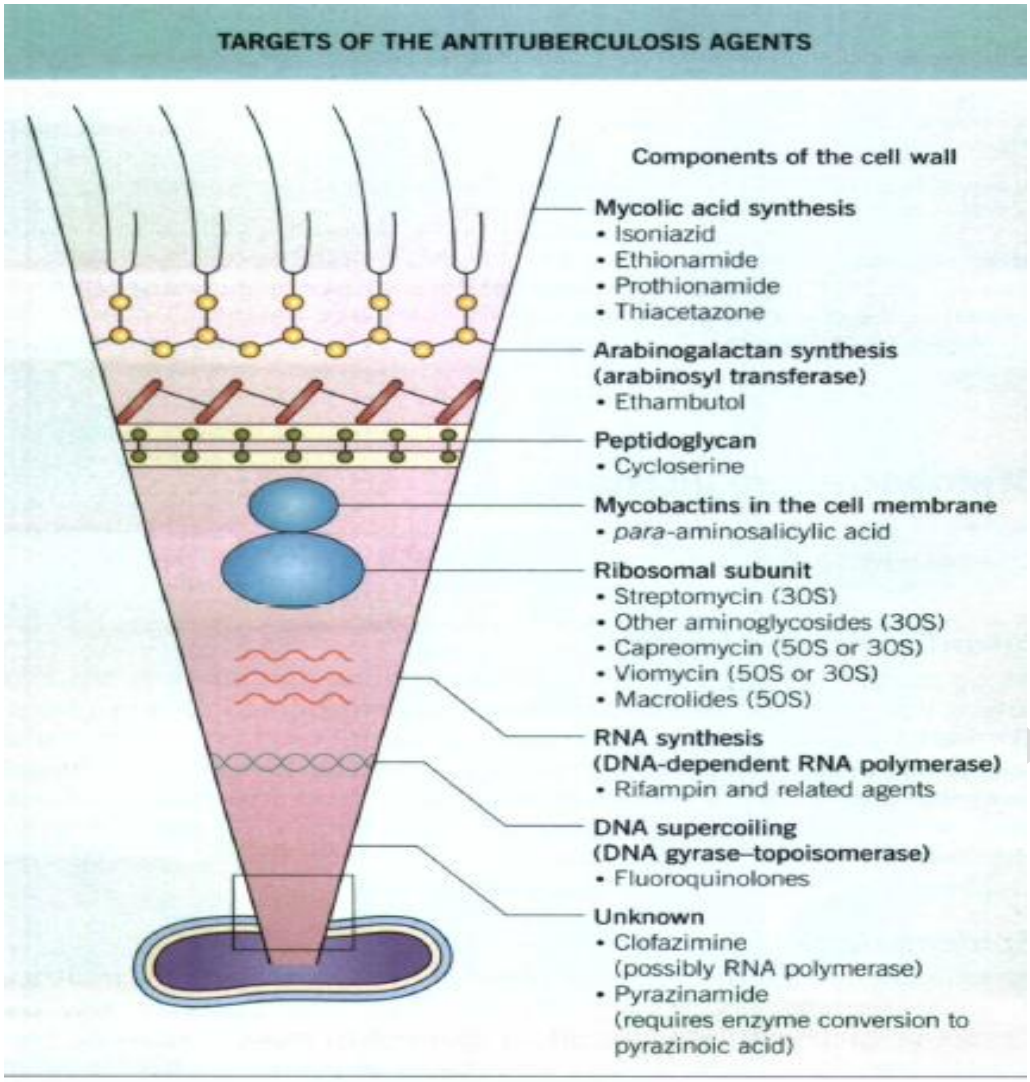


Figure 18.15 Targets of antituberclousis agents

Surgical intervention is quite helpful in scrofuloderma - reduces morbidity and shortens the required length of chemotherapy.

LV with mutilation can be corrected with plastic surgery

Cryotherapy or electrocautery may be used to destroy lupoid nodules that are within scarred areas.

Prevention

- BCG vaccination
- Treatment of latent infection
- Limiting nosocomial infection

Summary

- Infection with *Mycobacterium tuberculosis* or other very closely related strains, as well as the inflammatory reaction of the host define, the disease (tuberculosis [TB]), One-third of the world's population is infected with TB, TB is the main cause of death of patients infected with HIV.
- TB usually affects the lung, but virtually all other organ systems may be involved.
- TB of the skin is a relatively rare manifestation with a wide spectrum of clinical findings depending on the source of infection and the immune status of the host.
- Diagnosis is based on clinical manifestations, histopathologic analysis, demonstration of the relevant mycobacteria in tissue or in culture and host reaction to *M. tuberculosis* antigen.
- Treatment is with standard multidrug regimens; cases of multidrug-resistant TB or extensively multidrug-resistant TB require special attention.
- Course and prognosis depend on the immune status of the host
- Treatment is curative except for patients with a severely compromised immune system.

Chapter 19: Benign and Malignant Skin Conditions

Chapter description:this chapter describes the most common skin cancers (basal cell carcinoma,squamous cell carcinoma and melanoma).

Chapter objective:

- Create awareness and enhance protective measures which decreases further life deterioration.
- Early diagnosis and management of the case

Outline:

- Introduction
- Epidmology
- Pathogensis
- Clinical feature
- Management

Introduction

- Any cell within the skin can proliferate to form a benign lump or skin tumour. In general, a proliferation of cells can lead to hyperplasia (benign overgrowth) or dysplasia (malignancy/cancer).
- Benign lesions, which by definition are harmless,but may cause symptoms such as pain, itching and bleeding or may be a cosmetic nuisance.
- Benign cutaneous lesions are almost universally present on the skin of adults and are therefore so common that most are ignored and are never brought to medical attention.

Epidmology

- Skin cancers are among the most common malignancies and Basal cell carcinoma (BCC) is the most common cancer in humans.

Pathogenesis

- Skin cancers occur when there is an uncontrolled proliferation of undifferentiated dysplastic cells.
- In premalignant lesions, there is abnormal growth of cells but not complete dysplastic change this occurs in actinic keratoses and Bowen's disease
- The carcinogenic effect of the sun is an important cause of skin cancer and is a major factor in the high incidence of melanoma.
- Squamous cell carcinoma (SCC) develops in previously normal skin or pre-existing lesions such as actinic keratoses or Bowen's disease.
- Basal cell carcinoma (BCC) occurs when clumps of dysplastic basal cells form nodules that expand and break down to form an ulcer with a rolled edge.
- Melanoma is a malignant tumour of melanocytes. A major risk factor is high intensity UV exposure, particularly in childhood.
- Pigmented naevi or moles are usually benign but the signs of malignant change must be recognized
- Melanoma occurs in various forms; superficial spreading melanoma is the most common. Other types include lentigo maligna melanoma, nodular melanoma, acral melanoma and amelanotic melanoma

Clinical Classification

I. Benign

- Dermatosis papulosa nigra (DPN)
- Seborrhoeic keratosis
- Skin tag
- Haemangioma
- Pyogenic granuloma
- Dermatofibroma
- Neurofibroma

- Keloid
- Lipoma

II. **Malignant**

- basal cell carcinoma
- Squamous cell carcinoma
- Malignant melanoma
- Kaposi's sarcoma
- Lymphoma

Seborrhoeic keratosis

- This is a common benign epidermal tumour, unrelated to sebaceous glands.
- Usually unexplained *Cause*
- Occasionally follow an inflammatory dermatosis
- Usually arise after the age of 50 years,
- A distinctive 'stuck-on' appearance;
- May be flat, raised or pedunculated
- Colour varies from yellow to dark brown; and surface may have greasy scaling and scattered keratin plugs

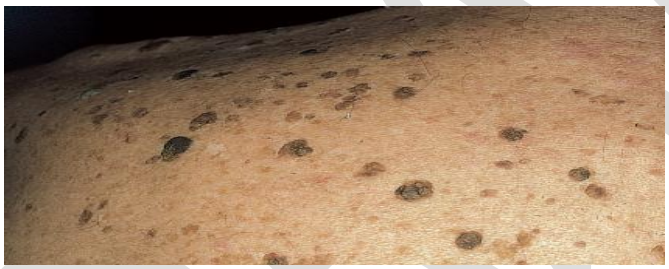


Figure 19.1 Seborrhoeic keratosis

Treatment

- Can safely be left alone
- Be removed with a curette under local anaesthetic
- Cryotherapy

Dermatosis papulosa nigra

- Multiple small pigmented papules seen on the face of adults with black skin
- Typically the lesions occur on the cheeks, forehead, neck and chest.
- No treatment is needed
- If cosmetically unacceptable light electrodesiccation and gentle curettage can effectively remove lesions.

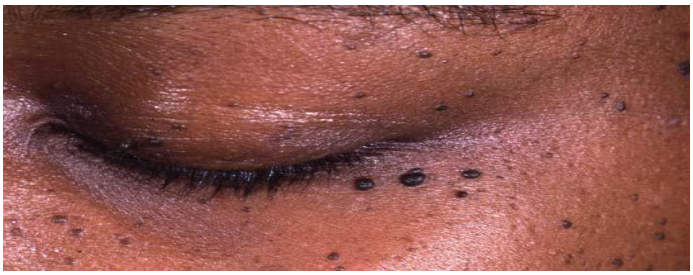


Figure 19.2 Dermatits Papulosa Nigra

Keloid:

- Is a firm, irregularly shaped, fibrous, hyperpigmented,pink or red excrescence.
- The growth usually arises as the result of a cut, laceration, or burn—or less often an acnepustule on the chest or upper back—and spreads beyond the limits of the original injury, often sending out clawlike (cheloid) prolongations.
- The overlying epidermis is smooth, glossy, and thinned from pressure.
- The early, growing lesion is red and tender and has the consistency of rubber,it is often surrounded by an erythematous halo, and the keloid may be telangiectatic ,lesions may be tender, painful, and pruritic and may rarely ulcerate or develop draining sinus tracts.
- Keloids are often multiple. They may be as tiny as pinhead or as large as an orange.
- The surface may be larger than the base, so that the edges are overhanging.
- The most common location is the sternal region, but keloids also occur frequently on the neck, ears, extremities, or trunk and rarely on the face,palms, or soles.
- Keloids are much more common and grow to larger dimensions in black persons than others.
- Trauma is usually the immediate causative factor, but this induces keloids only in those with a predisposition for their development.
- They may be distinguished from hypertrophic scars by their clawlike projections, the extension of the keloid beyond the confines of the original injury Frequently, spontaneous improvement of the hypertrophic scar occurs over months, but not in the keloid.
- Initial treatment is usually by means of intralesional injection of triamcinolone suspension injected into various parts of the lesion using a 30-gauge needle on a 1-mL tuberculin Luer syringe; 40 mg/mL is generally used, as the lesion softens 10–20 mg/ mL may be sufficient to produce involution with less risk. Injections are repeated at intervals of 6–8 weeks, as required.
- Flattening and cessation of itching are reliably achieved by this approach and in some cases may even be achieved with topical corticosteroids.

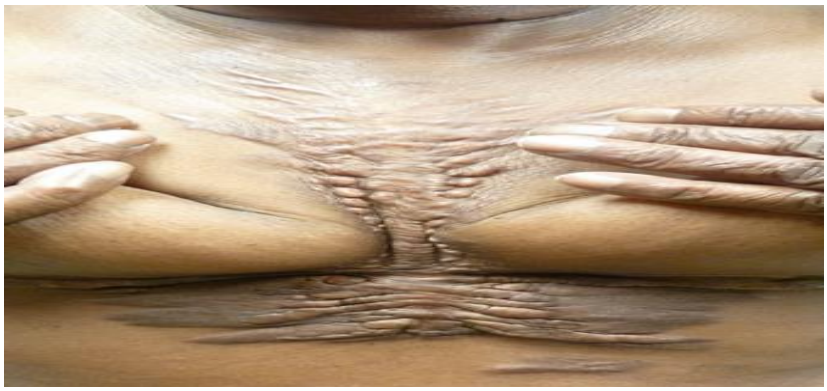


Figure 19.3 Keloid in surgical scar

Infantile hemangioma (strawberry hemangioma):

- The most common benign tumors of childhood present at birth in one-third of cases,the remainder appear shortly after.
- The dome-shaped lesion is dull to bright red, and when involution begins, streaks or islands of white appear in the lesion as it flattens. The lesions have sharp borders, they are soft and easily compressed
- Sixty percent are on the head and neck, but they may occur anywhere.
- Generally, they tend to grow over the first year or so, remain stable for a period of months, and then slowly involute spontaneously.
- The majority of these lesions occur sporadically
- Approximately 7% of hemangiomas may occur in association with structural malformations.
- In most cases, intervention produces a cosmetic result no better or worse than that achieved with simple observation.
- Specific circumstances necessitate treatment.
- Indications for intervention include severe hemorrhage, thrombocytopenia, skin ulceration, or threatened interference with vital functions, such as feeding, respiration, passage of urine or stool, limb function, tissue destruction, or vision.
- Oral prednisone and beta blockers are used most commonly.

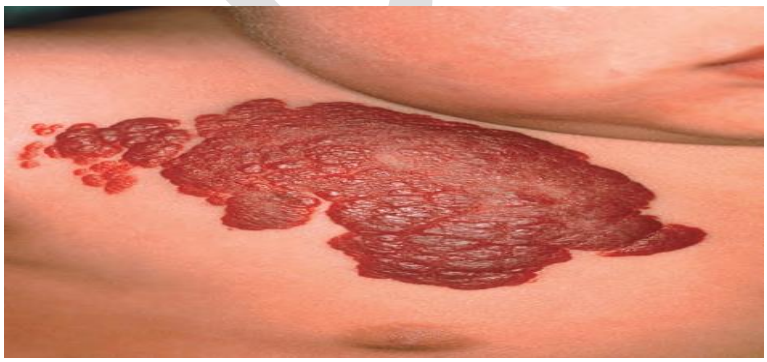


Figure 19.4 Infantile hemangioma.

Basal cell carcinoma (BCC)

- This is the most common cancer in humans with a lifetime risk around 30%.
- Known risk factors for BCC include: increasing age, fair skin, high-intensity UV exposure, radiation, immunosuppression…
- *Nodular* lesions appear as small papules or nodules are pearly and may have dilated telangiectatic vessels on their surfacewith a rolled edge
- Frequently a central depression that may become ulcerated.
- The growth pattern determined histologically usually guide management, so most tumours are biopsied prior to definitive treatment.

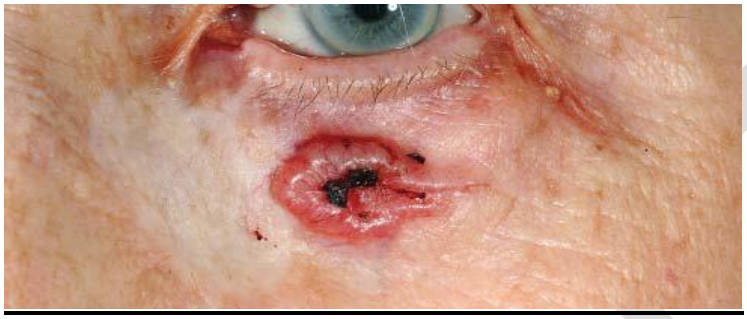


Figure 19.5 Recurrent nodular basal cell carcinoma.

Squamous cell carcinoma (SCC):

- Is the second most common form of skin cancer after BCC
  in which malignant keratinocytes show a variable capacity to form keratin.
- These tumours often arise in skin damaged by longterm ultraviolet radiation and also by X-rays and infrared rays.
- SCC may develop in any chronic wound or scar (Marjolin's ulcer).
- SCCs have invasive tumour cells within the dermis,seventy percent of lesions occur on the head and neck ,clinical suspicion of an SCC arises when lesions are rapidly growing.
- Tumours may arise as thickenings in an actinic keratosis or *de novo*, as small scaling nodules; rapidly growing anaplastic lesions may start as ulcers with a granulating base and an indurated edge.
- Tumours more than 2 cm in diameter are twice as likely to recur and metastasize compared with smaller tumours.
- *Histology :*Keratinocytes disrupt the dermo-epidermal junction and proliferate irregularly into the dermis. Malignant cells usually retain the capacity to produce keratin.
- *Treatment :*After the diagnosis has been confirmed by biopsy,the tumour should be excised with a 0.5-cm border of normal skin.
  - ✓ Mohs' micrographic surgery is useful for high-risk tumours.
  - ✓ Radiotherapy is effective but should be reserved for the frail and the elderly.

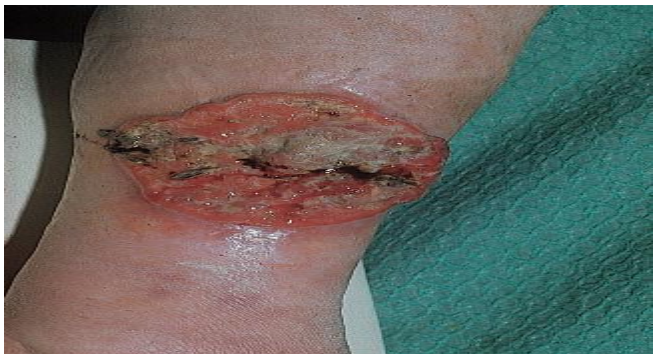


Figure 19. 6 Squamous cell carcinoma

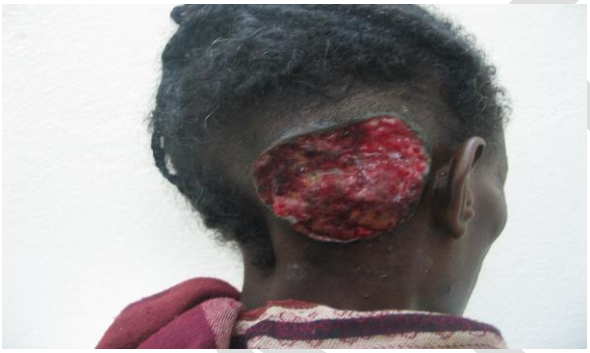


Figure 19.7 Squamous cell carcinoma

Melanoma

- ✓ Is an invasive malignant tumour of Melanocytes,accounts for 4% of skin tumours but is responsible for 75% of skin cancer deaths.
- ✓ Most cases occur in white adults over the age of 30. Females are more commonly affected than males in the USA but this trend is reversed in Australia.
- ✓ Solar radiation is a known carcinogen and is considered to be the main risk factor for melanoma,
- ✓ Other risk factors include light skin tones, poorly tanning skin, red or fair-coloured hair, light-coloured eyes, female sex, older age, family history of melanoma and congenital defect of DNA repair (xeroderma pigmentosum). The presence of giant congenital melanocytic naevi, multiple common moles, actinic lentigines and change in a mole.

