Symptomatology and Dermal inflammation

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Objectives of Dermal Inflammation

- Understand and able to use dermatologic terminology appropriately
- Able to describe the skin lesions correctly
- Understand pathogenesis,clinical manifestations, natural history and principle of the treatments of the following skin disorders

1. Papulosquamous diseases
2. Urticaria
3. Alopecia
4. Acne
5. Erythema multiforme
6. Steven-Johnson syndrome
7. Toxic epidermal necrolysis

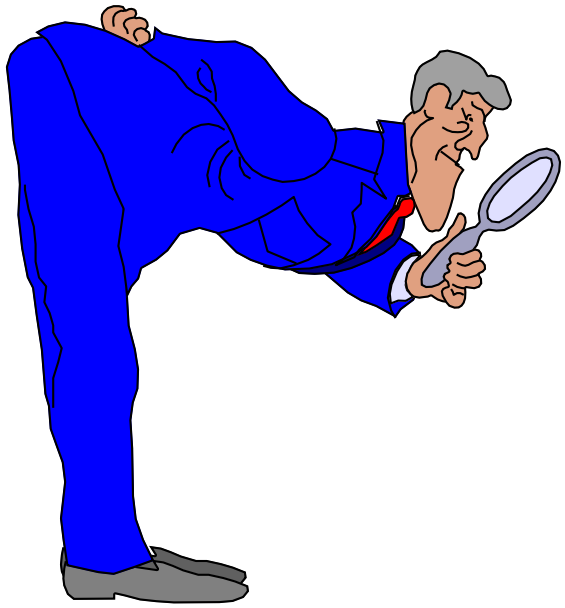
References

1. Fitzpatrick's Dermatology in General Medicine :2 volumes
2. Bolognia; Dermatology : 2 volumes
3. Rook; Textbook of Dermatology : 4 volumes

Symptomatology

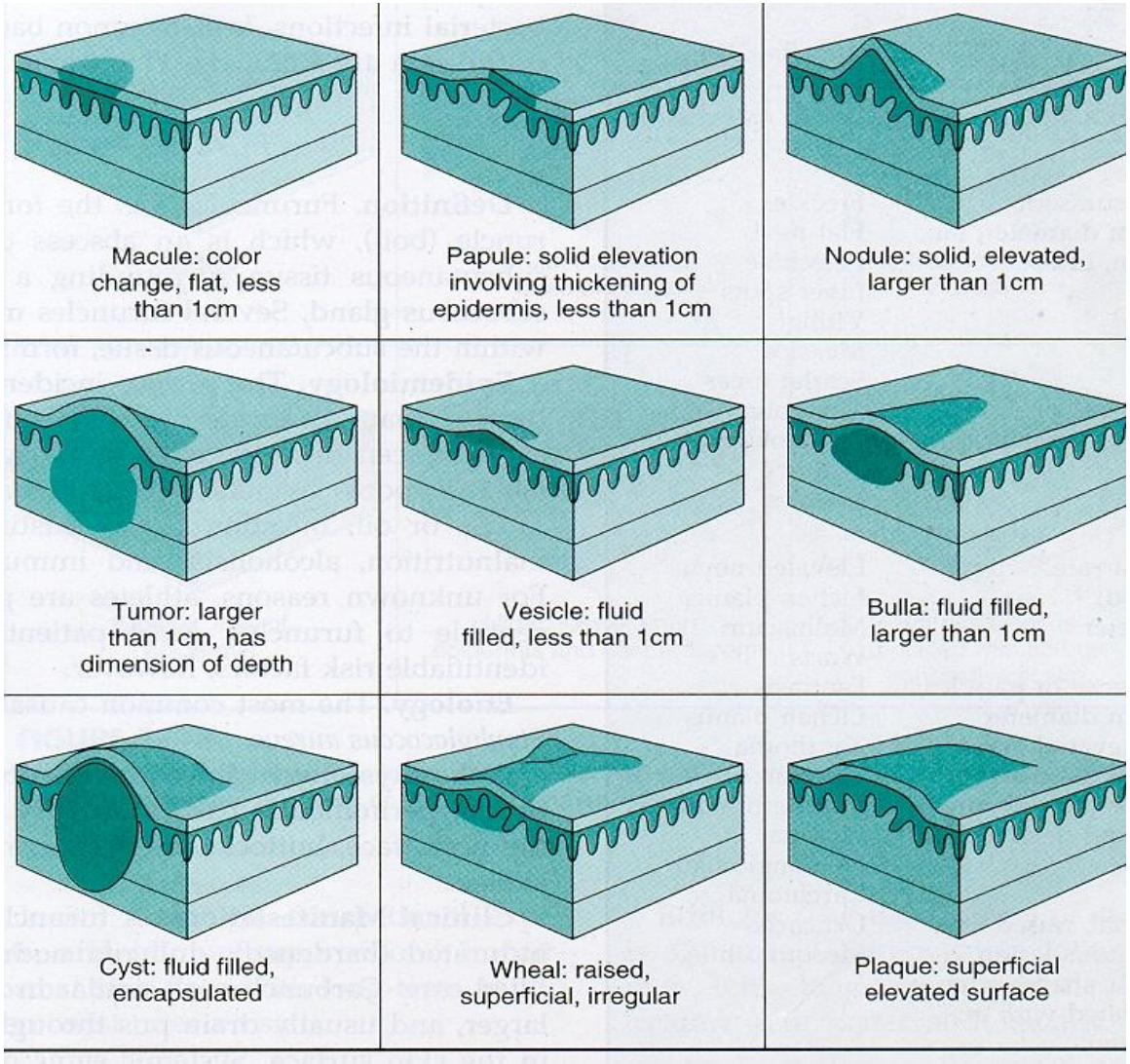
- **Skin lesions****
- Itching
- Pain/burning
- Anesthesia

How to diagnose skin disorders?