Types of melanoma:

1. Superficial spreading melanoma
2. Lentigo maligna melanoma
3. Nodular melanoma
4. Acral melanoma
5. Amelanotic melanoma

- ✓ *Prognosis*:depends on the depth to which the melanoma has penetrated below the base of the epidermis seen histologically:

- ✓ *Treatment of melanoma*: If melanoma is suspected it should ideally be excised in its entirety with initially just a 2-mm margin for histological analysis.

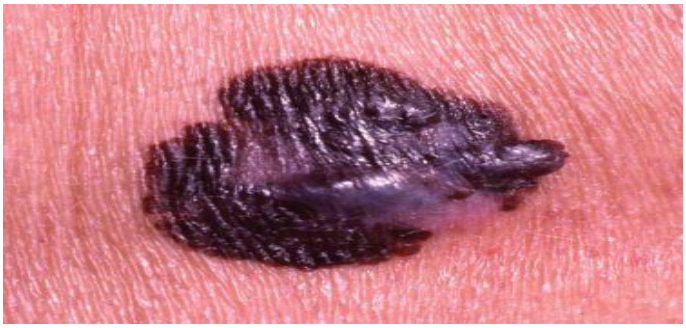


Figure 19.8 Nodular malignant melanoma

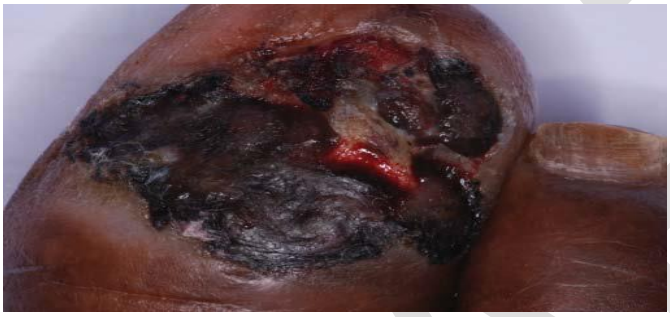


Figure 19.9 Acral malignant melanoma

The* ABCDE *of malignant pigmented lesions

Asymmetry– if you draw an imaginary line through the centre of a mole in any axis and both halves match then the mole is symmetrical and likely to be benign.

• ***Border***– benign moles usually have an even, regular outline. Any indentations such as scalloped edges may indicate malignant change, such that one part of the mole is growing.

• ***Colour***– variation in colour may be a sign of dysplasia or malignant change in a mole. Melanomas may be intensely blackand show variable colour within a single lesion from white to slate blue with all shades of black and brown. Amelanotic melanomas show little or no pigmentation.

• ***Diameter***– apart from congenital naevi most benign moles are less than 1 cm in diameter. Any lesion growing to over 0.5 cm should be carefully checked. However some melanomas are small – 0.1–0.2 cm.

• ***Evolving***– a mole changing over time.

Summary

- Skin cancer are among the most common malignanciesknown to man.
- Skin cancer can be divided into non melanoma(basal cell carcinoma and squamous cell carcinoma) and malignant melanoma .
- Benign skin lesions need removal, if they bleed persistentlyor if they cause pain.
- Malignant melanoma is the most life threatning type of skin cancer and it is one of the few cancers affecting younger population.
- Sun exposure is the single most preventable risk factor for skin cancer.
- Catch lesions early, small ones are easy to get rid of; larger ones can eat into cartilage or bone.
- Do not sit and watch doubtful lesions.
- Reassurance is usually needed

Chapter 20: VITILIGO

Chapter description: this chapter describes the various clinical presentations of vitiligo and its management.

Learning Objective:

- Discuss pathogenesis of vitiligo
- Explain the clinical features of vitiligo
- Discuss the clinical variants of vitiligo
- Describe the treatment options for vitiligo

Outline

Introduction

Epidemiology

Pathogenesis

Clinical presentation

Treatment

Summary

Introduction

Hypopigmentation (leukoderma) are general terms used to designate disorders characterized by lightening of the skin.

They are classically the result of decreased epidermal melanin content (melanin-related),or they may be secondary to a decreased blood supply to the skin(hemoglobin-related).

Hypomelanosis is a more specific term that denotes an absence or reduction of melanin within the skin; where as amelanosis signifies the total absence of melanin.

Depigmentation usually implies a total loss of skin color and it is most commonly due to disappearance of pre existing melanin pigmentation such as in vitiligo.

Cutaneous hypomelanosis is often classified into two groups:

Melanocytopenic hypomelanosis,

- caused by a partial or total absence of epidermal and/or follicular melanocytes.

Melanopenic hypomelanosis,

- in which the number of epidermal and/or follicular melanocytes is normal but the pigment cells fail to synthesize normal amounts of melanin and/or transfer it to surrounding keratinocytes.

Vitiligo

Vitiligo is an acquired, progressive, idiopathic pigmentary disorder of the skin and mucous membranes.

It is characterized by circumscribed depigmented macules and patches that result from a progressive loss of functional melanocytes.

It is a common cutaneous disorder that has severe psychological and significant social consequences.

Epidmology

It is common world wide.

Globally 0.5-2% of the general population affected .

Age- it can occur at any age but the age of onset is commonly 10-30 years.

Race- it affects all races.

Sex- it has no sex predisposition.

PATHOGENSIS

Vitiligo is a multifactorial, polygenic disorder, with a complex pathogenesis .

Several theories proposed but the exact cause is unknown:

- Genetic hypothesis
- Autoimmune hypothesis
- Neural hypothesis
- Oxidant-Antioxidant hypothesis
- Intrinsic defect of melanocytes
- Self-destruct theory
- Decreased melanocyte survival hypothesis
- CONVERGENCE THEORY

Genetics of vitiligo

Vitiligo is characterized by incomplete penetrance, multiple susceptibility loci & genetic heterogeneity.

The inheritance involve genes associated with melanin biosynthesis, response to oxidative stress, & regulation of autoimmunity.

20-30 % of patients may have a family history of vitligo.

Autoimmune Hypothesis

The autoimmune theory proposes that alterations in humoral or cellular immunity result in the destruction of melanocytes.

Dysfunction of the humoral components is supported by the association of vitiligo with other autoimmune disease such as:

Hashimoto thyroiditis.

Pernicious anaemia

Addison's disease

Diabetes mellitus

Hypoparathyroidism

Alopecia areata

Evidences for Auto immune pathogenesis:

Presence of circulating antibodies in patients with vitiligo.

Evidences for Autoimmune Cellular Mechanisms

Melanocyte specific T cells detected in peripheral blood of patients with Autoimmune origin.

Destruction of melanocytes may be directly mediated by autoreactive CD8 T cells.

Activated CD8 T cells demonstrated in perilesional vitiligo skin.

NEUROGENIC HYPOTHESIS

It suggests that a compound is released at peripheral nerve endings in the skin that may inhibit melanogenesis and could have a toxic effect on melanocytes.

However, recent studies on neuropeptide and neuronal markers in vitiligo suggest that **neuropeptide Y** may have a role which is supported by Case reports of patients afflicted with a nerve injury who also have vitiligo have hypo/depigmentation in denervated areas.

OXIDANT-ANTIOXIDANT THEORY

It suggests that accumulation of free radicals are toxic to melanocytes leads to their destruction.

Patients with vitiligo exhibit a characteristic yellow/green or bluish fluorescence due to accumulation of 2 d/t oxidized pteridines.

The over production of pteridines led to the discovery of a metabolic defect in tetrahydrobiopterin homeostasis in pts with vitiligo → accumulation of melanocytotoxic H_2O_2

High levels of the enzyme Superoxide dismutase & low levels of Catalase seen in the skin of vitiligo patients.

INTRINSIC DEFECT OF MELANOCYTES

Some evidence suggest that vitiligo is a disease of the entire epidermis, possibly involving biochemical abnormalities of both melanocytes and keratinocytes.

Internsic defect of growth &differentiation of some melanocyte which prevent production of melanin.

Decreased melanocyte survival hypothesis

Keratinocyte-derived stem cell factor regulates melanocyte growth and survival and there is lower expression of stem cell factor from surrounding keratinocytes seen in peri lesional skin.

CONVERGENCE THEORY

States that stress, accumulation of toxic compounds, infection, autoimmunity, mutations, altered cellular environment and impaired melanocyte migration and/or proliferation can all contribute to vitiligo etiopathogenesis in varying proportions.

Clinical features

Vitiligo can occur anywhere on the body sites but commonly occurs on areas that are subjected to trauma or friction such as the hands, feet and the skin around body openings (eg:-eyes, nose, mouth and lips, umbilicus and around genital areas and the anus).

Clinically it presents as milky or chalk-white maculeswith fairly homogeneous depigmentation.

The skin lesion are usually well demarcated , round, oval, or linear in shape which ranges from millimeter to centimeter in size.

Usually vitiligo is asymptomatic, but occasionally, may be pruritic.

Figure 20.1 Vitiligo affecting body opening areas: nose,eye and mouth

On the extremities vitiligo favors the elbows, knees, dorsal aspect of the hands, digits,flexor wrists, dorsal ankles and shins.

Leukotrichia

It can be quite variable seen ranging from 10%–60% in vitiligo patients.It can be seen in the absence of depigmentation of the surrounding epidermis.

It is considered to indicate destruction of the melanocyte reservoir within the hair follicle,therefore, predicting a poor therapeutic response.

Vitiligo of the scalp most often presents as localized patches of white or grayhair which is called **poliosis.**

CLINICAL VARIANTS OF VITLIGO

Trichrome vitiligo

- It is characterized by the presence of patches of intermediate hue (hypopigmentation) between the normal skin and the completely depigmented skin.
- Results in 3 shades of color →tan zone, normal and totally depigmented skin.
- Has an intermediate zone of hypochromia located between the achromic center & the peripheral unaffected skin.

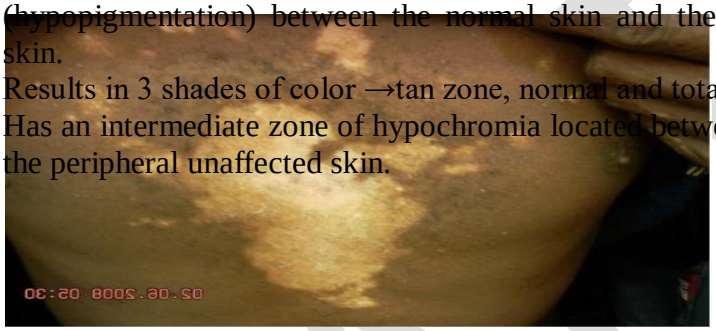


Figure 20.2 trichrome vitiligo

Quadrichrome vitiligo

- Refers to the additional presence of marginal or perifollicular hyperpigmentation.
- Presence of a fourth color (dark brown) at sites of perifollicular repigmentation.
- This variant is recognized more frequently in darker skin types, particularly in areas of repigmentation.

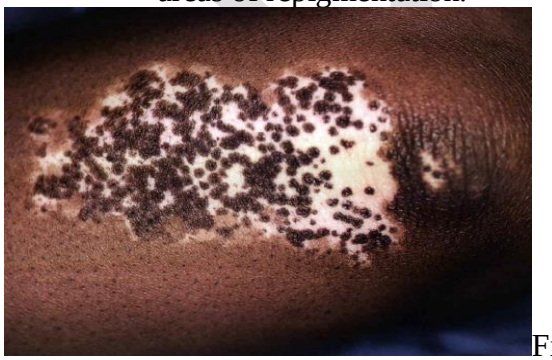


Figure 20.3 Quadrichrome vitiligo

Pentachrome vitiligo

- the occurrence of five shades of color:

(1) white, (2) tan, (3) medium brown(normal skin) (4) dark brown, and (5) black

- it represent areas of melanin incontinence (dermal melanin)
- it is observed in a patient with post inflammatory hyperpigmentation who then developed vitiligo.

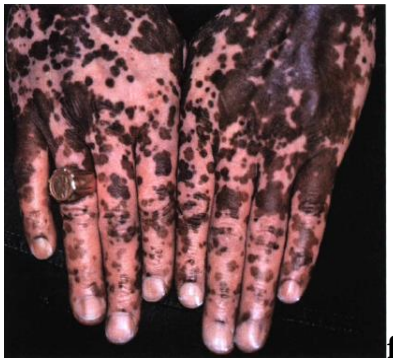


figure 20.4 Pentachrome vitiligo

Confetti vitiligo

- it is unusual variant .
- it is characterized by small confetti-like or several tiny, discrete, amelanotic macules occurring either on normal skin or on a hyperpigmented macule.

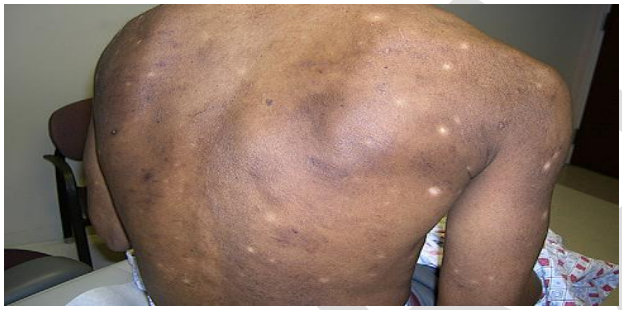


Figure 20.5Confetti vitiligo

Marginal Inflammatory vitiligo

- Characterized clinically by raised border erythema at the margins of vitiligo.
- It is seen in 5%of vitiligo patients,
- It is a pruritic lesion with inflammatory border ,associated with edema, and erythema .

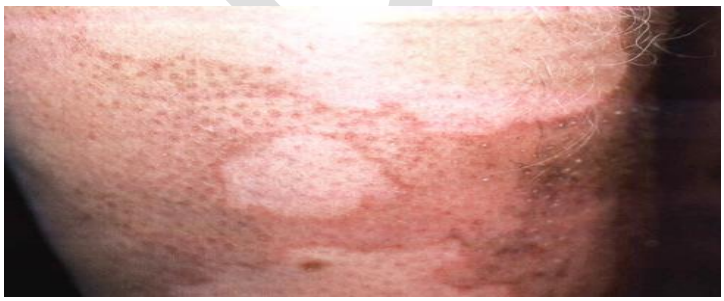


Figure 20.6Marginal Inflammatory vitiligo

Blue vitiligo

- Blue colored macules can be observed in areas already affected by postinflammatory hyperpigmentation in which vitiligo develops
  - has a blue-grey hue because of the absence of epidermal melanocytes and the presence of numerous dermal melanophages.

Occupational vitiligo

- Thiols, phenolic compounds, catechols, mercaptoamines, and several quinines (including chloroquine) can produce depigmentation.

Classification of Vitiligo

Vitiligo has been classified in different clinical classes, according to the extent of involvement, severity and distribution of the depigmentation,This classification is very useful to evaluate different therapeutics regimens.

Based on severity vitiligo can be divided into 4 stages

1. Limited(10%) involvement
2. Moderate (10–25%)
3. Moderately severe (26–50%)
4. Severe disease (50%) depigmentation.

Based on *distribution* vitiligo is divided into *3 types:*

1. Localized vitiligo
   A. Focal
   B. Segmental
   C. Mucosal
2. Generalized vitiligo
   A. Vulgaris
   B. Acrofacial
   C. Mixed
3. Universal vitiligo

Localized vitiligo

A. Focal vitiligo

- Usually it is characterized by a solitary macule or *a few* scattered macules in one area.But it is not in a segmental or zosteriform distribution.
- The neck and trunk are also commonly involved and it is considered a precursor form of generalized vitiligo.

B. Segmental (unilateral) vitiligo

- Characterized by one or more macules involving a unilateral segment.
- It has dermatomal distribution and the lesions stop abruptly at the midline.

- Trigeminal Nerve distribution is commonly involved in> 50% of cases of segmental vitiligo.
- Trigeminal nerve involvement commonly occurs with poliosis and it tends to be stable.
- Other concomitant autoimmune diseases are uncommon.
- It tends to have an early age of onset.

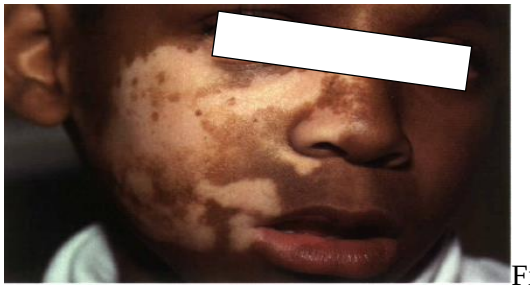


Figure 20.7 Segemental Vitiligo

C. Mucosal vitiligo*:*

- In such cases mucous membranes alone are affected.

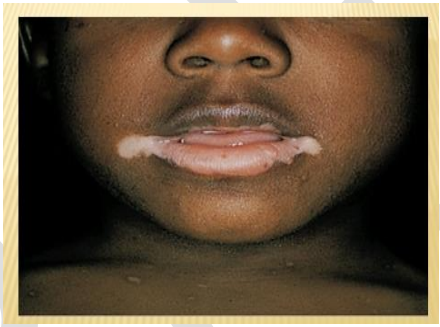


Figure 20.8**.** *Mucosal vitiligo*

Generalized Vitiligo

- It is the commonest type of vitiligo and it accounts >90% of vitiligo cases.
- Usually it starts later in life.
- Sites sensitive to pressure, friction, trauma and mucous membraneInvolvement is frequently observed .
- It is typically progressive with flare-ups.
- Hair is affected in later stages.
- It is associated personal or family history of autoimmune diseases.
- It has 3 subtypes

A. Vitiligo vulgaris

- Is the most common subtype of generalized vitiligo.
- Characterized by scattered patches that are widely distributed more or less symmetrically.
- It commonly affects the fingers ,wrists, axillae & groin, and body orifices, such as the mouth, eyes & genitals.

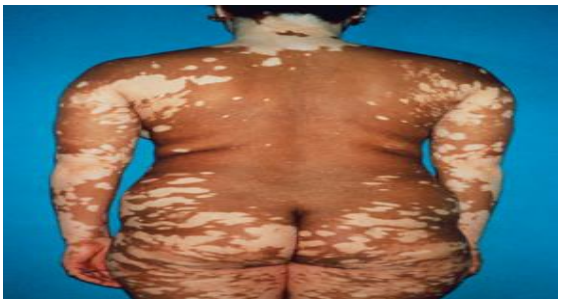


Figure 20.9 Generalized Vitiligo

B.Acrofacial Vitiligo

- Depigmentation occurs on the distal extremities (distal fingers, periungual) and on the face (periorificial, lip) areas.

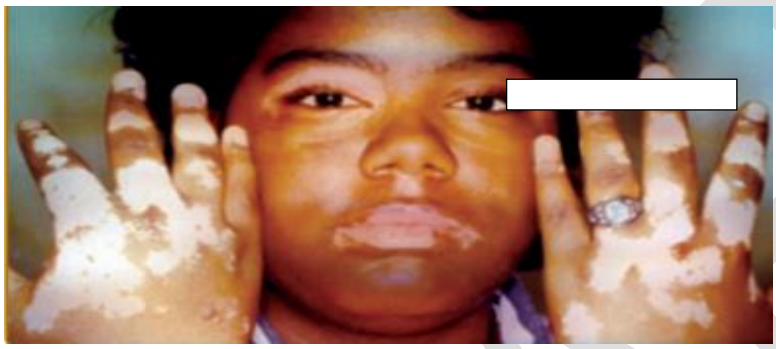


Figure 20.10**.**Acrofacial Vitiligo

C. Mixed

- It is a subtype of generalized vitiligo with a combinations of
  - Acrofacial vitiligo & vitiligo vulgaris , or
  - Segmental vitiligo &Acrofacial vitiligo &/or vitiligo vulgaris present together.

D.Universal vitiligo

- It is a Depigmented macules and patches over most of the body parts.
- There is complete or nearly complete depigmentation.
- It involves more than 80%of the body surface area .
- It is the most severe form of generalized vitiligo & it is related with the worst psychological impact which impairs quality of life the patient.
- It might have autoimmune comorbidities and there is family history of vitiligo.

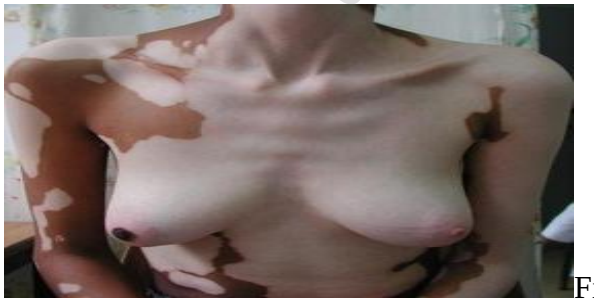


Figure 20. 11Universal vitiligo

Related Diseases with vitiligo

Ocular disease

- Ocular abnormalities present in up to 40% of vitiligo patients ,
- It includes: choroidal anomalies, uveitis, iritis, and some degree of fundal pigment disturbance in vitiligo patients.
- **Uveitis** is the most significant ocular abnormality seen in vitiligo patients.
- Non-inflammatory depigmented lesions of the ocular fundus are present in some patients with vitiligo, presumably representing focal areas of melanocyte loss.

Auditory System

- Up to 20% of patients with vitiligo have hearing loss, which is presumably caused by disorders of cochlear melanocytes.

PROGNOSIS AND CLINICAL COURSE

The clinincal course of vitiligo is unpredictable.
Initial clinical sub-type of vitiligo does not predict future anatomical sites of involvement or activity of disease.
Complete and stable repigmentation is rare.
Spontaneous repigmentation is seen in 10–20% of patients, most frequently in sun-exposed areas and in younger patients.
Spontaneous repigmentation in case of poliosis does not occur.
Poor prognostic signs are the following

- Early age of onset
- Presence of associated autoimmune disorders
- Acrofacial Vitiligo
- Segmental Vitiligo
- Leucotrichia
- Long duration of the disease
- Occurrence of Koebner's phenomenon
- Mucosal involvement

DIAGNOSIS

Diagnosis is usually clinical .
Laboratory tests should be done to look for other autoimmune diseases.

- CBC
- FBS
- LFT
- RFT
- ANA
- TSH/T4 level

- Serum antithyroglobulin&antithyroid peroxidase Abs
- Genetic studies
- MRI
- CT

Differential Diagnosis

Inherited hypomelanoses

- Piebaldism
- Waardenburg's syndrome
- Tuberous sclerosis
- Ito's hypomelanosis

Infectious disorders

- Tinea versicolor
- Secondary syphilis
- Leprosy (tuberculoid/borderline forms)
- Onchocerciasis
- Tinea versicolor

Post inflammatory hypopigmentation

- DLE
- Scleroderma
- lichen sclerosis et atrophicus,
- Psoriasis
- Toxin-Induced depigmentation
- Drug-induced depigmentation

Paramalignant hypomelanoses

- Mycosis fungoides
- Cutaneous melanoma
- Autoimmune reactions to advanced melanoma

Idiopathic disorders

- Idiopathic guttatehypomelanosis
- Post-inflammatory pigment loss

Management

No single therapy produces predictable good results .

The choice of therapy depends on the extent, location, age, skin type ,activity of disease ,patients preference , availability , applicability , cost , …

The best response to treatment is seen in younger patients, disease of recent onset, darker skin type ,lesions on the face, neck & trunk.

- Better response rate is due to
  - A high permeability of the facial skin to the corticosteroids.
  - A larger number of residual melanocytes in the uninvolved facial skin.
  - Greater follicular reservoirs.
  - Melanocyte damage that is more easily reversed.

Distal extremities ,mucosal & segmental lesions tend to be extremely refractory to treatment.

Treatment options include*:*

- Medical
- Physical
- Surgical
- Depigmentation
- Camouflage, Sunscreens
- Psychological support

- Treatment principle is to initiate repopulation of melanocytes that are able to migrate , survive & carry out melanogenesis.
- Sources of melanocyte includes
  - melanocytes from hair follicles
  - unaffected melanoctes with in the lesional skin.
  - near the lesional boarders
    - melanocytes can migrate up to 2-4mm from the edge.

Indicators of treatment outcome

- 2–3 months are required to determine treatment effectiveness.
- >50% -75% of re-pigmentation in vitiligo treatment may be considered a good response.
- Wood's lamp examination is useful to monitor response to therapy.
  - It shows in the absence of epidermal melanin→fluorescence of bright visible light on vitiligo area and darker appearance of the normal skin.

Corticosteroids

In general, intralesional corticosteroids should be avoided because of the pain associated with injection and the risk of cutaneous atrophy.

Topical corticosteroids indicated for the treatment of:

- Limited areas of vitiligo (localized vitiligo involving <10-20% BSA)
- In children it is the first line therapy.
- It is indicated for lesions on the face, neck and extremities (exception of the fingers and toes).
- Also it serve as adjunctive therapy
- It has to be topical potent to super-potent steroids ,
- 80% of patients with facial vitiligo will achieve >90% re-pigmentation.
- On the trunk only 40% of patients will achieve >90% re-pigmentation.
- Localized lesions treated with a high-potency corticosteroid for 1–2 months then tapered to a lower potency corticosteroid.
- Topical corticosteroids should be used intermittently in order to minimize its side effects.
- If no response is seen after 2 months of topical corticotsteroid treatement then discontinue the therapy.
- Caution when using on and around the eyelids, as their use can increase intraocular pressure and exacerbate glaucoma.
- Side effects of topical steroids are skin atrophy , telangiectases , striae , contact dermatitis and glaucoma.

Combination therapy

- Corticosteroids +UVB,
- Corticosteroids +Calcineurin inhibitors,
- Corticosteroids +Vitamin D analogs

It is beneficial in some cases, as two agents together may act synergistically on pigment restoration and on immune suppression, at lower individual doses with lower side effects.

Systemic corticosteroids

Currently it is not considered conventional treatment for vitiligo, they can be effective through inducing immunosuppression.

It is used in pulse therapy and for short periods to halt rapid spread of de-pigmentation and induce re-pigmentaiton in some cases of generalized vitiligo.

The role of systemic corticosteroids in the treatment of vitiligo remains controversial.

Topical Calcineurin Inhibitors

It is slightly inferior than topical corticosteroid.

Tacrolimus and pimecrolimus ointements are the most common types of topical calcineurin inhibitors.

Tacrolimus –it acts by inhibiting T cell activation.

Tacrolimus ointment 0.03%–0.1% or pimecrolimus ointment 1% twice a day is preferred for localized vitiligo on the face and neck.

It is more effective together with narrowband UVB phototherapy or the 308 nm excimer laser.

Combination therapy is more effective and the combinations are the following:

- Topical tacrolimus 0.1% + UVB or excimer Laser therapy is superior to monotherapy for UV-resistant vitiliginous lesions.
- Pimecrolimus 1% cream + NB UVB - works better on the face rather than used alone.
- Topical calineurin inhibitors can also be used successfully in conjunction with topical corticosteroids.
- Its efficacy when assessed after 3 and 6 months of therapy, response rates ranged from 63% to 89%.

TOPICAL VITAMIN D DERIVATIVES

- Vitamin D analogs are calcipotriol ointment (0.005%) & tacalcitol ointment (20 μg/g)
- Mechanism of action:

- Target local immune response and act on specific T-cell activation by inhibiting expression of proinflammatory cytokines that encode TNFα and IFN-γ.
- Influence melanocyte maturation and differentiation.

Combination therapy

- Vitamin D analogs + topical corticosteroids has faster onset of repigmentation.
- Topical calcipotriene+ Narrow band UVB results in improvement appreciably better than that achieved with monotherapy.

PHYSICAL

- Phototherapy
  - Narrowband UVB (311 nm)
- Photochemotherapy
  - PUVA
- Excimer laser Therapy

Phototherapy

The treatment of choice is Narrow band UVB .

Narrow band-UVB light, with peak emission at 311 nm,is the most effective and safest current therapy of choice for patients with moderate-to-severe generalized vitiligo.

Narrow band UVB -is the first choice for Adults and children (>6yrs) in case of generalized vitiligo and for Localized vitiligo associated with a significant impact on patient's quality of life .

The most responsive sites are face, trunk, and limbs, and the least responsive sites are the hands and feet.

It can be used in children, pregnant or lactating women, and individuals with hepatic or kidney dysfunction.

It produces less accentuation of the contrast between de-pigmented and normally pigmented skin.

Side effects of phototherapy are pruritus and xerosis .

PHOTOCHEMOTHERAPY (PUVA)

Until recently, it is considered the mainstay of therapy for patients with widespread vitiligo.

It involves the use of psoralens combined with UVA light.

PUVA consists of a combination of topical or oral 8-methoxypsoralen followed by exposure to artificial UVA (320–400 nm) irradiation or natural sunlight (PUVASOL).

In general, vitiligo on the trunk, proximal extremities, and face respond well to PUVA, but lesions on the distal extremities respond poorly.

Mechanism of Action

PUVA stimulates tyrosinase activityand melanogenesis in unaffected skin.
It is locally immunosuppressive, and it also decrease expression of melanocyte antigens.

It Stimulates follicularmelanocytes to migrate into the epidermis and repopulate the surrounding depigmented skin .

Oral psoralens is indicated for patients with more extensive involvement or in patients who do not respond to topical PUVA

- Oral PUVA treatment is using
  - 8-MOP tablet (0.4–0.6 mg/kg) typically administered twice per week and the tablet is given 1–2 hours prior to UVA exposure.
  - UVA initial dose 0.5-1.0 J/cm2 administere twice per week.
  - Dose is gradually increased until minimal erythema of the involved skin occurs.
- The total number of PUVA treatment required is between **50 and 300.**
  - After taking oral psoralen tablet, patients must wear UVA-blocking glasses and it is also recommended to use broad-spectrum sunscreens and wear protective clothing.

Topical PUVA

In patients whose vitiligo involves < 20% body surface area.

Low concentrations (0.1 % cream or ointment) should be used.

20-30 minutes after applying on the lesions, exposed to initial UVA doses of no more than 0.25 J/cm2.

The same fractional increments until mild erythema is achieved in the treated sites.

*S*ide effects are common, like

- Severe phototoxicity reactions (blistering, koebnerization)
- Intense pruritus
- hyperpigmentation of skin surrounding vitiligo areas due to inadvertent psoralen application

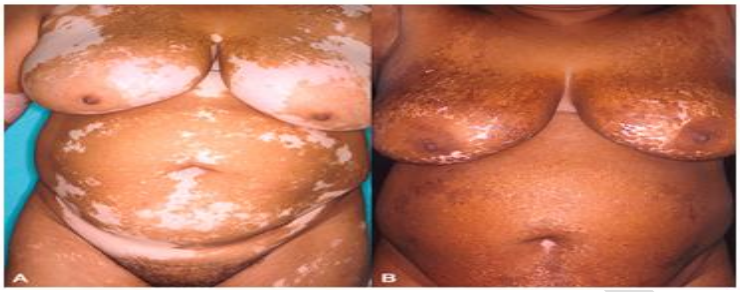
It is not recommended for use in children <12 yrs owing to the long-term delayed risks of cataract formation and skin cancer.

Patients with darker complexions tend to respond best to PUVA possibly b/c they tolerate higher PUVA exposures.

PUVASOL (psoralens + natural sunlight)

It can be used in sunnier climates.5-MOP (methoxy psoralen tablet) .

Dose - 0.6 mg/kg ,after 2hr of taking the tablet the patients is exposed to sunlight, preferably around midday.Therapy is continued for at least 6month to several years.



A **B**

Figure 20.12 **A**. before treatment **B**. after treatment with PUVASOL

PUVA Vs NB-UVB

Narrow band-UVB produces higher repigmentation rates and better color matching, lack of gastrointestinal side effect.

Narrow band -UVB has fewer short-term adverse reactions and fewer long-term side effects (epidermal thickening, atrophy, and photocarcinogenesis) than PUVA.

High rates (≥75%) of repigmentation seen in at least 40% of patients treated with Narrow band-UVB .

LASER THERAPY

UV B-Narrow band excimer laser (XeCl) and monochromatic excimer laser (MEL) are currently used for treatement of localized vitiligo.

It is similar to classical NB-UVB treatment, with fewer side effect.

Surgical

Surgical treatment is indicated for focal vitiligo with small areas and few or single lesion.

It is usually done by Transfer of melanocytes or full-thickness skin graft from normally pigmented areas to hypomelanotic patches.

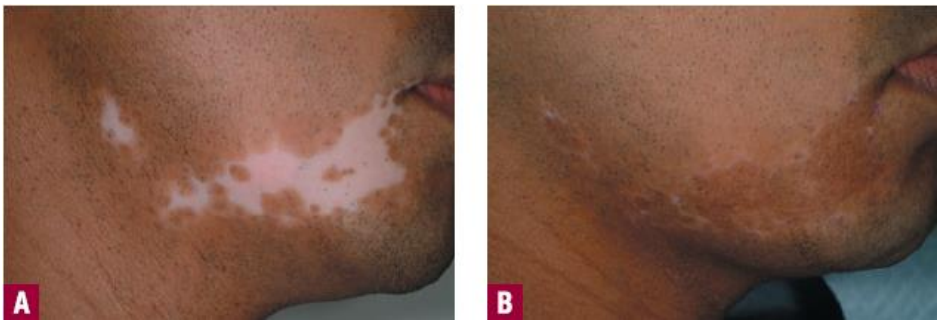


Figure 20.13 Segmental vitiligo, **A.** Before grafting. **B.** Three months after punch grafting

DEPIGMENTATION

It represents a treatment option for patients who have widespread vitiligo with only a few areas of normally pigmented skin .

It requires life long strict photoprotection.

The most commonly used agent is 20% monobenzyl ether of hydroquinone (MBEH) applied 1-2x/day to the affected areas for 9–12 months or longer duration.

It is a phenolic toxin that destroys epidermal melanocytes resulting uniform depigmented state .

20% monobenzyl ether of hydroquinone (MBEH) is first applied as a patch test for 48 hrs to detect hypersensitivity reaction.

CAMOUFLAGE

Use of cosmetic camouflage and clothing to conceal affected areas can improve the quality of life for patients with vitiligo.

The wide range of color and shades are available and can enable patients to choose the most suitable ones for their own skin color.

Sunscreens

The use of sunscreen are to prevent sunburn in the amelanotic areas, Lessen photodamage and prevent Koebner phenomenon.

PSYCHOLOGICAL SUPPORT

The impact of this disorder on psychological and quality of life is very severe in many patient. It Is best to explain the nature of the disease process & the potential and limits of available therapy for the patient.

Psychological counselling of the patient is very important .

Summary

The casuse of vitiligo is unknown but it is attributed to be autoimmune reaction that destroy melanocytes temporarily or permanently.another possible casue of vitiligo is metabolic genesis. Neurogenic processes(if stress induced mediators) also activates the immune system to destroy the melanocytes.

Vitiligo can be treated using topical steroids,calcieurin inhibitors and narrow band phototherapy.

Treatment algorithm of vitiligo

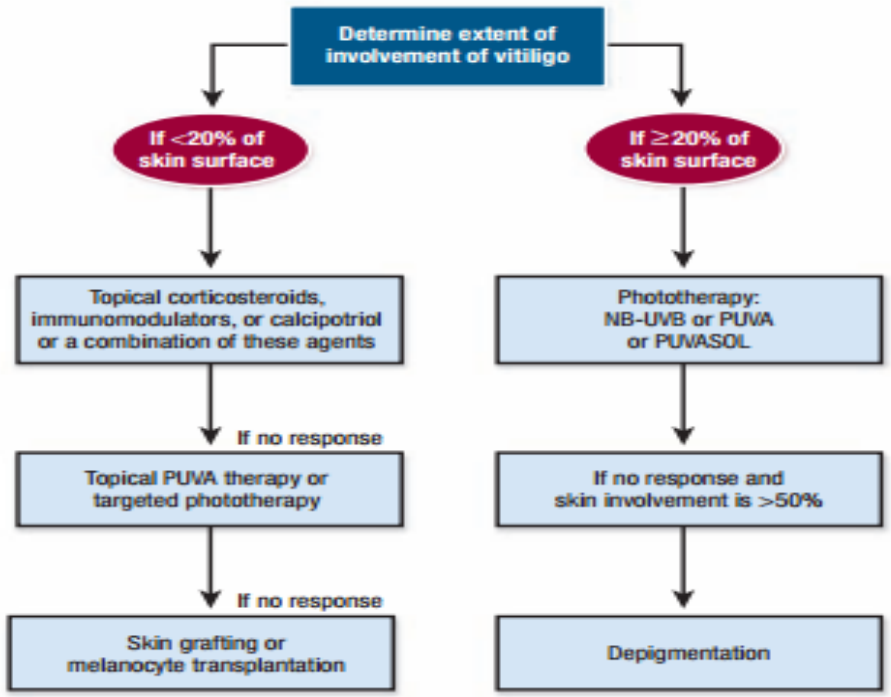


Figure 20.14 Treatment algorithms for vitiligo

Chapter 21: Melasma

Chapter description: this chapter deals with clinical features and treatment of melisma.