1. Skin lesions
2. Configuration
3. Location of the lesions
4. Distribution of the lesions

Classification of skin lesions

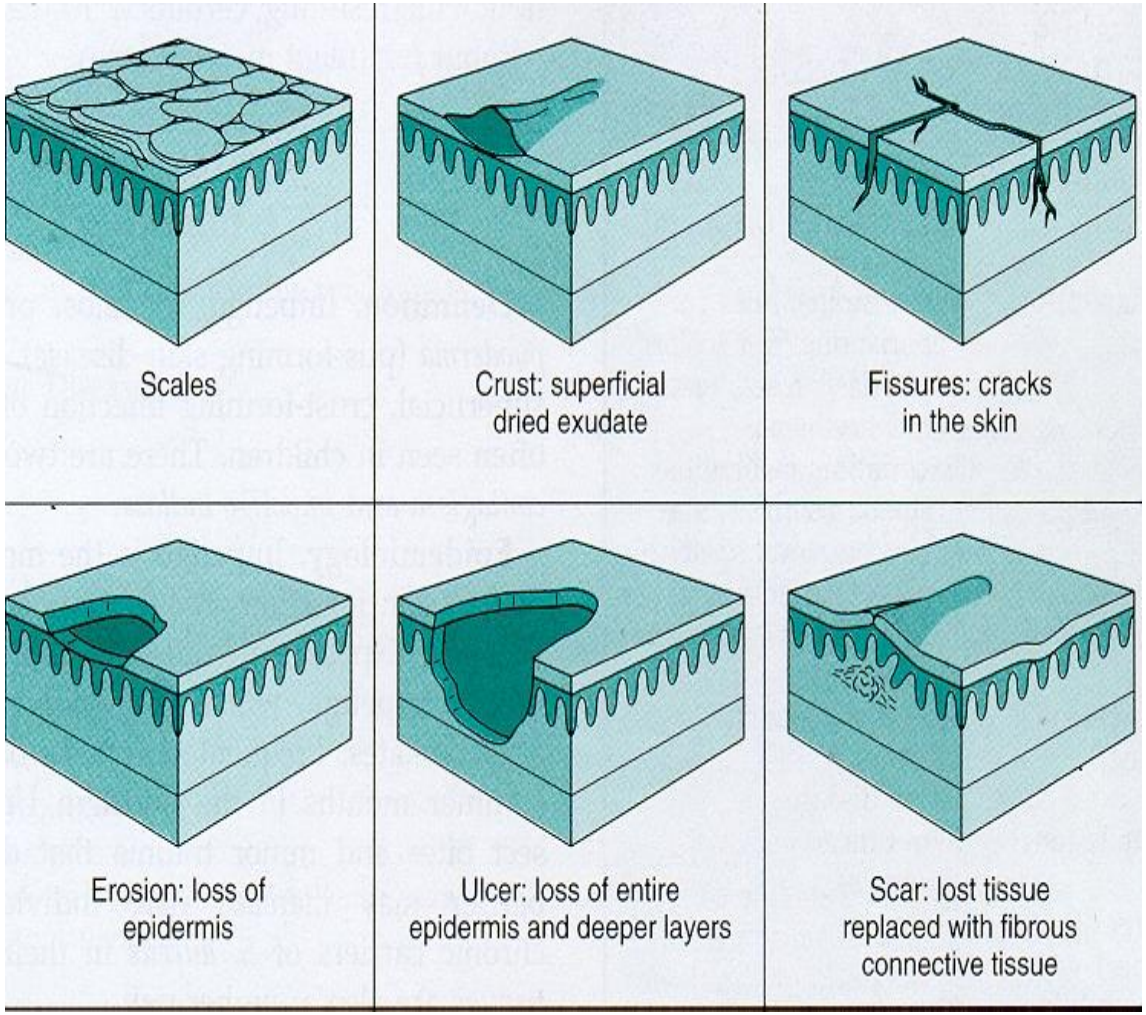


Primary skin lesions

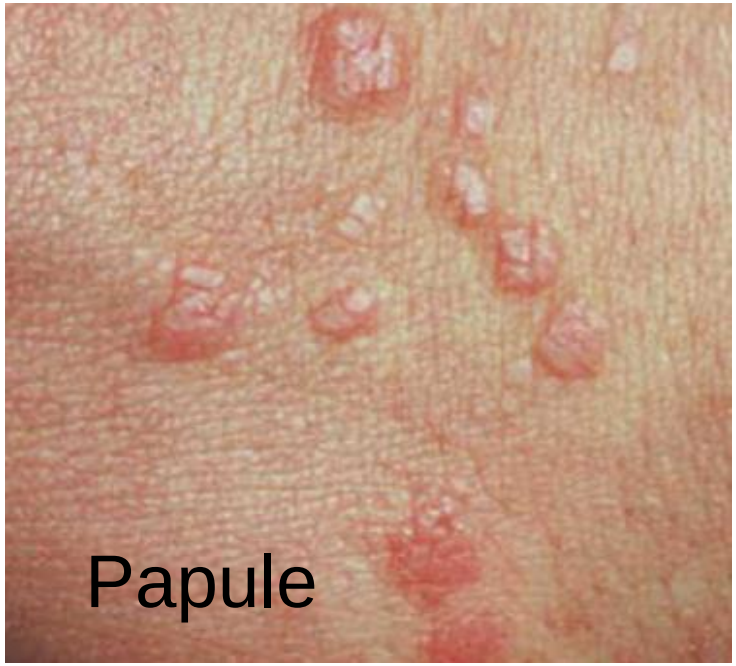
arise from previously normal skin classified morphologically as