Learning objectives

Discuss the cause of melasma
Discusss the pathogenesis of melasma
Explain the management of melasma

Outline:
Introduction
Epidimology
Pathogenesis
Clinical features
Treatment
Summary

Introduction

Melasma is an increased melanin production presenting as brown patches on sun-exposed areas.

Melanin gives color to the skin, hair, and iris of the eyes and it also determines the persons skin colour.

Melasma is Common among persons with constitutive brown skin color living in tropical areas.

Occurrence of melasma during pregnancy is called **chloasma.**

Epidmology

Melasma is much more common in constitutionally darker skin types than in lighter skin types, and it may be more common in light brown skin types, especially Latinos and Asians.

Melasma is much more common in women than in men with the generally accepted ratio is approximately 9:1 .

Melasma is rare before puberty and most commonly occurs in women during their reproductive years.

Melasma is present in 15-50% of pregnant women.

Pathogensis

The pathophysiology of melasma is multifactorial and not clearly known.

These factors are the following:

- Female hormones
- Genetic predisposition
- UV light exposure
- Emotional stress

Female Hormones

The occurrence of melasma with estrogen- and progesterone-containing oral contraceptive pills has been reported.

The expression of estrogen receptors appears to be up-regulated in melasma lesions.

The observation that postmenopausal woman who are given progesterone develop melasma, which implicates progesterone is playing a critical role in the development of melasma.

The exact mechanism by which pregnancy affects melasma is unknown. Estrogen, progesterone, and melanocyte-stimulating hormone (MSH) levels are normally increased during the third trimester of pregnancy.

Genetic Susceptibility

55-64% of patients with melasma have a family history of this condition.
Persons with light-brown skin types from regions of the world with intense sun exposure are much more prone to the development of melasma.

UV light Exposure

UV light induces production of reactive oxygen species in the skin, which subsequently promotes melanogenesis. Ultraviolet (UV) radiation is also known to induce increased production of alpha-melanocyte–stimulating hormone and corticotropin, as well as interleukin 1 and endothelin 1, all of which contribute to increased melanin production by intraepidermal melanocytes.

Ultraviolet radiation can cause peroxidation of lipids in cellular membranes, leading to generation of free radicals, which could stimulate melanocytes to produce excess melanin.

UV-B radiation (290-320 nm) and longer wavelengths (UV-A) and visible radiation,(320-700 nm) also stimulate melanocytes to produce melanin.

Emotional Stress

Emotional stress causes release of Melanocyte Stimulating Hormone by the hypothalamus .

Clinical Presentation

The patient present with symmetrically distributed well defined macular hyperpigmentation of brown colour or it could be blue or black in patients with dermal melasma.
There are 3 clinical patterns of melasma
1.Centrofacial melasma : involves the forehead, cheeks, nose, upper lip, and chin.
2.Malar melasma : involves solely the nose and the cheeks.
3.Mandibular melasma: affects the ramus of the mandible.

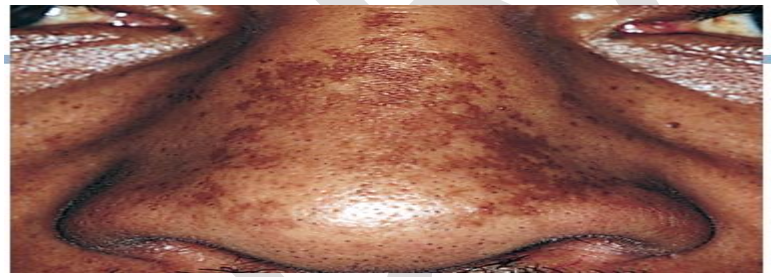


Figure 21.1Centrofacial melasma

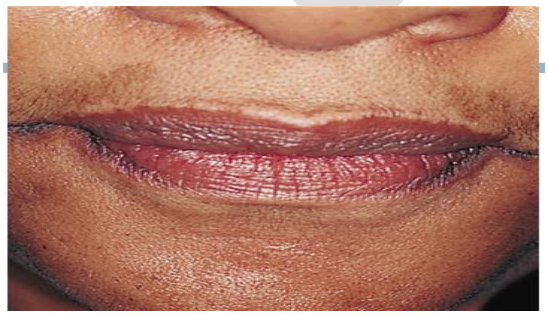


Figure 21.2Mandibular Melasma

Diagnosis

Melasma is almost invariably a clinical diagnosis and does not require any type of skin biopsy or laboratory workup.
Some studies have suggested mild abnormalities in thyroid function are associated with melasma, specifically pregnancy- or oral contraceptive pill–associated melasma;in such conditios, thyroid function tests might be done. Wood lamp examination usually helps to localize wheter the pigment is localized to the epidermis or the dermis. Note that in many cases, the pigment is found in both locations.

Woods light Examination
The excess melanin can be visually localized to the epidermis or the dermis by use of a Wood lamp (wavelength, 340-400 nm).
Epidermal pigment is enhanced during examination with a Wood light and generally appears well-circumscribed with accentuation of borders.
Dermal melanosis, on the other hand, tends to be less well-defined. Clinically, a large amount of dermal melanin is suspected if the hyperpigmentation is black.

Treatment

Melasma is very challenging to treatment and it takes longer duration to resolve completely.

Dermal pigment may take longer to resolve than epidermal pigment because no effective therapy is capable of removing dermal pigment. The source of the dermal pigment is the epidermis, and, if epidermal melanogenesis can be inhibited for long periods, the dermal pigment will not replenish and will slowly resolve.

The mainstay of treatment for melasma remains topical depigmenting agents. Hydroxyquinone (HQ) is a classic and commonly used first-line agent used alone or in combination with other agents.

Hydroxyquinone (HQ)
It is a hydroxyphenolic chemical that inhibits tyrosinase, the enzyme that converts L-tyrosine to L-DOPA and the rate-limiting step in the pathway of melanin synthesis.
It can be applied in cream form or as an alcohol-based solution.
Concentrations vary from a 2% to 4% concentration and even higher when compounded.
Side effects of hydroquinone are skin irritation, phototoxic reactions with secondary postinflammatory hyperpigmentation, and exogenous ochronosis (irreversible hyperpigmentation).
It should not be used for more than 3 months.

It is contraindicated during pregnancy.

Retionids
The use of topical retinoids (*trans*-retinoic-acid) can be effective as monotherapy. These agents are derivatives of vitamin A and lead to increased keratinocyte turnover and decreased melanocyte activity.

They also increase the permeability of the epidermis, allowing for better penetration of adjunct therapies.
The response to treatment with topical retinoids is also less than that with HQ and can be slow, with improvement frequently taking 6 months or longer.
The major adverse effect of tretinoin is mild skin irritation,photosensitivity and paradoxical hyperpigmentation can also occur.
Tretinoin is believed to work by increasing keratinocyte turnover, thus limiting the transfer of melanosomes to keratinocytes.
The most commonly used concentration are 0.025% and 0.05% tretinoin cream.

Combination therapy

Owing to tretinoin's ability to increase the effectiveness of other therapies, combinations of tretinoin with HQ, with or without a topical corticosteroid are more effective.
There is a triple-combination cream, a composite of hydroquinone 4%, tretinoin 0.05%, and fluocinolone acetonide 0.01% (Tri-Luma).
Comparative studies of the effectiveness of the triple-combination cream versus topical hydroquinone suggest that the combination cream is faster and more effective at reducing melasma pigmentation.
Triple-combination cream is safe and effective when used intermittently for up to 24 weeks.

Azelaic acid

Azelaic acid, available as a 20% cream-based formulation, appears to be an effective alternative to 4% HQ and may be superior to 2% HQ in the treatment of melasma. The mechanism of action is similar to that of HQ, but, unlike HQ, azelaic acid seems to target only hyperactive melanocytes and thus will not lighten skin with normally functioning melanocytes.
The primary adverse effect is skin irritation.
Azelaic acid may be used in pregnancy.

Chemical Peels

Commenly used chemical peels are 4-*N*-butylresorcinol, phenolic-thioether, 4-isopropylcatechol, kojic acid, and ascorbic acid.
Superficial skin peels maybe effective and safe, but they do carry some risk of adverse outcomes. These peels use glycolic or salicylic acid–based compounds and are thought to hasten turnover of hyperpigmented keratinocytes.

Laser Therapy

The efficacy of lasers for the treatment of melasma is unclear .
Chemical peels and laser therapy yield unpredictable results and are associated with a number of potential adverse effects, including epidermal necrosis, postinflammatory hyperpigmentation, and hypertrophic scars.
Chemical peels and laser therapy are considered second-line therapies, if topical medications has failed.

Strict Sun Protection

Resistant cases or recurrences of melasma occur often and are certain if strict avoidance of sunlight is not advised.

Patients must be warned of the potential flare up. Absolute sun protection is necessary; thus, Broad spectrum sunscreen must be used during the day, even when indoor activities.
Strict sun protection include the use hats or umbrella and other forms of shade combined with the application of a broad-spectrum sunscreen at least daily. UV-B, UV-A, and visible light are all capable of stimulating melanogenesis. Sunscreens containing physical blockers, such as titanium dioxide and zinc oxide, are preferred over chemical blockers because of their broader protection.

Summary

Melasma is an acquired hyperpigmentation on sun-exposed areas.

Melasma presents as symmetrically distributed hyperpigmented macules, which can be confluent, reticulated or punctate. Areas that receive excessive sun exposure, including the cheeks, the upper lip, the chin, and the forehead, are the most common locations

Strict sun protection is the cornerstone of all melasma treatment plans. Success or failure often relys on patient compliance with recommendations for sun avoidance.
Management of melasma is challenging and treatment is often long-term, with potential for relapse or worsening of disease as a result of external factors.
The use of regular broad-spectrum and physical blocker sunscreens is effective for prevention of melasma and enhances the efficacy of therapies used in treatment.
Hydroquinone, a tyrosinase inhibitor, is a safe and effective tool for treating disorders of hyperpigmentation. A combination hydroquinone, retinoid, and topical corticosteroid is frequently very effective treatment for melasma when used appropriately.
Tretinoin is a second-line topical agent for melasma. It may be effective but has the potential to cause skin irritation and often requires months of treatment before benefit is realized.
Glycolic acid peels may be the most efficacious peeling agent for melasma, but they should be used with caution.

Chapter 22: Drug Reaction

Chapter description: this chapter describes Cutaneous Drug reactionswhich are commonly encountered at clinic visits.

Primary objective: To be able to DIAGNOSE AND TREAT cutaneous drug reactions

Enabling Objectives

- Discuss the different types of Cutaneous drug reactions
- Define and describe the clinical presentations of Cutaneous drug reactions
- Discuss the clinical and laboratory diagnosis of Cutaneous drug reactions
- Discuss treatment of Cutaneous drug reactions

OUTLINE

- Introduction
- Epidemiology
- Pathophysiology
- Clinical feature
- Treatment
- Summary

Introduction

A drug is a chemical substance, or combination of substances, administered for the investigation, prevention or treatment of diseases or symptoms. An adverse drug reaction (ADR) is any an undesirable clinical manifestation resulting from administration of a particular drug or appreciably harmful or unpleasant reaction, resulting from an intervention related to the use of a medicinal product, this includes reactions due to overdose, predictable side effects and unanticipated reactions which warrants specific treatment, or alteration of the dosage regimen, or withdrawal of the product. Complications of drug therapy are a major cause of patient morbidity and account for a significant number of patient deaths.

The skin is one of the most common targets for ADR, Cutaneous adverse drug reactions (CADR) account for 24% - 29% of all ADRs. Drug reactions may be solely limited to the skin, or they may be part of a systemic reaction, such as drug hypersensitivity syndrome or toxic epidermal necrolysis. Drug eruptions range from common nuisance eruptions to rare or life-threatening drug-induced diseases. Among CADRs exanthematous eruptions and urticarial CADRs are the two most common types the less common types are lichenoid, pustular, photo-, bullous and vasculitic reactions. There are severe and rare CADRs which includes SJS (Stevens-Johnson syndrome), TEN (toxic epidermal necrolysis), and DRESS (drug reaction with eosinophilia and systemic symptoms /drug hypersensitivity syndrome).

EPIDEMIOLOGY

The incidence of cutaneous adverse drug reactions varies across populations. A systematic review of the medical literature, encompassing 9 studies, concluded that cutaneous reaction rates varied from 0% to 8%. The risk in hospitalized patients ranges from 10% to 15%. Outpatient studies of cutaneous adverse drug reactions estimate that 2.5% of children who are treated with a drug, and up to 12% of children treated with an antibiotic, will experience a cutaneous reaction. Elderly patients do not appear to have an increased risk of maculopapular exanthems, and may have a lower incidence of serious reactions. Populations that may have an increased risk of drug reactions in hospital include patients with HIV, connective tissue disorders (including lupus erythematosus), non-Hodgkin lymphoma and hepatitis. Approximately 2% of all CADR are considered 'serious' they need hospitalization and have high fatality, the incidence of fatalities among inpatients is between 0.1 % and 0.3%. Eruptions are observed in 0.1% to 1% of patients enrolled in premarketing trials of most systemic drugs.

SKIN REACTIONS TO 'DRUGS' RECEIVED BY AT LEAST 1000 PATIENTS	
Drugs	**Reaction rate (per 1000 recipients)**
Ampicillin	52
Penicillin G	16
Cephalosporins	13
Packed red blood cells	8.1
Heparin	7.7
Nitrazepam	6.3
Barbiturates	4.7
Chlordiazepoxide	4.2
Diazepam	3.8
Propoxyphene	3.4
Guaifenesin	2.9
Furosemide	2.6
Phytonadione	0.9
Flurazepam	0.5
Chloral hydrate	0.2

Table 22.1 Cutaneous reaction to drugs

Pathogenesis of drug reaction

Drug eruptions are caused by immunologic or nonimmunologic mechanisms and are provoked by systemic or topical administration of a drug. The majority are based on a hypersensitivity mechanism and may be of types I, II, III, or IV.

Immunologic mechanisms

1)Type I

Type I (IgE mediated) Urticaria requires the presence of drug-specific (IgE), certain patients form drug-specific IgE upon exposure to a medication, the drug or its metabolite may act as a hapten, forming hapten-carrier complexes that can be processed by antigen presenting cells (eg, penicillins, platinum agents). Less commonly, the drug may be a complete antigen in its native form (e.g., foreign proteins).

2)Type II (cytotoxic)

Type II (cytotoxic) is uncommon and involve antibody-mediated cell destruction, the reactions arise when drugs bind to surfaces of certain cell types (most often red blood cells or platelets, and occasionally neutrophils) and act as antigens. Binding of the antibodies to the cells' surface results in the cells being targeted for clearance by macrophages. Drugs known to cause type II reactions include:-cephalosporins, penicillins, NSAIDs, quinidine, and methyldopa../../USER/Documents/MEDICINE/uptodate_21.2/contents/mobipreview.htm.

3)Type III(immune complex): Serum Sickness, Drug-Induced Vasculitis

Mediated by deposition of immune complexes in small vessels, activated by complement and recruitment of granulocytes. Onset of reaction is within 5 to 7 days after introduction of the drug. Manifested by vasculitis, urticaria-like lesions, arthritis, nephritis, alveolitis, hemolytic anemia, thrombocytopenia and agranulocytosis.

4)Type IV (delayed cell mediated): (Exanthematous) Reactions

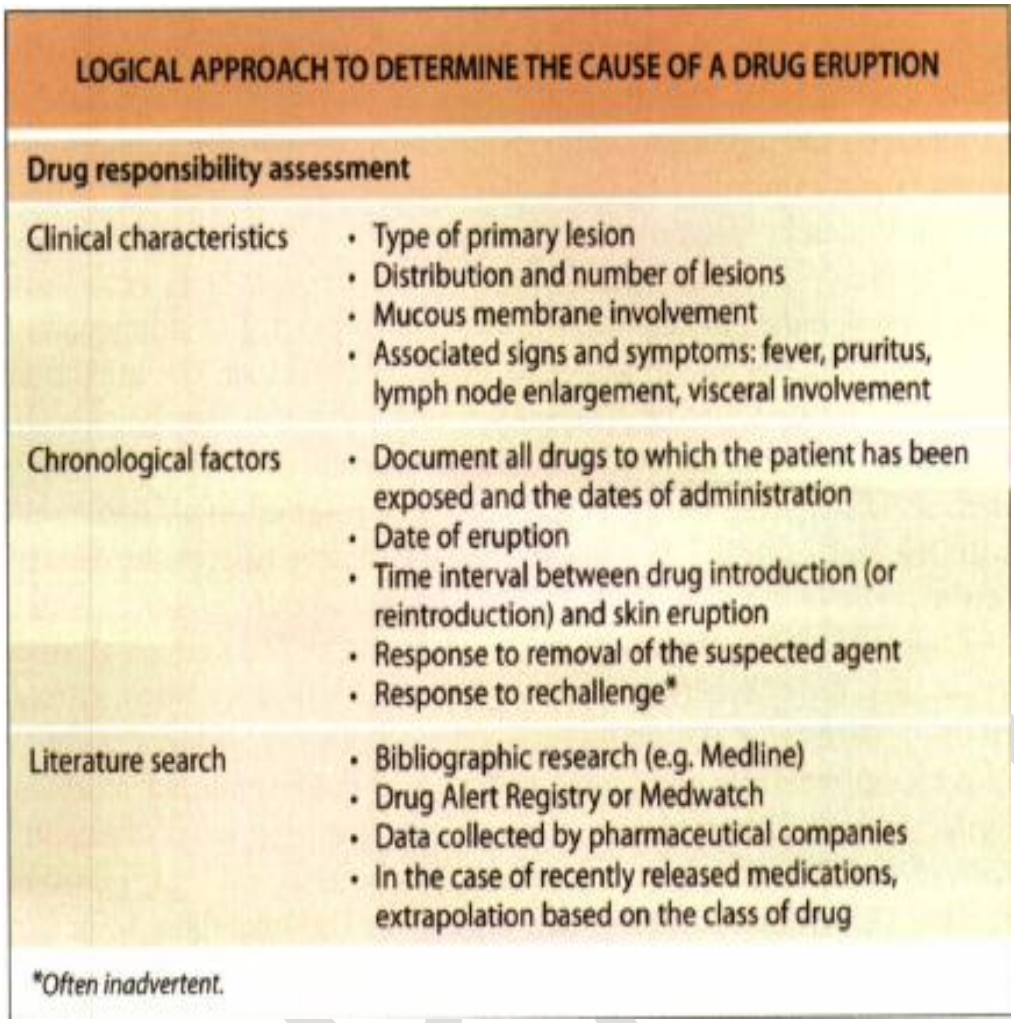
TypeIVreaction is a cell-mediated immune reaction, Sensitized lymphocytes react with drug, liberating cytokines, which trigger cutaneous inflammatory response.

Nonimmunologic mechanisms

1. reactions due to hereditary enzyme deficiencies
2. cumulation, such as melanosis due to gold or amiodarone
3. irritancy of a topically applied drug
4. an individual idiosyncrasy to a topical or systemic drug
5. reactions due to the combination of a drug with UV radiation (photosensitivity). These may have a toxic or immunologic (allergic) effect.
6. mechanisms not yet known

Immunologic hypersensitivity reactions are manifested by a variety of distinct clinical patterns

- Exanthematousreactions Type IV, type III
- Urticaria, angioedema Type I, type III
- Fixed drug eruption Type III, type IV
- Stevens-Johnson syndrome/toxic epidermal necrolysis Type III, type IV
- Vasculitis Type III
- Lichenoid eruptions Type IV
- Photoallergic reactions Type IV



LOGICAL APPROACH TO DETERMINE THE CAUSE OF A DRUG ERUPTION

Drug responsibility assessment	
Clinical characteristics	• Type of primary lesion • Distribution and number of lesions • Mucous membrane involvement • Associated signs and symptoms: fever, pruritus, lymph node enlargement, visceral involvement
Chronological factors	• Document all drugs to which the patient has been exposed and the dates of administration • Date of eruption • Time interval between drug introduction (or reintroduction) and skin eruption • Response to removal of the suspected agent • Response to rechallenge*
Literature search	• Bibliographic research (e.g. Medline) • Drug Alert Registry or Medwatch • Data collected by pharmaceutical companies • In the case of recently released medications, extrapolation based on the class of drug

*Often inadvertent.

Figure 22.1 Approach to a patient with drug reaction

INVESTIGATION

No gold standard investigation for confirmation of a drug cause, full blood count, liver and renal function tests, and a urine analysis could be done for all patients, Skin biopsy should be considered for all patients with potentially severe reactions, rechallenge test can also be tried in mild reactions, Patch tests for delayed cellular hypersensitivity reactions and Patch test which have 80% sensitivity in AGEP and 40% in FDE, can be done.

Morphologic approach to drug eruption

The morphology of CADRs include exanthematous, urticarial, pustular, bullous/ Blistering, erythema multiforme-like eruptions, and Fixed Drug Eruptions.

severe cutaneous adverse reactions

Severe cutaneous adverse reactions include anaphylaxis and angioedema, drug reaction with eosinophilia and systemic symptoms (DRESS) (mortality 10%), acute generalized exanthematous pustulosis (AGEP) (mortality 5%), Serum sickness syndrome, vasculitis, SJS and TEN -(mortality 25 to 30%), erythroderma, anticoagulant induced purpura and skin necrosis.

Exanthematous Drug Eruption

Exanthematous drug eruption also called morbilliform eruptions is the most common type ofCADR, underlying mechanism is immunologic cell-mediated hypersensitivity reactions, viral infections may increase the incidence, e.g. Penicillin vs infectious mononucleosis - 100% (i.e. in a patient who has infectious mononucleosis if they take penicillin they have 100% chance of developing morbilliform eruption), sulfonamide antibiotics vs HIV -50% (i.e. in a patient who has HIV if they take sulfonamides they have 50% chance of developing morbilliform eruption).

CLINICAL FEATURE

Exanthematous drug eruption begins within 7 to 14 days of drug intake, but earlier in rechallenge. It presents with erythematous macules sometimes slightly palpable, symmetric and begins on the trunk and upper extremities and progressively becomes confluent. It is typically polymorphous with morbilliform or sometimes urticarial lesions on the limbs, purpuric lesions on the ankles and feet could appear. Pruritus and low-grade fever are often present, Mucous membranes are usually spared. The eruption disappears spontaneously 1 to 2wks later with desquamation.

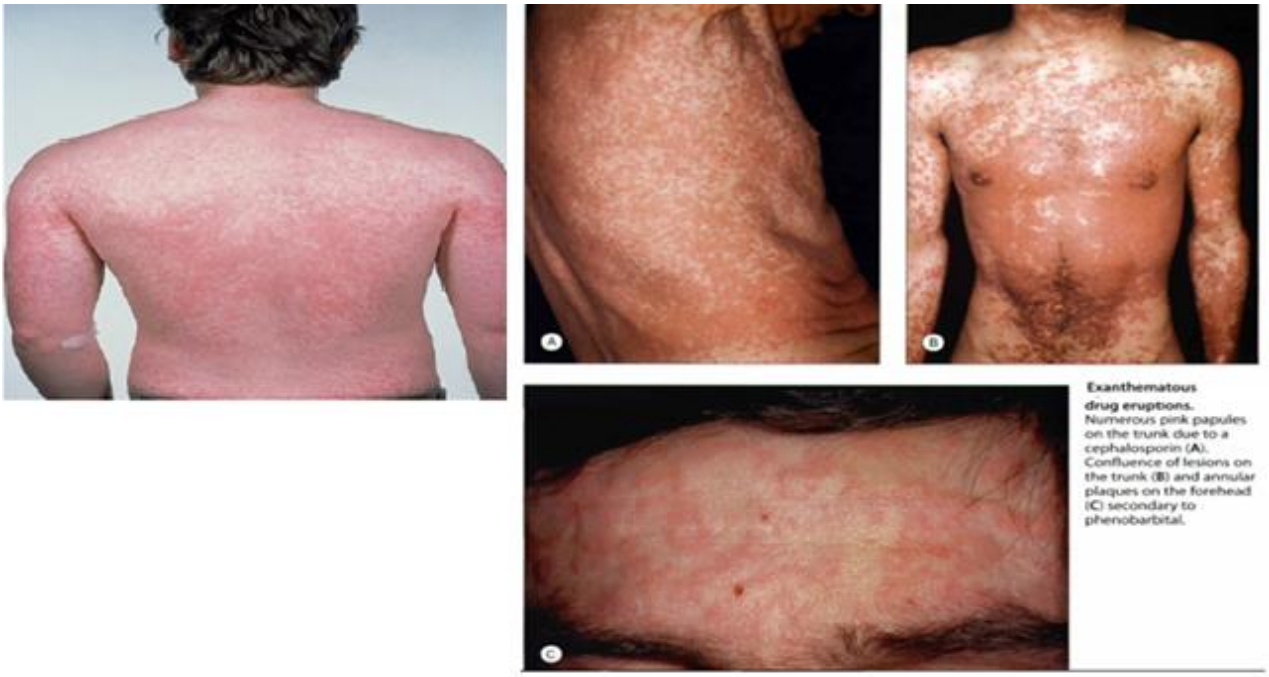


Figure 22.2 Morbilliform drug reaction

Drugs causing exanthematic reactions.

Most common	Less common
Ampicillin and penicillin	Cephalosporins
Phenylbutazone and other pyrazolones	Barbiturates
Sulphonamides	Thiazides
Phenytoin	Naproxen
Carbamazepine	Isoniazid
Gold	Phenothiazines
Gentamicin	Quinidine
	Meprobamate
	Atropine

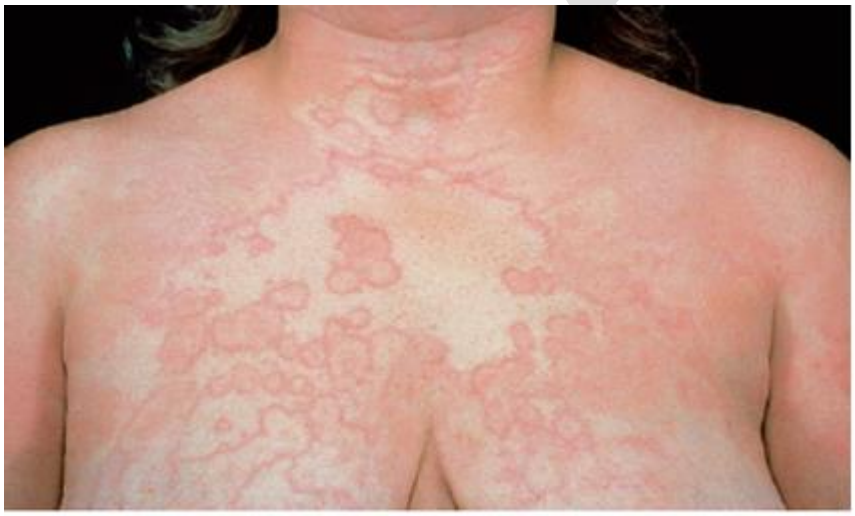
Table 22.2 Drugs causing exanthematic reaction

TREATMENT

Treatment is largely supportive, topical corticosteroids used for the pruritus, discontinue the offending agent but Treating throughor desensitization can be considered if the suspected drug is of paramount importance. Usually, the eruption will disappear even though the drug is continued, few patients progress to an erythroderma.

URTICARIAL DRUG ERUPTION

URTICARIAL DRUG ERUPTION is the second most common type of CADR, which accounts for 9% of chronic urticaria or angio-oedema. Occurring within 24–36hr of drug ingestion, but on rechallenge, lesions may develop within minutes. penicillins, sulphonamides and NSAIDs are the commonest type of drugs which cause urticarial CADRs.



Urticaria induced by acetylsalicylic acid. (Courtesy of St John's Institute of

Figure 22.3 Urticarial Drug Eruption

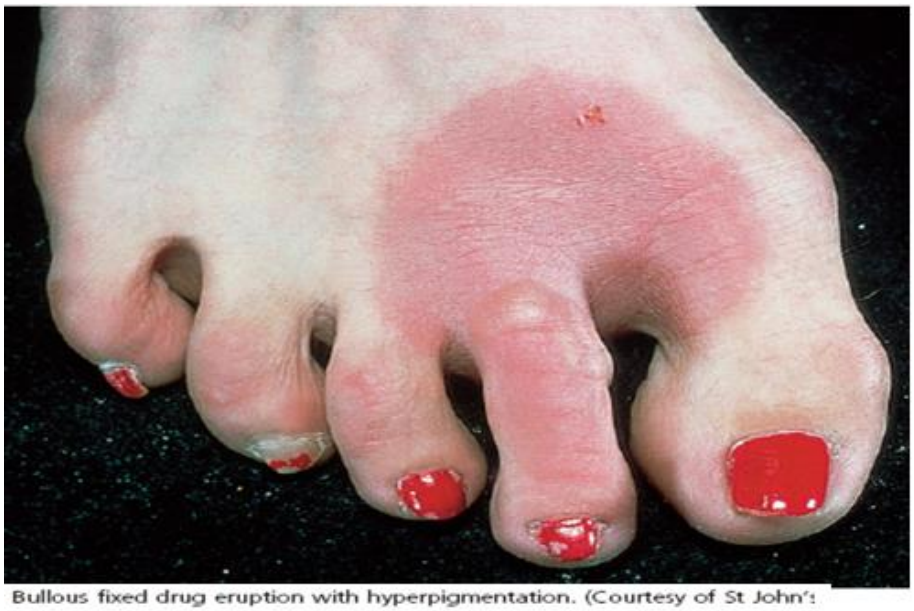
Treatment

Withdrawal of the drug and using antihistamines.

FIXED DRUG ERUPTION (FDE)

The term FDE describes the development of one or more annular or oval erythematous patches as a result systemic exposure to a drug; these reactions normally resolve with hyperpigmentation and may recur at the same site with reexposure to the drug. The lesions could be solitary, erythematous, bright red or dusky red macule then it may evolve into an edematous plaque. The eruption may initially be morbilliform, scarlatiniform or erythema multiforme-like. Genitalia,perianal area,hand, feet – are the most common sites. Some

complain of burning or stinging, fever, malaise, and abdominal symptoms, the initial acute phase lasting days to weeks, leaving residual grayish or slate-colored hyperpigmentation. Repeated exposure to the offending drug may cause new lesions to develop in addition to "lighting up" the older hyperpigmented lesions.



Bullous fixed drug eruption with hyperpigmentation. (Courtesy of St John's

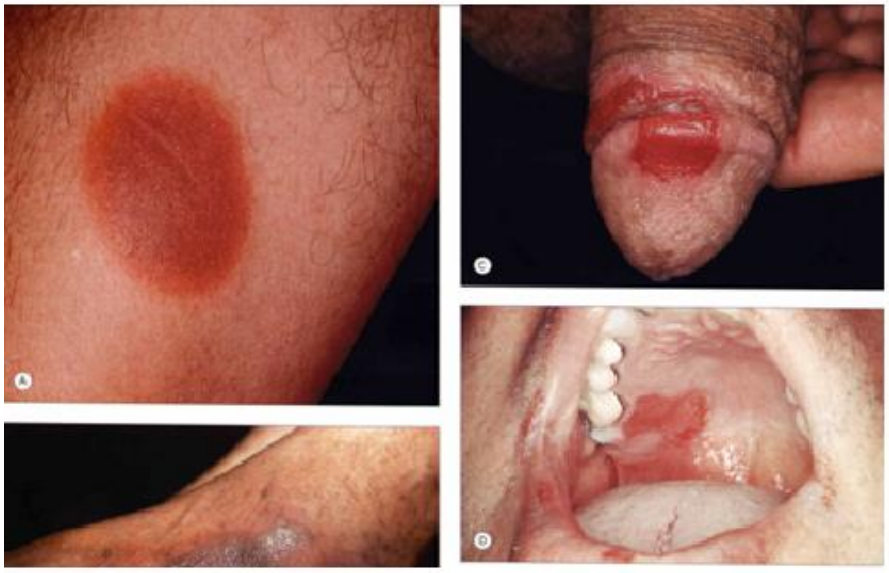


Figure 22.4 Fixed Drug Eruption

Occasionally, involvement is so extensive as to mimic TEN. Genital and oral mucous membranes may be involved in association with skin lesions, or alone. Pigmentation of thetongue as a form of FDE in heroin addicts can be seen.

Several clinical variants including pigmented, generalized or multiple, linear, non-pigmented, bullous, eczematous, urticarial, psoriasiform could be seen.

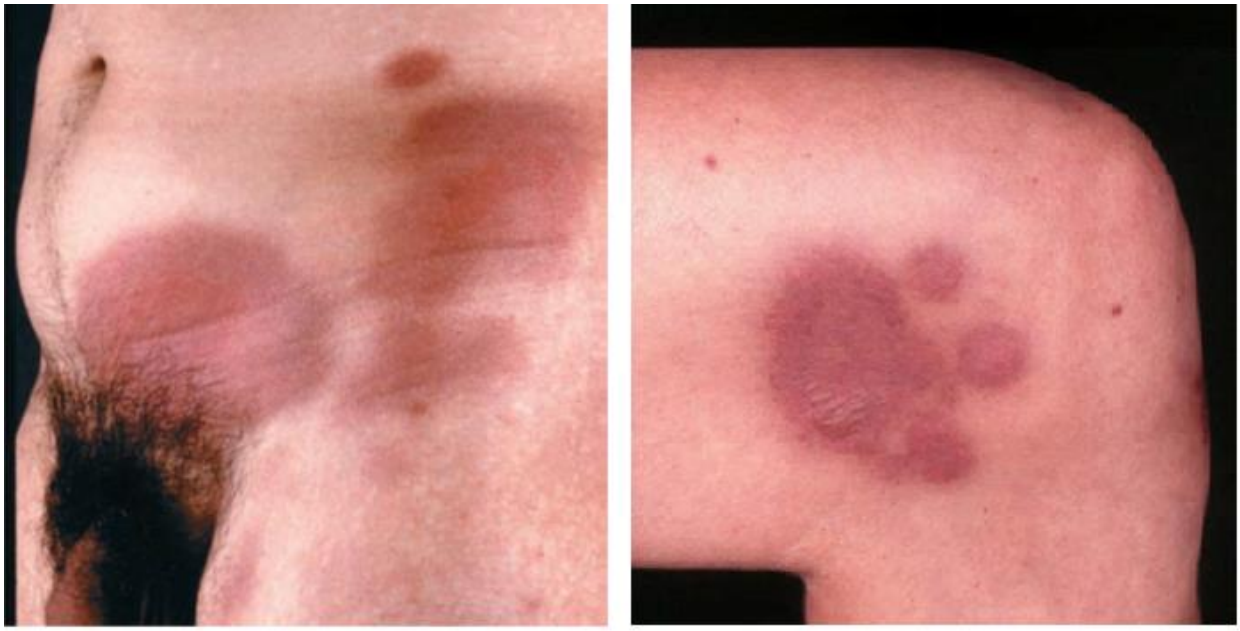


Figure 22.5 Pigmented fixed drug eruption

Drugs causing fixed eruptions.

Antibacterial substances	*Non-steroidal anti-inflammatory drugs*
Sulphonamides (co-trimoxazole)	Aspirin (acetylsalicylic acid)
Tetracyclines	Oxyphenbutazone
Penicillin	Phenazone (antipyrine)
Ampicillin	Metamizole
Amoxicillin	Paracetamol (acetaminophen)
Erythromycin	Ibuprofen
Trimethoprim	Various non-proprietary analgesic combinations
Nystatin	*Phenolphthalein and related compounds*
Griseofulvin	*Miscellaneous*
Dapsone	Codeine
Arsenicals	Hydralazine
Mercury salts	Oleoresins
p-Aminosalicylic acid	Sympathomimetics
Thioacetazone (thiacetazone)	Sympatholytics
Quinine	Parasympatholytics: hyoscine butylbromide
Metronidazole	Magnesium hydroxide
Clioquinol	Magnesium trisilicate
Barbiturates and other tranquillizers	Anthralin
Barbiturate derivatives	Chlorthiazone
Opium alkaloids	Chlorphenesin carbamate
Chloral hydrate	Food substitutes and flavours
Benzodiazepines: chlordiazepoxide	
Anticonvulsants	
Dextromethorphan	

Table 22.3 Drugs causing fixed drug eruption

Diagnosis

A re-challenge or provocation test in establishing the diagnosis could be considered in mild cases, patch testing at the site of a previous lesion has a sensitivity in 43 % of patients, prick and intradermal skin tests may be positive in 24 and 67 % of patients, respectively.

Treatment

Treatment is only symptomatic with antihistamine, topical steroids, and avoid the offending agent.