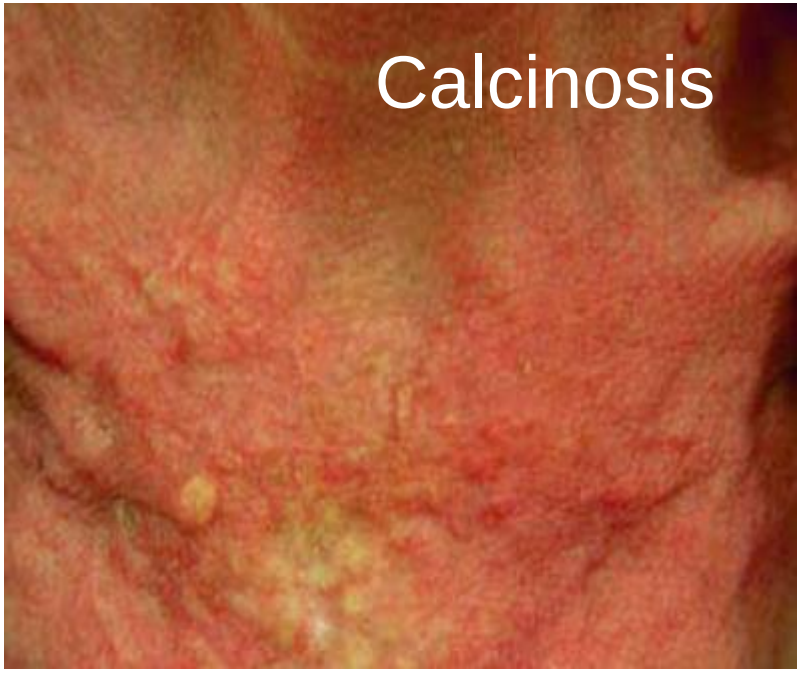
macules, papules, plaques, patches, nodules, tumors, wheals, cysts, vesicles, bullae or pustules

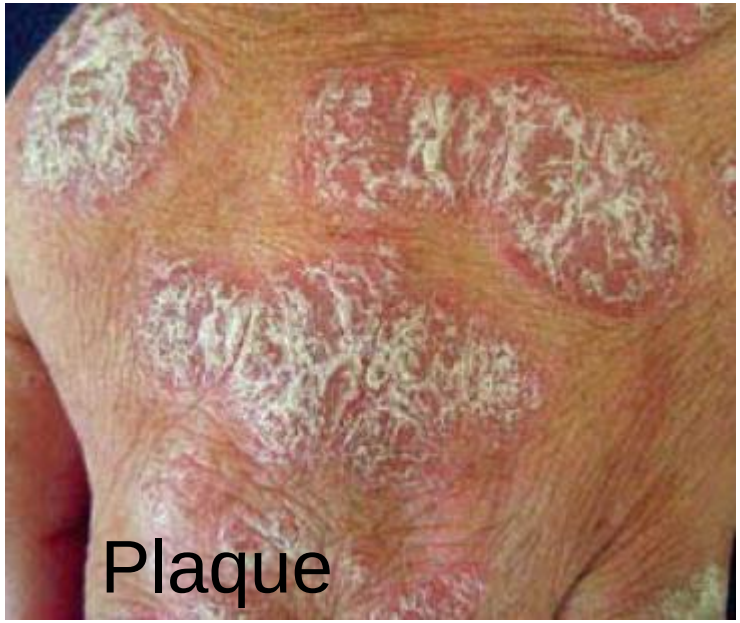
Classification of skin lesions

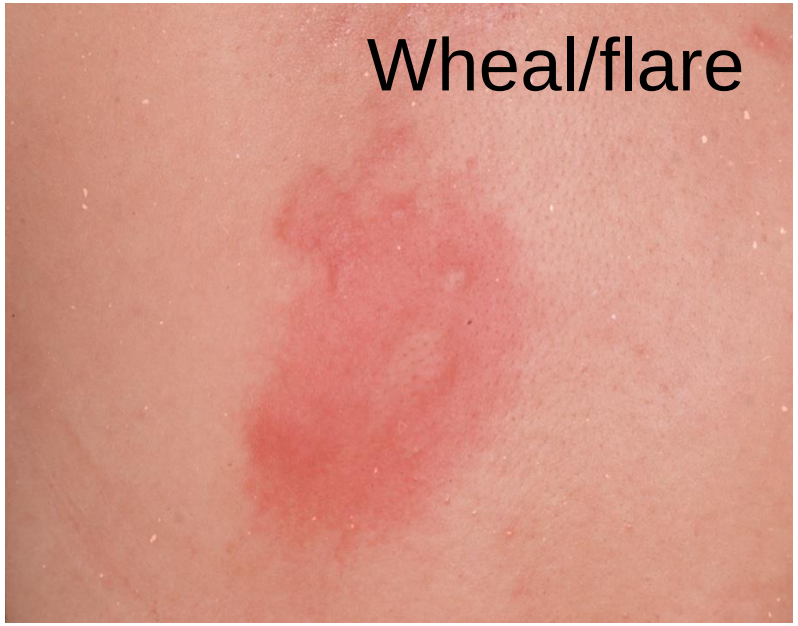


Secondary skin lesions lesions arise as a consequence of rupture, mechanical irritation, extension, invasion, normal and abnormal healing eg. erosion, ulcer, fissure, crust, scale, lichenification, excoriation, scar, keloid