PHOTOSENSITIVITY

Photosensitivity or Drug–light reactions are CADRs which cause eruptions on exposed areas, with sparing of upper eyelids, submental and retroauricular areas. Commonly caused by UVA, but sometimes UVB and visible light could induce it.

Treatment is with discontinuation of the drug, steroid and photoprotection.

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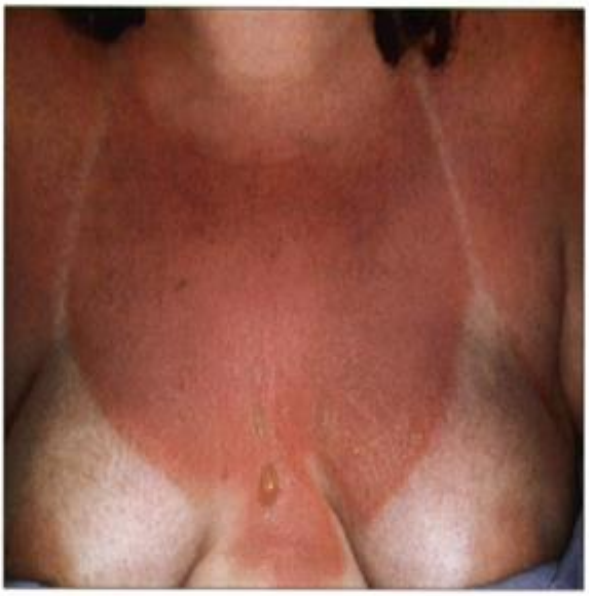
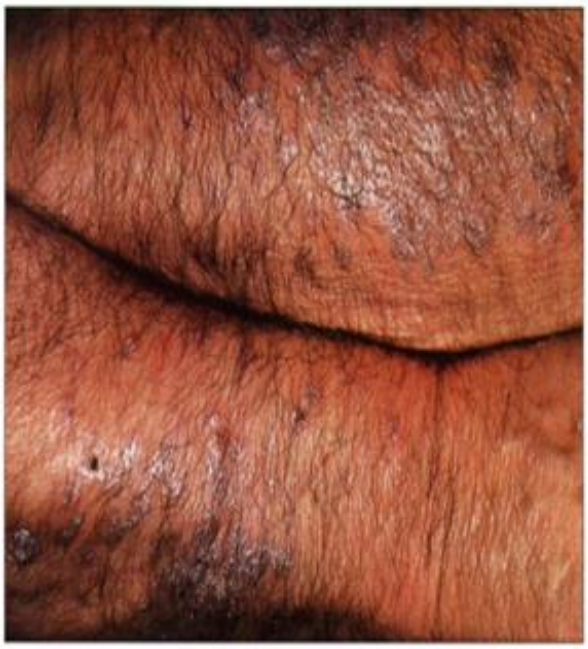


Phototoxic reaction in a patient receiving methotrexate. The erythema and bullae are obviously limited to sun-exposed sites and resemble an exaggerated sunburn. Patients on methotrexate can also experience a 'sunburn-recall' phenomenon.



Photolichenoid drug eruption due to hydrochlorothiazide. The lesions favored the extensor surfaces of the forearms.

Figure 22.6 Phototoxic drug reaction Figure 22.7 Lichenoid drug eruption

ERYTHEMA MULTIFORME(EM)

EM presents with macular, papular or urticarial lesions, as well as the classical iris or 'target lesions'. Lesions may involve the palms or trunk, as well as the oral and genital mucous membranes with erosions, can be divided into minor and major types according to mucous membrane involvement. Target lesions are commonly less than 3 cm in diameter. In up to 50% of cases of EM, there is no known provoking factor, a preceding herpes simplex infection or Mycoplasma infection could present, and drug accounts for only 10% of cases of EM. sulphonamides,co-trimoxazole, sulphones, penicillins, rifampicin, barbiturates, carbamazepine, topical agents like Primulaobconica, poison ivy,diphenylcyclopropenoneand bromofluorene can cause EM.

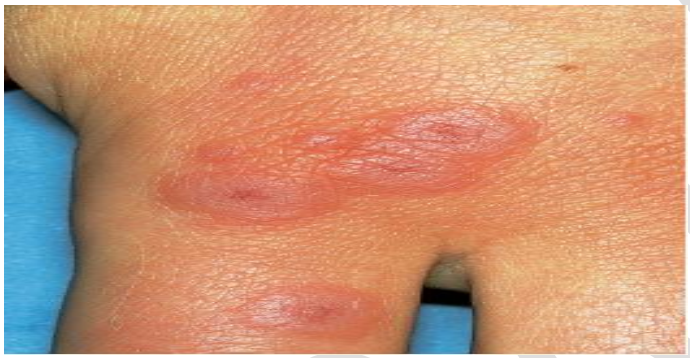


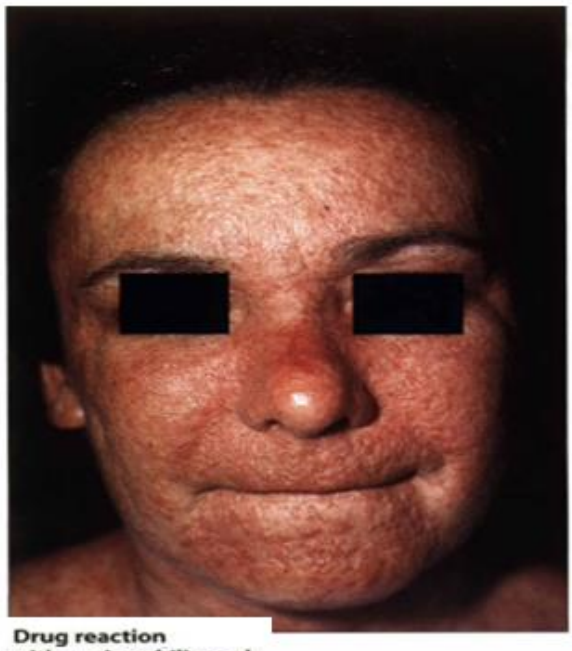
Figure 22.8 Erythema multiforme: Dusky erythematous lesion with central target

Treatment

Symptomatic treatment and d/c of the offending agent only is necessary in the papular and localized bullous forms, for more severe cases, prednisolone at an initial dosage of 30–60 mg/day, decreasing over a period of 1–4 weeks, may be given (controversial).

Drug Reaction with Eosinophilia and Systemic Symptoms (DRESS): Hypersensitivity Syndrome

DRESS is one the severe skin reactions with systemic manifestations, incidence is 1 in 1000 to 1 in 10000. Drugs commonly causing DRESS are anticonvulsants, sulfonamides, allupurinol, dapson, and abacavir. The incidence is higher in African-Americans. DRESSdevelops 2 to 6 weeks after the drug intake, fever and a cutaneous eruption are seen in 85% and 75% of patients, respectively, usually begins as a morbilliform eruption, which later becomes edematous, often with a follicular accentuation, vesicles, tense bullae induced by dermal edema, follicular as well as non-follicular pustules, erythroderma and purpuric lesions can be seen. Face, upper trunk and extremities are the common sites to be involved. Edema of the face is a hallmark of DRESS.



Drug reaction with eosinophilia and systemic symptoms (DRESS). Multiple edematous papules are present. Courtesy of Kenneth Greer MD.

Figure 22. Hypersensitivity Drug Syndrome

Systemic involvement includes lymphadenopathy,hepatitis, nephritis, pneumonia, myocarditis and hypothyroidism. Hepatitis is the most common systemic involvement; it presents with fulminant hepatitis and is the cause of death in the majority of DRESS cases. Infiltration of the brain by eosinophils and gastrointestinal bleeding can occur. Sign and symptoms may persist for several weeks or months after drug withdrawal. Prominent eosinophilia is very common (90%), atypical lymphocytosis and elevation of hepatic enzymes can occur.

TREATMENT

Treatment is with early withdrawal of the offending drug, Corticosteroids are the first line of therapy for DRESS which can be topical high-potency corticosteroids in mild disease, if severe systemic corticosteroids are used. Relapse can occur with tapering so better to maintain steroid treatment for several weeks and even months.

Epidermal Necrolysis

1. Stevens-Johnson Syndrome(SJS)
2. Toxic Epidermal Necrolysis(TEN)

Epidermal Necrolysis (EN) are acute life-threatening mucocutaneous reactions, characterized by extensive necrosis and detachment of the epidermisassociated with an erosive stomatitis and severe ocular involvement. SJS/TEN are rare and life-threatening reactions, which are mainly drug-induced (in>**90**% of the cases).

SJS and TEN represent variants of epidermal necrolysis with different body surface area (BSA) involvement.

SJS -less than 10 % of BSA

SJS/TEN overlap - between 10 to 30 % BSA

TEN - more than 30 % of BSA

EPIDEMIOLOGY

Incidence of epidermal necrolysis is different, SJS occur 1 to 6 cases per million person-year and TEN occur in 0.4 to 1.2 cases per million person-year. EN can occur at any age, but risk increases with age after the fourth decade, F to M ratio 5:3, HIV infection, collagen vascular disease and cancer increased risk of EN. Mortality vary from 5 to 12 % for SJS to more than 30 % for TEN, Increasing age, significant co-morbidity, and greater extent of skin involvement correlate with poor prognosis.

Medications and the Risk of Epidermal Necrolysis

High Risk	Lower Risk	Doubtful Risk	No Evidence of Risk
Allopurinol	Acetic acid NSAIDs (e.g., diclofenac)	Paracetamol (acetaminophen)	Aspirin
Sulfamethoxazole	Aminopenicillins	Pyrazolone analgesics	Sulfonylurea
Sulfadiazine	Cephalosporins	Corticosteroids	Thiazide diuretics
Sulfapyridine	Quinolones	Other NSAIDs (except aspirin)	Furosemide
Sulfadoxine	Cyclins	Sertraline	Aldactone
Sulfasalazine	Macrolides		Calcium channel blockers
Carbamazepine			β Blockers
Lamotrigine			Angiotensin-converting enzyme inhibitors
Phenobarbital			Angiotensin II receptor antagonists
Phenytoin			Statins
Phenylbutazone			Hormones
Nevirapine			Vitamins
Oxicam NSAIDs			
Thiacetazone			

Figure 22.10 Medications causing toxic epidermal necrolysis

Clinical features

History- EN begins within 8 weeks (usually 4 to 30 days) of drug intake, only in very rare cases with prior reaction and inadvertent rechallenge it appear more rapidly, within a few hours of drug intake. Fever, headache, rhinitis, and myalgias may precede the mucocutaneous

lesions by 1 to 3 days, pain on swallowing and burning or stinging of the eyes can present with rapid progression and pain.

- about 1/3-begin with non-specific symptom,
- 1/3-symptoms of mucous membrane involvement
- 1/3- with an exanthema

Cutaneous Lesionsareinitially symmetrically distributed on the face, the upper trunk, and the proximal extremities, the distal portions of the arms as well as the legs are relatively spared, but the rash can rapidly extend to the rest of the body within a few days or even hours.
Nikolsky sign(a sign in which when we apply lateral pressure to erythematous, affected skin it will have shearing effect) is positive on erythematous zones, at this stage, the lesions evolve to flaccid blisters, the necrotic epidermis is easily detached revealing large areas of exposed, red, sometimes oozing dermis.

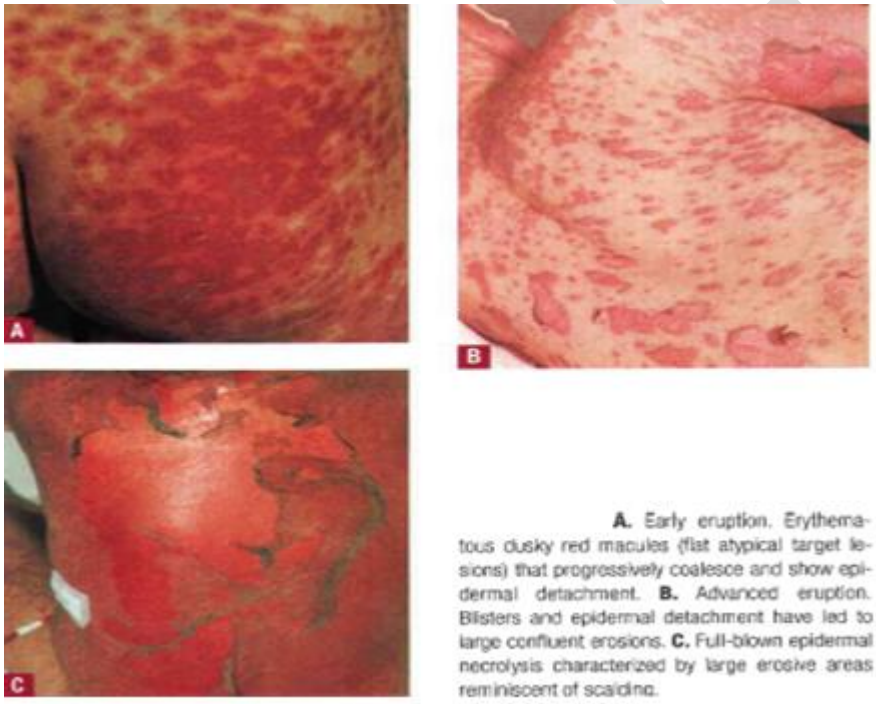


Figure 22.11 **A**. Erythematous dusky macule with atypical targetoid lesion
B and C. Epidermal sloughing and blisters

Mucous Membrane Involvementnearlyalways, at least two sites are involved in approximately90 % of cases. It can precede or follow the skin eruption. Mucous membrane involvementbegins with erythema followed by painful erosions of thebuccal, ocular, and genital mucosa, which leads to impaired alimentation, photophobia, conjunctivalsynechiae,

and painful micturition. The oral cavity and the vermilion border of the lips are almost invariably affected, with painful hemorrhagic erosions coated by grayish white pseudomembranes and crusts of the lips. Approximately 85 % of the patients develop conjunctival lesions with hyperemia, erosions, chemosis, photophobia, and lacrimation, shedding of eyelashes. Severe forms lead to corneal ulceration, anterior uveitis, and purulent conjunctivitis. Shedding of nails occurs in severe forms.

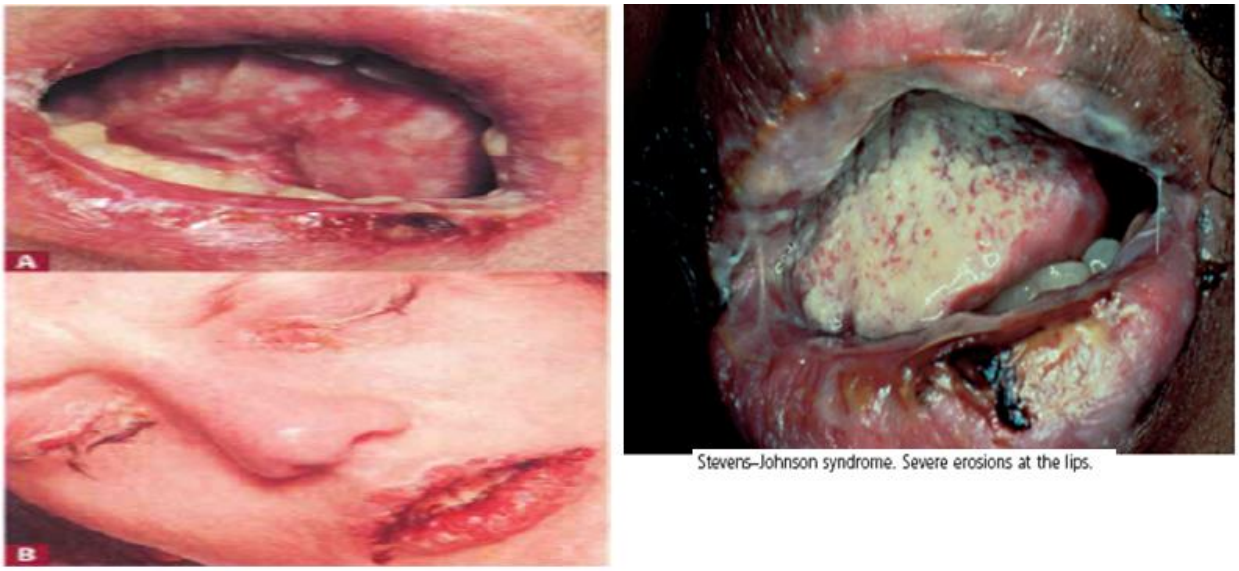


Figure 22.12 Steven Johson Syndrome: erosion at the upper and lower lips

Extra-Cutaneous Symptomsincludehigh fever, pain, and weakness.

pulmonaryinvolvement present in 25 % of the cases of EN, dyspnea, bronchial hypersecretion, hypoxemia, and hemoptysis.

GI- profuse diarrhea with malabsorption, melena, and even colonic perforation

Renal - Proteinuria, microalbuminuria, hematuria, and azotemia are not rare.

DIAGNOSIS - LABORATORY

- CBC - anemia -leukocytosis, thrombocytopenia
- LFT –increased liver enzymes and amylase
- Electrolyte imbalances, hypoalbuminemia, and hypoproteinemia
  Raised BUN level is one marker of severity

Differential Diagnosis of Epidermal Necrolysis (EN)

- Limited EN (Stevens-Johnson syndrome)
  - Erythema multiforme major

- Varicella

- Widespread EN
  - Acute generalized exanthematouspustulosis(AGEP)
  - Generalized bullous fixed drug eruption(GBFDE)

GBFDE has a much better prognosis, probably because of the mild involvement of mucous membranes and the absence of visceral complications. Prior attacks, rapid onset after drug intake, and very large, well-demarcated blisters are the hallmarks of GBFDE.

PROGNOSIS AND CLINICAL COURSE

The epidermal detachment progresses for 5 to 7 days then a plateau phase, with progressive re-epithelialization, this can take a few days to several weeks. During this period, life-threatening complications such as sepsis or systemic organ failure may occur. The mortality rate is 5 to 12 % for SJS and more than 30 % for TEN. The prognosis is not affected by the type or dose of the responsible drug or the presence of human immunodeficiency virus infection.

Treatment

Early recognition and withdrawal of the offending drug(s) is the first thing to do in EN cases.

supportivecare

- Fluid and electrolyte correction
- The environmental temperature >> 28°C to 30°C
- nutritional support provided by NG tube
- Extensive débridement of necrotic epidermis is not recommended
- no standard policy on wound dressings and antiseptics use
- Artificial tears, antibiotic or antiseptic eyedrops, and vitamin A are often used every 2 hours in the acute phase
- The mouth should be rinsed several times a day with antiseptic or antifungal solution

Specifictreatment

- a large number of immunosuppressive and/or anti-inflammatory therapies have been tried, but none has clearly proved its efficacy, the low prevalence of the disease makes randomized clinical trials hard to perform.

CORTICOSTEROIDS

- The use of systemic corticosteroids is still controversial, associated with increased mortality and adverse effects, particularly sepsis.

INTRAVENOUS IMMUNOGLOBULINs

Cyclosporins
Hemodyalisis……

PREVENTION

- A list of the suspected medication(s) and molecules of the same biochemical structure must be given to the patient on a personal "allergy card''
- prescription of the offending agent to family members should also be avoided.

SUMMARY

- Drug-induced cutaneous eruptions are common and they range from common nuisance rashes to rare life-threatening diseases.
- The spectrum of clinical manifestations includes exanthematous, urticarial, pustular, and bullous eruptions
- Drug eruptions can mimic virtually all the morphologic expressions in dermatology and must be first on the differential diagnosis in the appearance of a sudden symmetric skin eruption
- Drug reactions may be limited solely to skin or may be part of a severe systemic reaction, such as drug hypersensitivity syndrome or toxic epidermal necrolysis.

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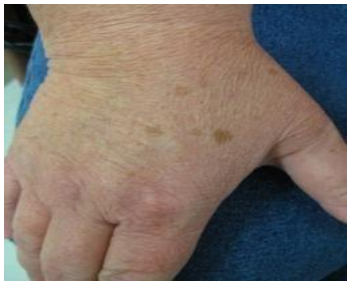
19. Fitzpatrick's-8th ed

Annex

Case studies

1. Discuss the structure and functions of skin

2. What is the BEST morphological description for these primary lesions? (Lesions measure less than 0.5cm)



3.The difference between a vesicle and a bulla is:

a. Diameter of the lesion
b. Extension into the dermis
c. Location on the body
d. Presence of pus vs. clear serous fluid
e. Thickness (height) of the lesion

Case study 1

History

A 6 years old chid presented with skin lesion over the face of 5 days

It is asymptomatic

Question

1. Describe the skin lesion
2. What is your diagnosis
3. How do yo

Case study 2

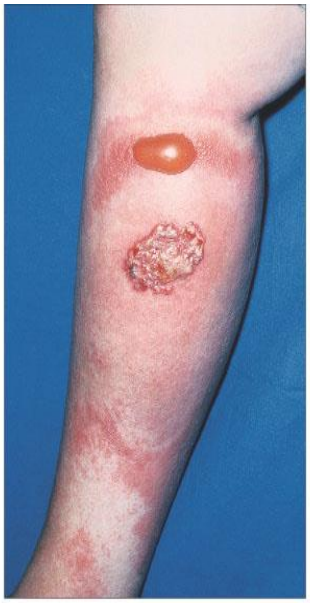
History

A 34 years old patient who presneted with swelling on the leg of 13 days

It is painful .

Physical Examination

Diffuse erythematous tender ness with oedema of the lower leg



What is your diagnosis

How do you manage this condition

Case study 3

A 16 years old patient presented with skin lesion over the body of 3 years

It is asymptomatic

1. What is your diagnosis
2. How do you classify the disease
3. How do you manage the condition

Case study 4

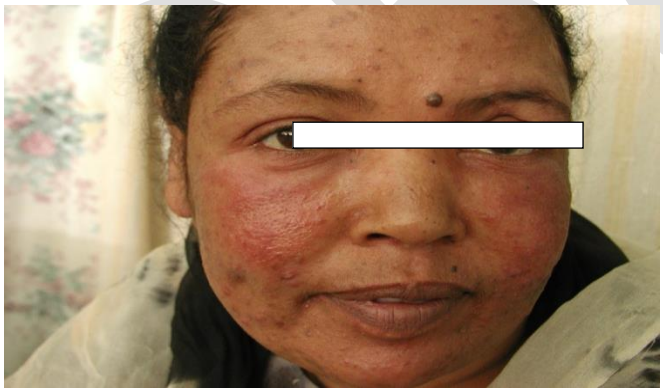
History

A 42 years old lady presented with skin lesion over the face of 6 months duration.

It is aggravated by sunexposure ,emotional stress and when she took hot drinks.

Physical Examination

Erythematous patch es and erythmatous papules on the right and left cheeks



1. What is your diagnosis?
2. What is your differential diagnosis?
3. How do you classify the disease?
4. How do you manage it?

Case study 5

History

A 40 years old lady presented with lesion on the gluteal (buttock) areas of 2 years

Physical Examination

Well defined hypopigmented patches on the right and left buttock

Questions

A. List differential diagnosis
B. What investigation should be done
C. Which signs are used to make diagnosis?
D. How do you manage it?

Case Study 6

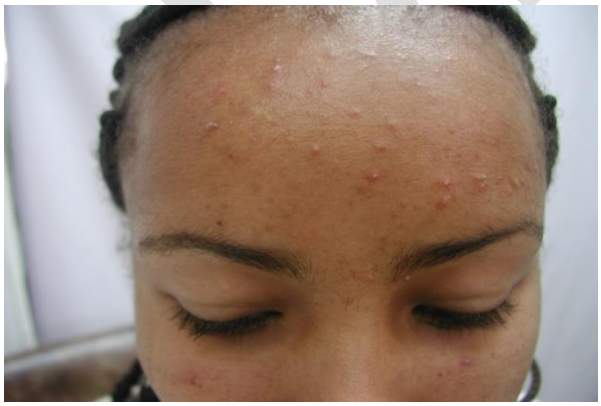
History

A 17 years old young lady presented with skin lesion over the face of 02 years.

It is aggravated by sun exposure. She used to apply greasy substance on her face.

Physical Examination

Multiple papules and few pustules on the forehead and cheeks.



Questions

1. What is your diagnosis
2. What is your differential diagnosis

3. How do you classify the disease
4. What is the Treatment

Case Study 7

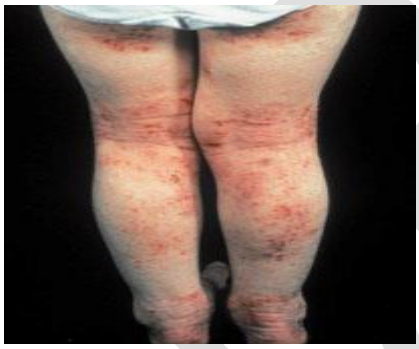
History

A 5-year-old girl who is well known to your practice attends with her mother. She has been troubled by worsening pruritus over the last six weeks.The girl has begun to develop the symptoms of seasonal allergic rhinoconjunctivitis within the last couple of months. She has a positve family history of atopy, both parents are allergic to animals and her older brother has asthma. Her younger brother has been sent home from nursery with impetigo recently. Her treatments include an emollient as soap and leave-on preparation and various strengths of topical steroids ranging from very mild to moderately potent depending on site and eczema severity. On questioning, however, mother reports that her daughter's skin is so sore that she is refusing to bathe or apply her topical treatment.

PhysicalExamination

A full examination reveals a fractious child; she is unable to stop scratching her skin once undressed.

She has widespread, mildly tender, shotty lymphadenopathy (cervical, axillary and groin). Her skin is generally mildly erythrodermic and extensively excoriated, particularly her limbs, neck and lower back. The excoriations are covered with haemorrhagic crust and yellowish exudates.



What is the primary diagnosis?

What secondary complications are exacerbating her pruritus?

How would you manage this patient?

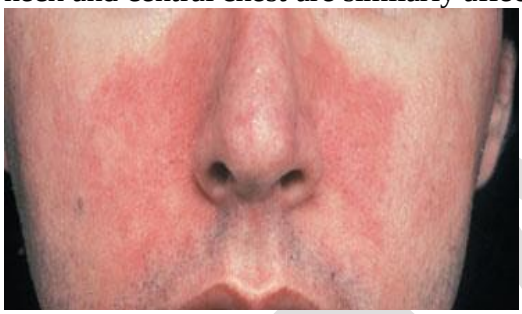
Case study 8

History

A 29-year-old man attends your clinic with a 4-year history of a recurrent and itchy facial eruption that he feels is unsightly. He notices the eruption is worse in the winter and tends to improve over the summer. He is currently studying for business exams and feels the associated stress has triggered the current flare. He avoids soaps, which make his face sore, and recently has reduced his alcohol intake in an effort to improve his eruption. He is otherwise well and on no medication.

Physical Examination

A full examination is unremarkable except for the skin of his face, neck, central chest and scalp. There are poorly defined erythematous patches with overlying adherent greasy scale affecting his naso-labial folds and extending onto his cheeks. His eyebrows, scalp, nape of his neck and central chest are similarly affected.



Question

□□□What is this eruption?
□□□What age groups are affected?
□□□How would you manage this patient?

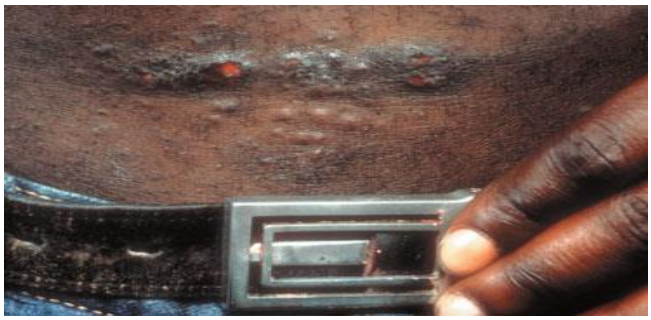
Case Study 9

History

A 59-year-old bus driver presents with a 5-month history of a persistent itchy patch below his umbilicus. Initially it began as an intermittent eruption, coming and going in an apparently random pattern; over the past six weeks, since the weather became warmer, it has persisted. He is otherwise well with no history of previous skin problems. He is not on medication.

Examination

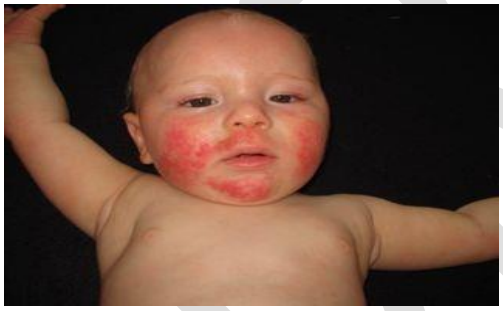
There is a localized area of marked lichenification, post-inflammatory hyperpigmentation, excoriation and erosion at the midline below his umbilicus. The surrounding skin has a more diffuse area of low-grade lichenification, hyperpigmentation and mild erythema.



Q□□□What could this eruption be?
Q□□□How should he be investigated?
Q□□□What information does this man need?

Case study 10

A 3 month-old baby has developed erythematous, oozing patches on the cheeks and chin and frequently rubs his face. Which of the following is the most likely diagnosis?
a. Atopic dermatitis
b. Candidal dermatitis
c. Dyshidrotic dermatitis
d. Impetigo
e. Irritant Dermatitis



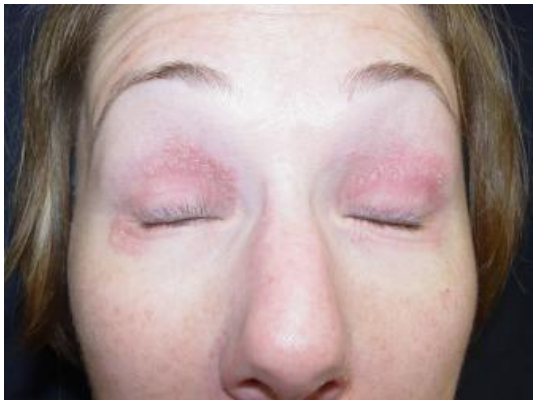
Case study 11

History

A 25-year-old female presents to you with a rash over her eyelids of 3 days after using a new cosmetic brand.

Physical examination

Multiple erythematous papules on the right and left eye lids.



Question

What is your diagnosis?

What is the BEST test to confirm the diagnosis?

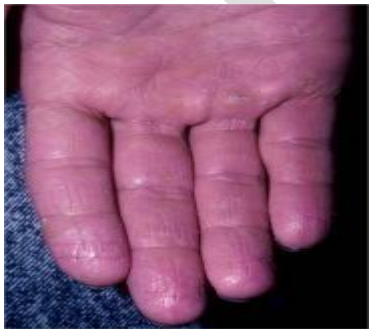
Case study 12

History

A 30-year-old nurse is transferred to a new hospital and begins to develop red, painful, chapped hands (see photo). He has been working on a unit with multiple patients on contact precautions, and he has been washing his hands frequently with soap and water.

Physical Examination

On exam there are multiple fissures and scaling, but no vesicles are seen. What is the most likely diagnosis?



a. Allergic contact dermatitis
b. Dyshidrotic dermatitis
c. Irritant contact dermatitis

d. Nummular dermatitis
e. Psoriasis

Case study 13

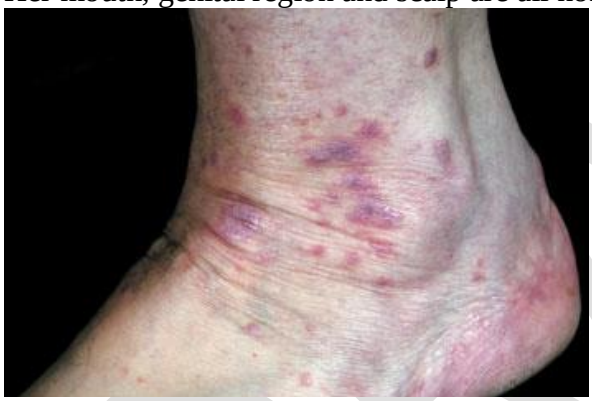
History
A 47-year-old woman is seen in the dermatology clinic with a 5-month history of itchy eruption consisting of lesions mainly on her feet but also scattered on her legs. The rest of her skin is unaffected. She does not complain of any symptoms in her mouth or involving the genital area. On direct questioning she had noticed that some of her nails have become slightly brittle and are liable to splitting. No one else in the family is currently affected. She is otherwise well and not taking any regular medication.

Examination
There are multiple, discrete, purplish, shiny flat-topped papules over the dorsum of her feet; some of the lesions have a lacy white pattern over their surface.

Further similar lesions are seen scattered on her lower legs; some of the papules are clustered in a linear fashion demonstrating Koebner's phenomenon.

A number of her fingernails have longitudinal ridges on them with 'V-shaped' nicks.

Her mouth, genital region and scalp are all normal.

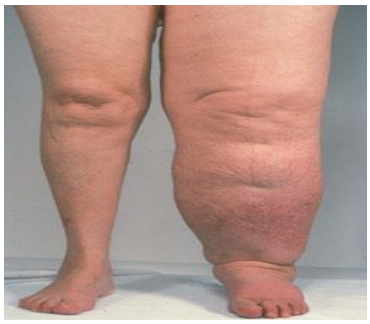


What is the diagnosis?
What triggers are known to be associated with this skin disease?
What are the treatment options for this patient?

Case study 14

History
A 33-year-old woman attends the dermatology clinic with a 9-month history of unilateral leg swelling. Although the swelling is a cause of significant cosmetic concern, it is fairly asymptomatic.She is not taking any medication. There is no family history of similar swelling or varicose veins.

Examination
There is unilateral swelling of the entire left leg, including toes and extending to the groin. There is no involvement of the skin above the inguinal ligament. The edema is non-pitting and non-tender. Over the distal anterior shin, the skin is erythematous, with evidence of early verrucous or cobble-stone change, but there is no crusting, oozing or ulceration. There are no palpable lymph nodes. Examination of her cardiorespiratory system, abdomen and pelvis was normal.



what is the diagnosis?
what are the potential causes?
how would you investigate this patient further?

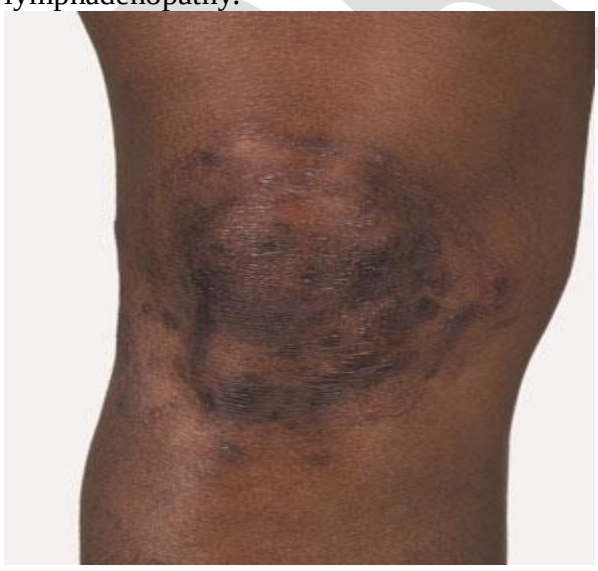
Case study 15

History

A 37-year-old healthcare assistant presents to the dermatology clinic with a pruritic eruption over her right knee. The lesion had started as a small erythematous papule and then spread out very gradually to form a scaly, ring-shaped lesion. The itching is not intense but she does find herself scratching. She has no history of previous skin problems. Her 7-year-old son has eczema and a dry scaly scalp. She has used some of her son's cortisone ointment on the lesion, which seemed to reduce the itching and scaling but the lesion has continued to expand.

Examination

There is an annular lesion 9 cm in diameter with a raised edge over the right knee (Fig. 86.1). Marked hyperpigmentation, erythema and multiple papules and pustules are seen at the raised edge. Her scalp and nails are normal, as is the rest of her skin. She has brought her son with her to the clinic; he has a very scaly scalp with patches of alopecia and occipital lymphadenopathy.



What is the diagnosis?
From whom did the patient acquire the infection?
How would you treat the mother and child?

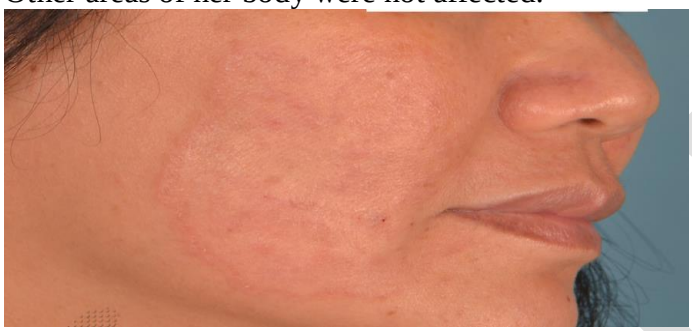
Case Study 16

History

A 46-year-old woman presented with a facial rash that had worsened over nine months. There were no specific triggers or contacts, and she had no significant medical history.