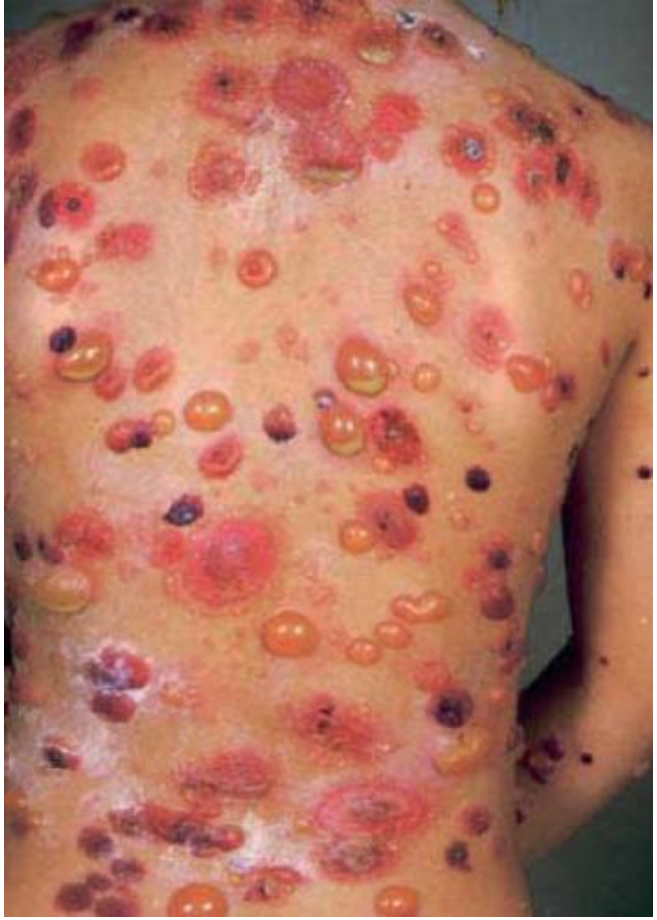

Papule


Calcinosis

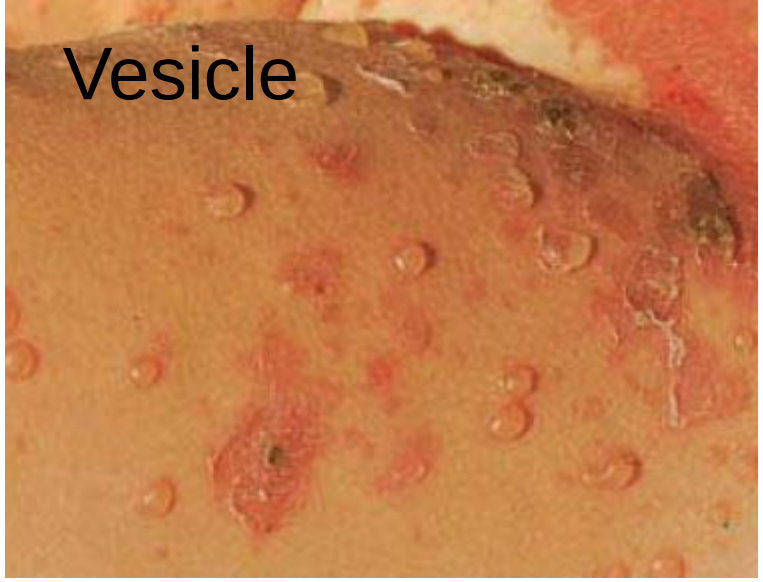

Plaque


Wheal/flare

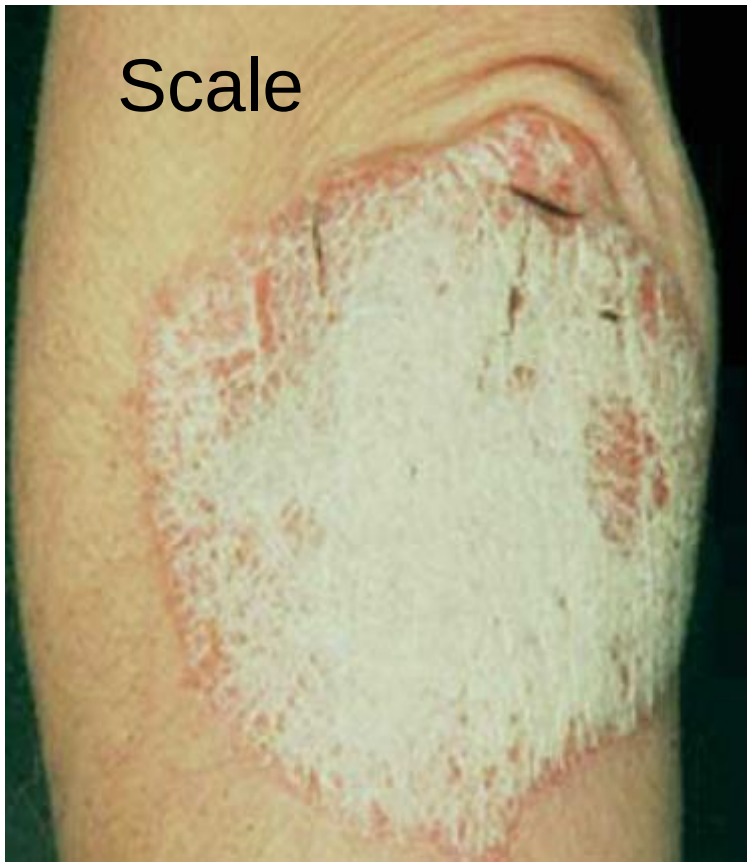
Blister



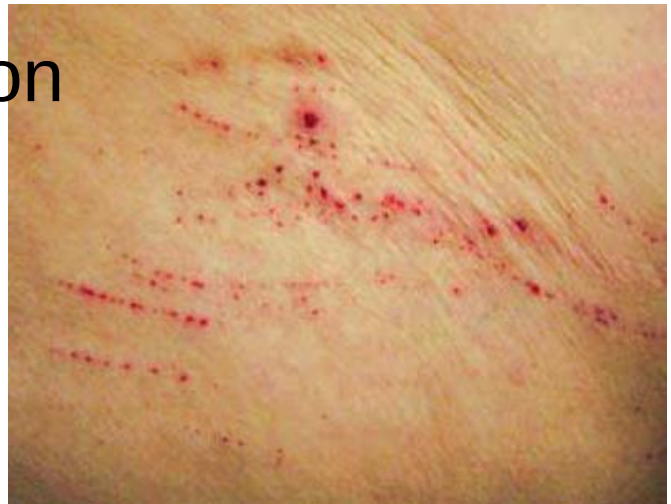
Vesicle



Scale

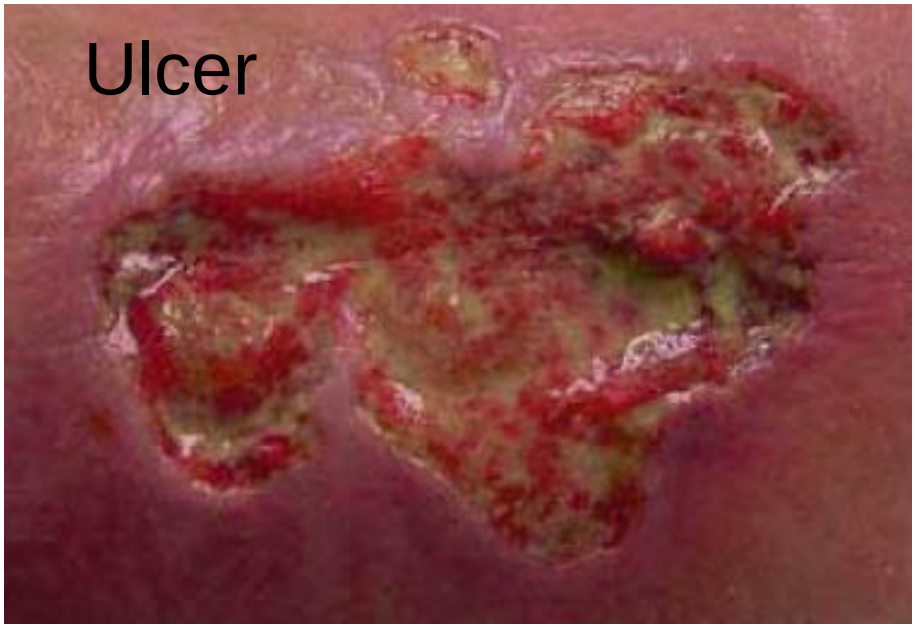


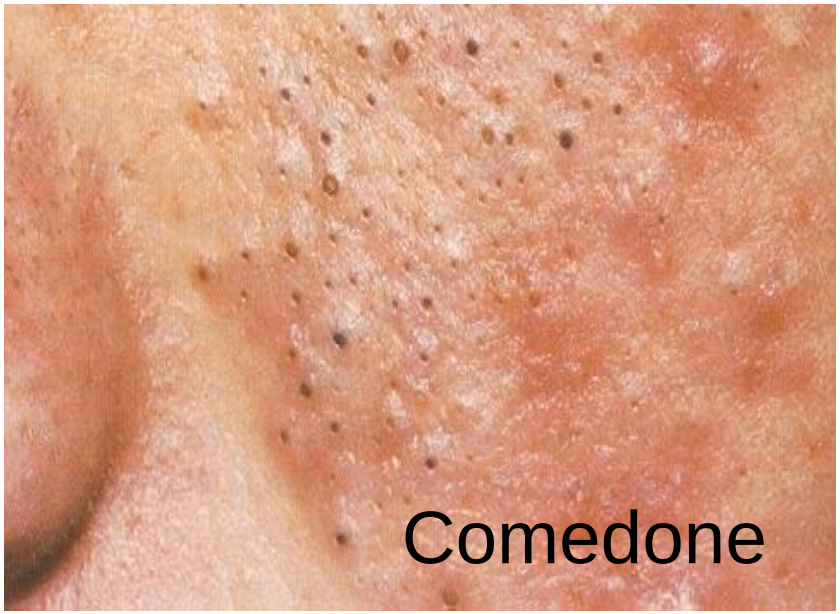
Excoriation



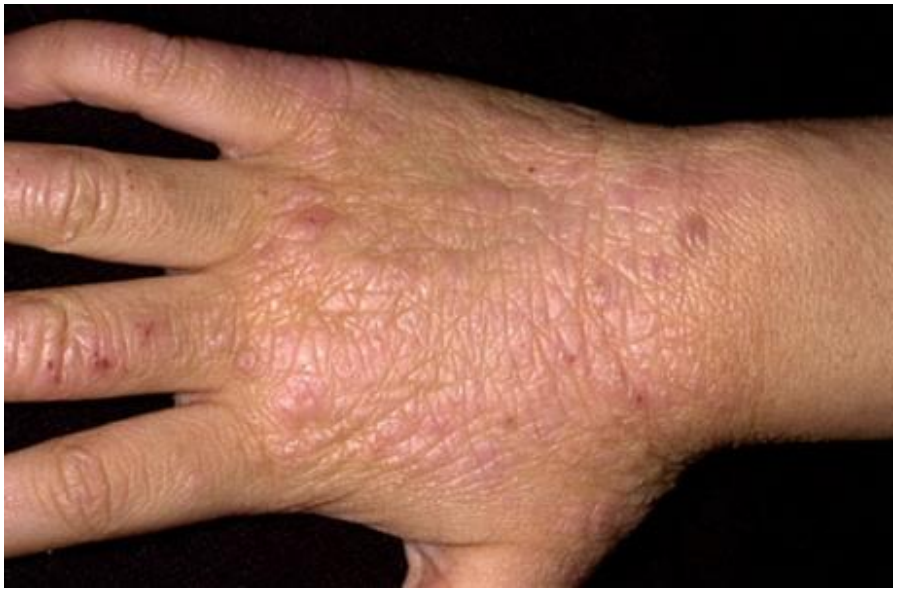