Physical Examination

Examination revealed annular plaques with a raised erythematous border on her right .cheek. Other areas of her body were not affected.



Question

Based on the patient's history and physical examination findings, which one of the following is the most likely diagnosis?

A. Acne rosacea.
B. Acute cutaneous lupus erythematosus.
C. Atopic dermatitis.
D. Dermatomyositis.
E. Tinea faciei.

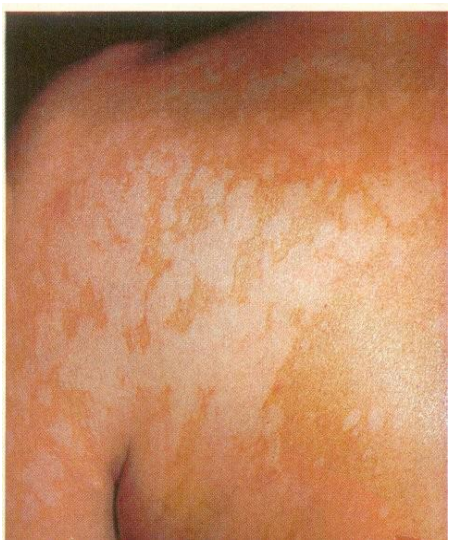
Case study 17

History

This is 22-year-old building laborer presented with skin lesion over the trunk of 9 months duration and it is asymptomatic.

Physical Examination

Multiple hypopigmented patches on his trunk.. He has no history of chronic illness.



What is your diagnosis?
what investigation do you order?

How do you manage?

What do you advise him?

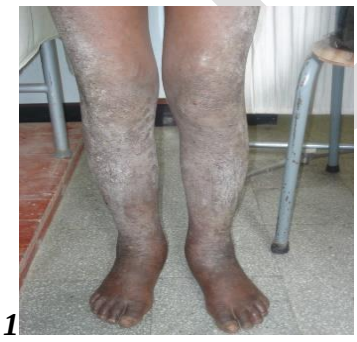
Case Study 18

"This itching is going to kill me!"

Aba Temam a 20 year-old farmer from Yebu, scratched and scratched, but he just couldn't get relief from the itching sensation he felt in his lower leg. He never had this problem before, and as far as he could remember, he had done nothing to his leg, no injuries, no paste put on it or the like. At first, the itching had not been very strong, but recently it had gotten much worse, so now he even used rough objects to scratch himself.

The other problem was that it now involved a much wider area: it had extended from the left lower leg to the thigh and gluteal area and finally to the right side. When he looked at it,he saw that the skin at these parts had become somewhat thicker and darker.

He started to get worried that it might be something serious, so he went to the traditional healer. The healer gave him some local drugs which he dutifully applied, but nevertheless, the problem got worse.



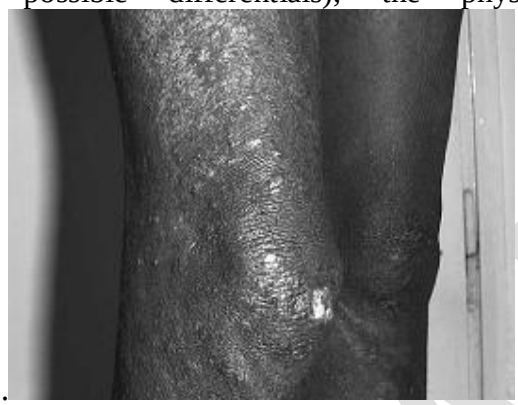
1

List the problems this patient is having.

Discuss the possible differential diagnoses.

After he had this problem for almost two years, he complained about his skin

problem to his friend. His friend said "You know, the local drugs don't help at all! well, may be you should go and see a medical doctor. Jimma is close by; why don't you go there?"
Aba Temam thought about this for some time; after a week he decided that his friend was probably right and came to the Department of Dermatology at Jimma University Specialized Hospital.
The attending dermatologist recorded in the chart:
Localised, pigmented plaque lesions with pigmented, oedematous and thickened skin on the left leg, thigh and gluteal area combined with few papules and a solitary lesion around the knee; mild pigmentation and thickening of skin on the right leg.
Having a pretty firm suspicion about the underlying disease (but not being quite sure about the possible differentials), the physician sent her patient for appropriate tests.



What other examinations would you do?
What are the appropriate tests?
Aba Temam was told to go to the laboratory, where a skin snip was done.
On the paper the lab technician had given him, the Dermatologist could read:
Multiple microfilariae from left leg lesion.
Therefore, the diagnosis of onchocerciasis was confirmed.
The physician prescribed him tablets, some lotions and gave him advice.
Aba Temam thanked the physician and he was glad that finally something could be done against the itching.

Group Exercise 3
Based on the case history given above, try to answer the following questions.
1. What do you think is the mode of transmission of the disease?
2. In which parts of the country is the disease common?
3. How do you treat this patient?
4. Discuss the prevention measures.

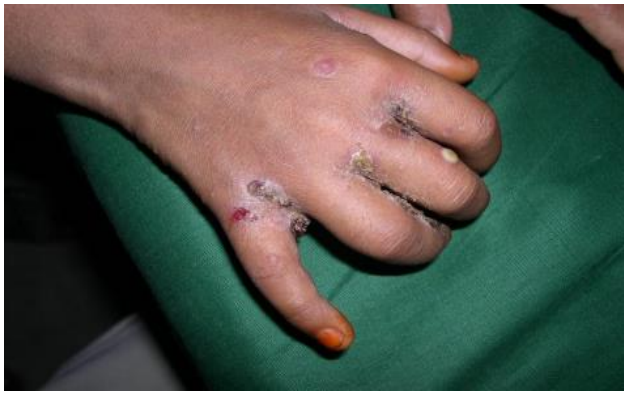
Case study 19

History

A 15years old female patient comes to you with two weeks history of itching all over body which becomes worse at night. She has family history of similar illness. It becomes painful since the last one week.

Physical examination

Multiple tender pustules involving finger web space.



What is the diagnosis?

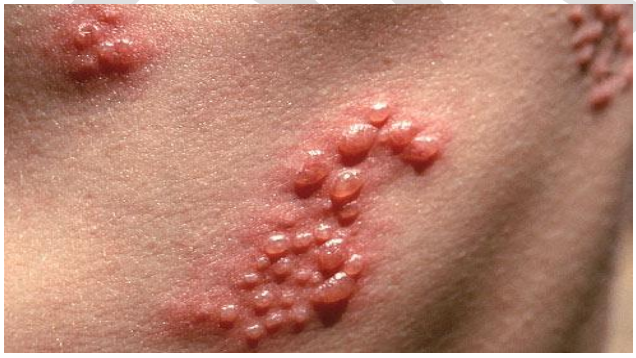
What is the treatment?

What do you advice?

CASE STUDY20

History

A 25 years old lady presented to you with a skin lesion on her neck since one month followed by chest and back involvement, she claimed the lesions are sometimes itchy otherwise no associated feature.



What differentials come to your mind? What do you ask more on the history and you expect to see on physical examination, how do you manage?

2, A 60 years old male presented with the skin lesion of 2 days duration, which is painful and sometimes itchy.

What additional history do you want to ask?

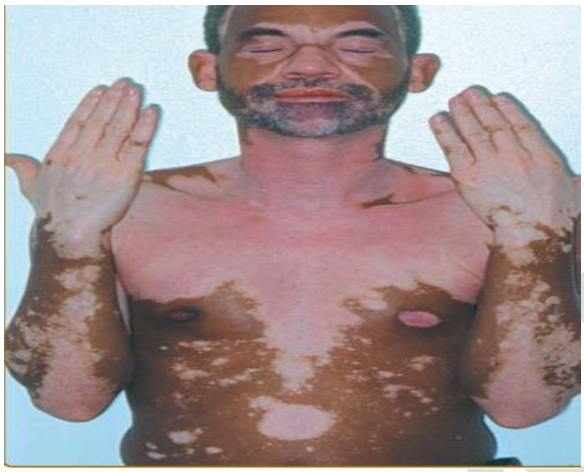
How do you describe the skin lesions?

How do you manage this patient?

Case study 21

History

A 43 years old man presented with discolouration on the body of 4 years.



Physcial Examination

Multiple depigmented patches on the trunk,upper extreimities and face.

Question

What is your diagnosis?

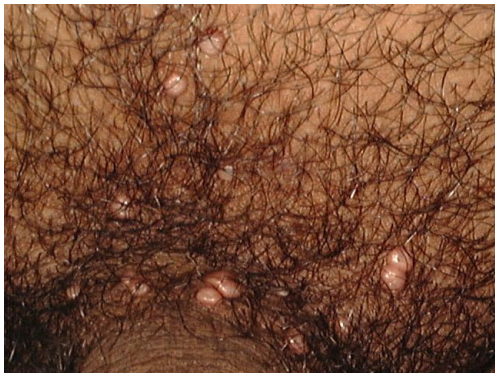
How do you classify the disease?

What investigation should be done?

How do you manage it?

Photo Quiz

Picture 1



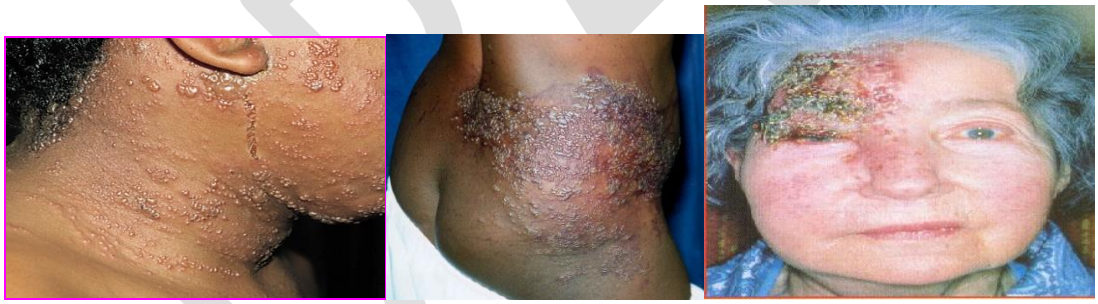
1A-Describe the skin lesion?

1B-What is your diagnosis?

1C-Is there any investigation?

1D-How do you manage it ?

Picture 2



2A-Describe the skin lesion?

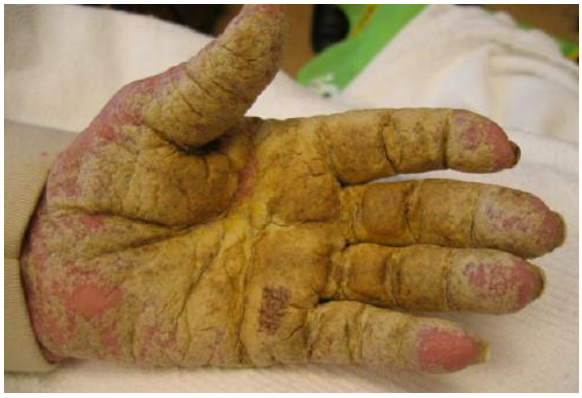
2B-What is the diagnosis?

2C-Is there any investigation?

2D-what are the complications?

2E-How do you manage it ?

Picture 3



3A-how do you describe?

3B-what is the diagnosis?

3C-Is there any investigation?

3D-How do you manage it?

Picture 4

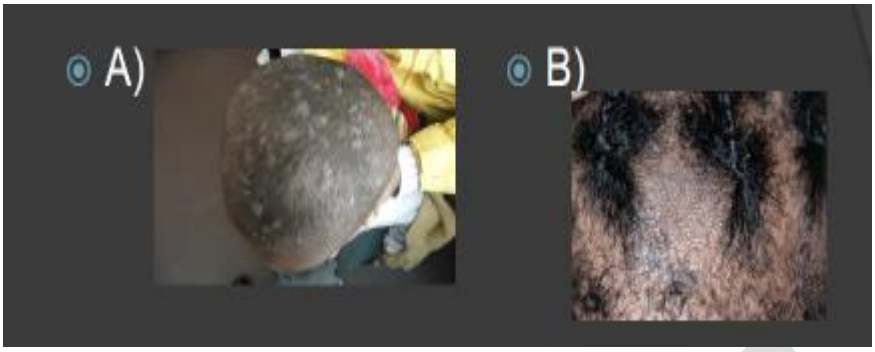
4A- Describe the skin lesion?

4B-what is your diagnosis?

4C-What investigation should be done?

4 D-How do you manage it?

Picture 5



5A. Describe the lesion?

5B. What is your diagnosis?

5C. What is your differential diagnosis?

5D. What investigation do you order?

5E. How do you manage it?

Picture 6

6A. Describe the lesion?

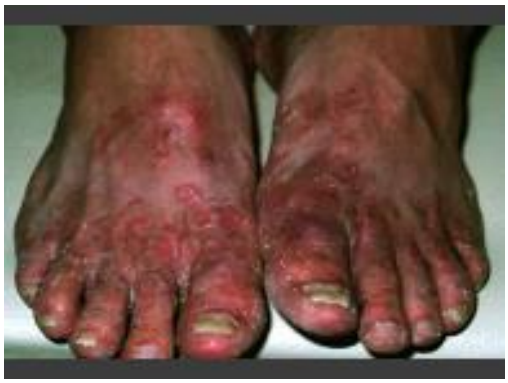
6B. What is your diagnosis?

6C. What is your differential diagnosis?

6D. What investigation do you order?

6E. How do you manage it?

Picture 7



7A. Describe the lesion

7B. What is your diagnosis?

7C. What is your differential diagnosis?

7D. What investigation do you order?

7E. How do you manage it?

Picture 8

8A. Describe the lesion?

8B. What is your diagnosis?

8C. What is your differential diagnosis?

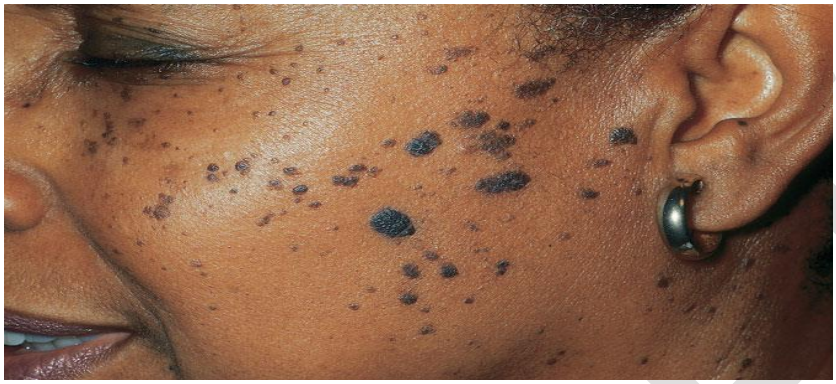
8D. What investigation do you order?

8E. How do you manage it?

Case presentation :

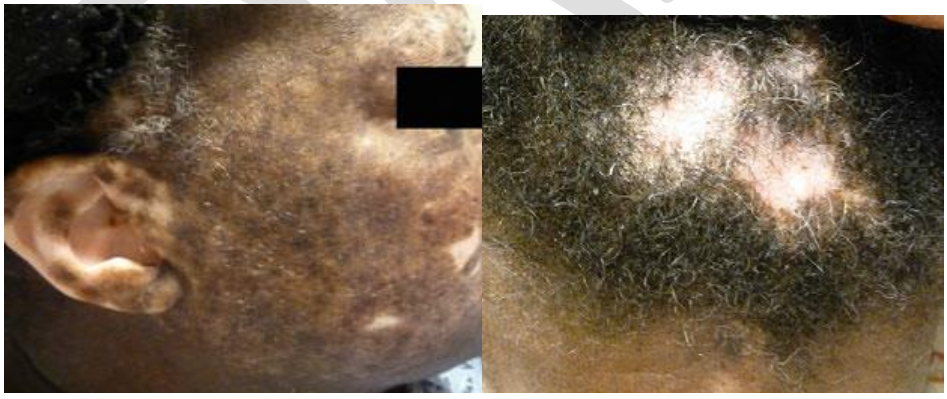
Case1: A35 years old female patient from Adama,no history of any health problem came to the clinic with non symptomatic skin lesions basically on the face since 5years back, she noticed that the lesiones become more numerous and difiguring.Multiple polimorphic ,pigmented and mildly raised and papulo plaque lesion with greasy surface on the face and some on the back and infra mamarial area.

Q. what is the diagnosis of this case? What are the possible diferential diagnosis?

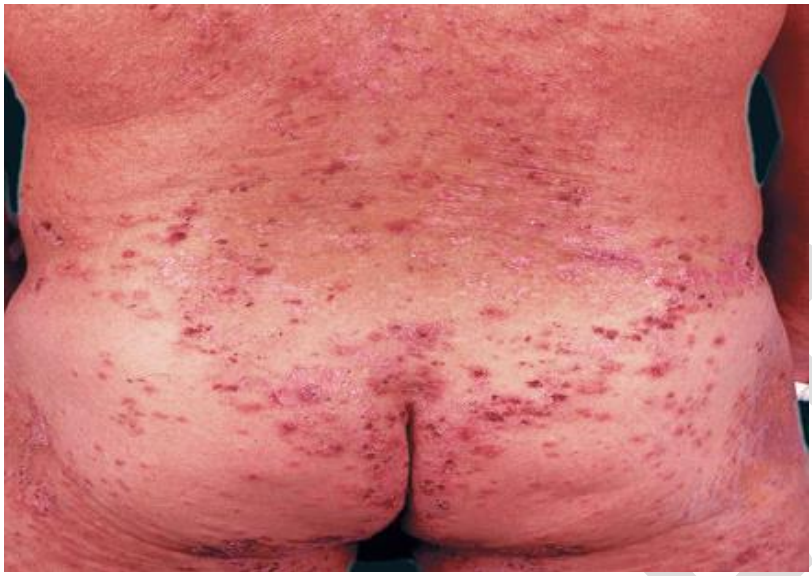


Case 2: A 30-year old woman presents with multiple occasionally pruritic plaques on her scalp, ears, and neck. The lesions are occasionally painful, especially in the early stages when they first appear. She notes that outbreaks are worse during the summer.

Q. What is the diagnosis?& DD



Case3:A50 years old male patient from Addis came with itchy multiple papulo vesicular and crusted lesions on the limbs (arms, legs,tighs) as well the scalp back and trunk for the last 10 years which is recurrent.



Q: what is the diagnosis?& DD