Erosion

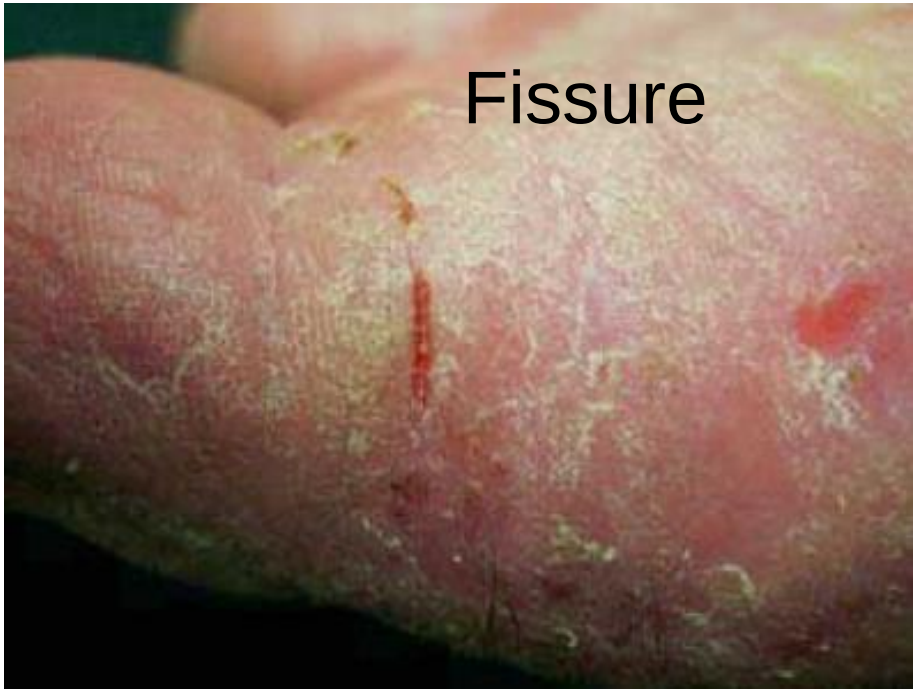

Horn

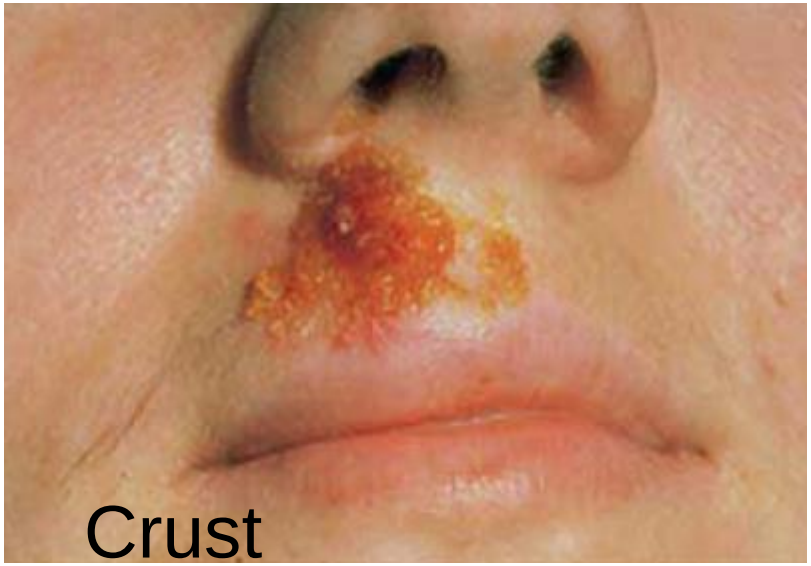

Ulcer

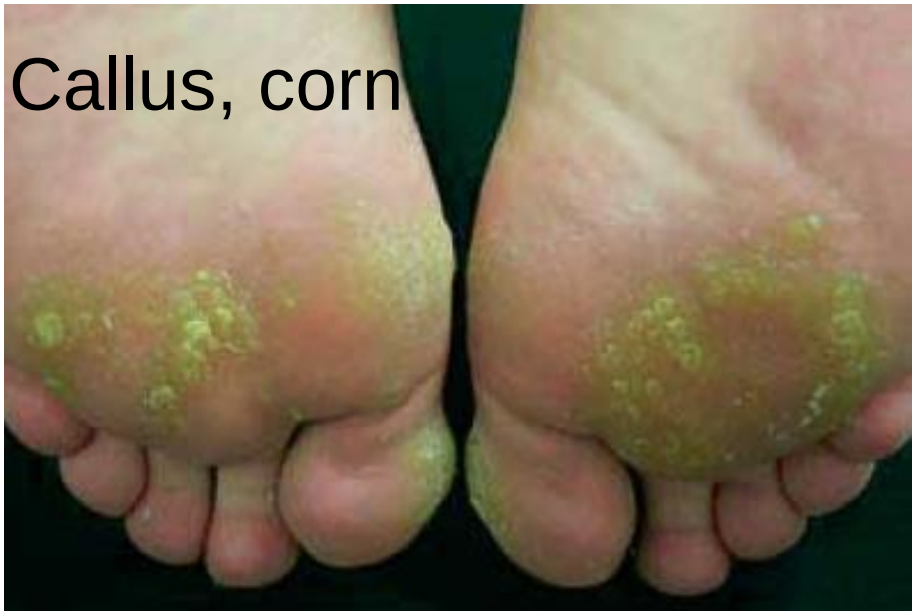

Comedone

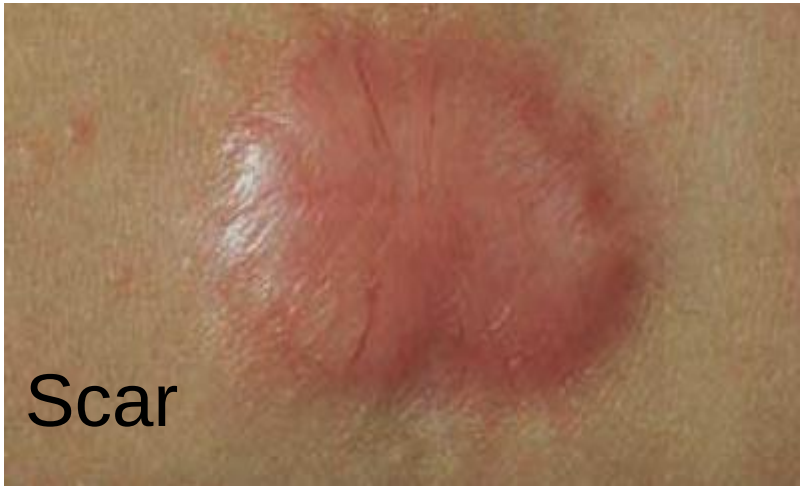
Lichenification

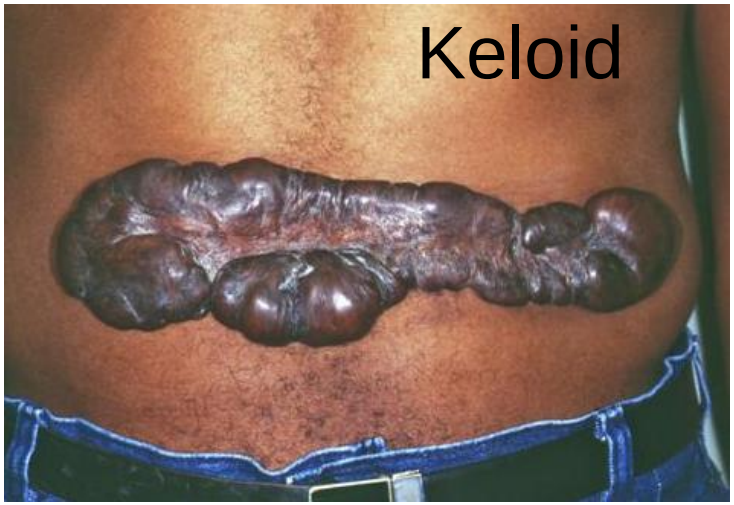


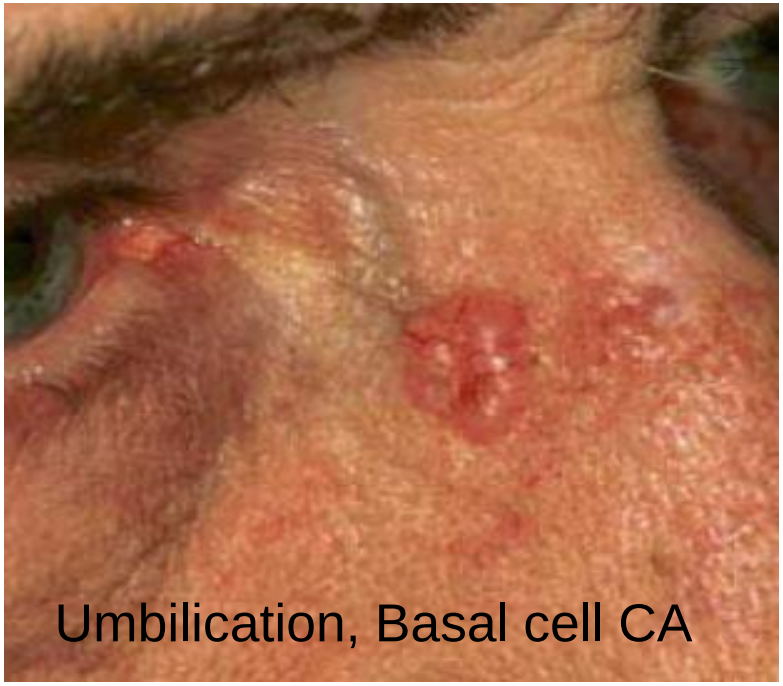


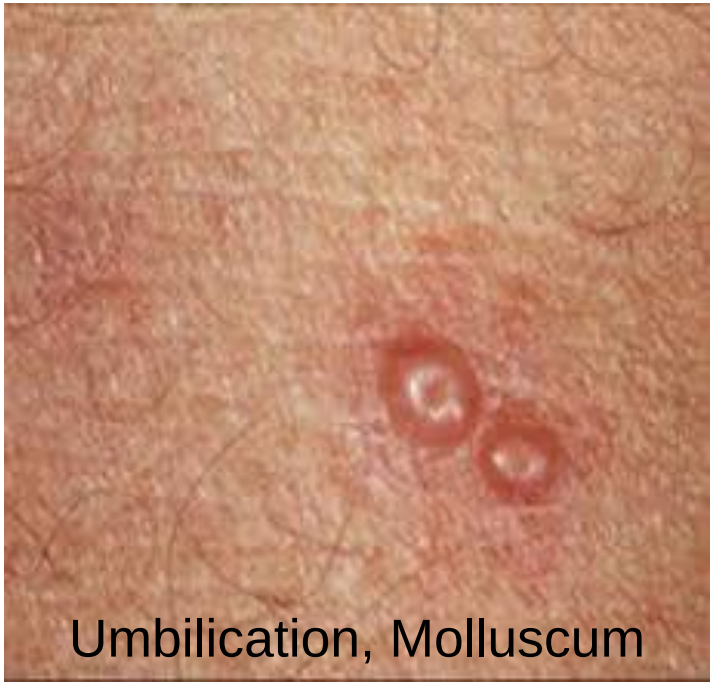


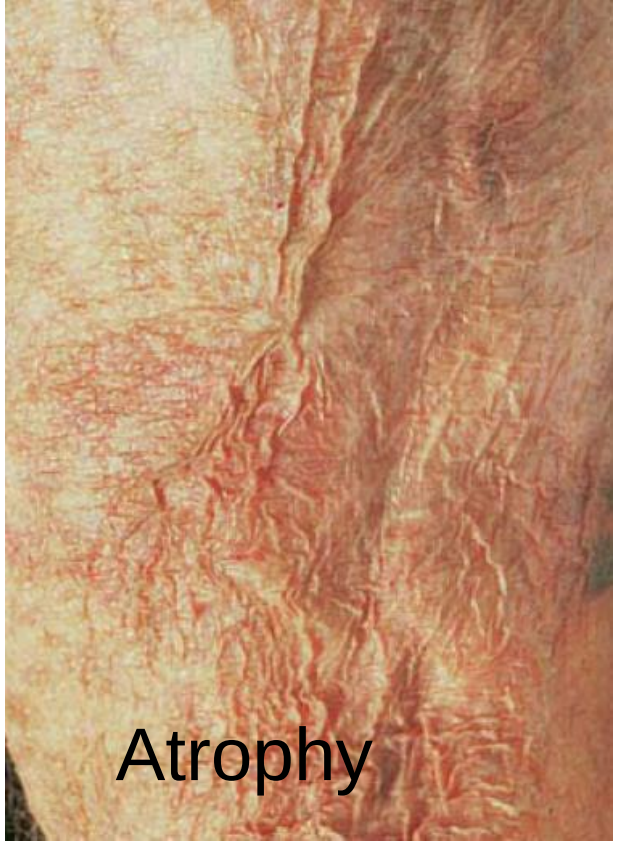


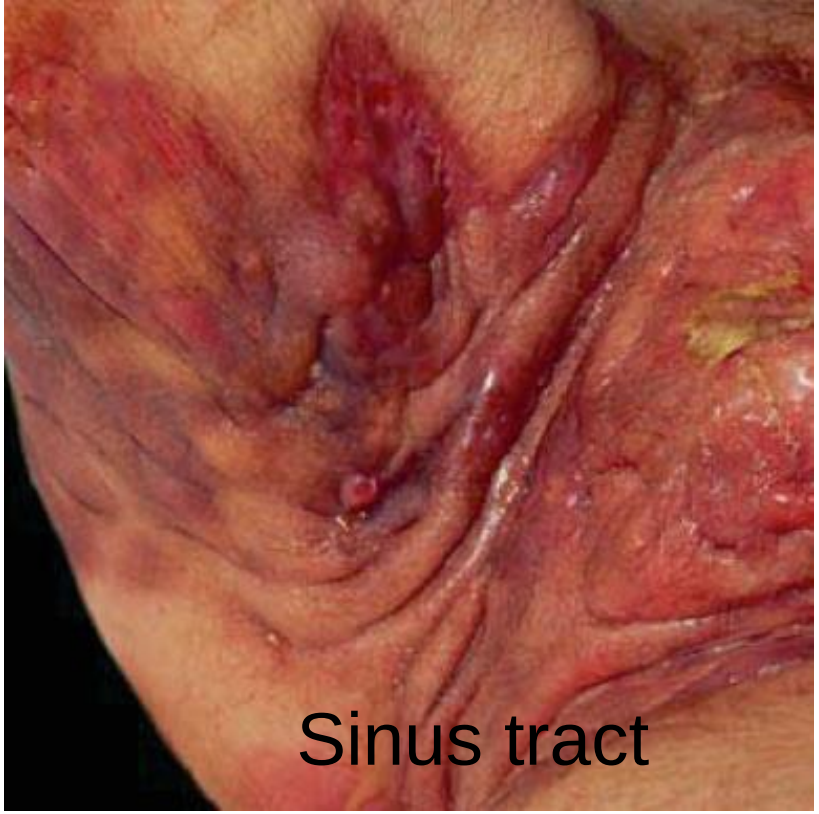

Scar

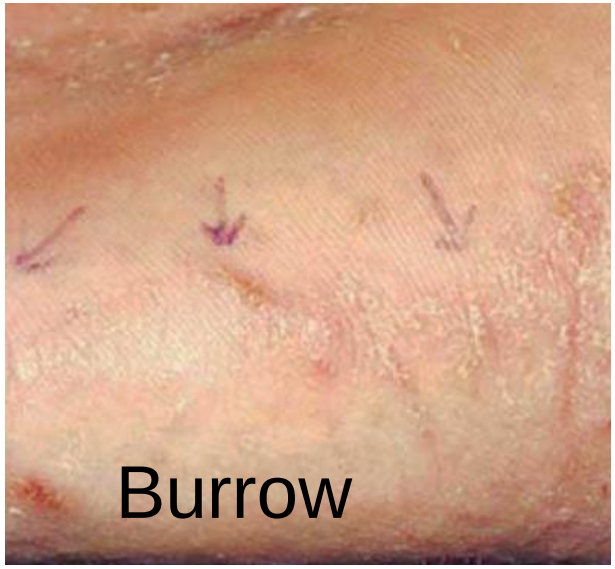

Keloid

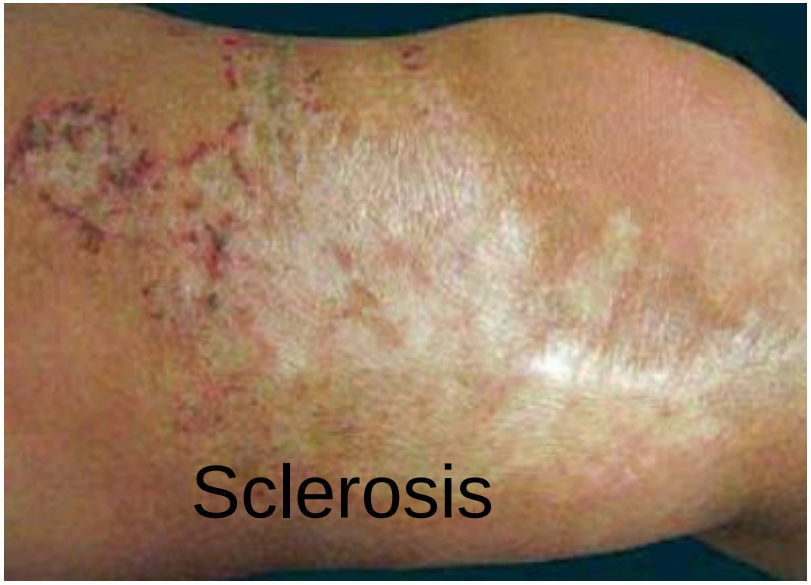

Umbilication, Basal cell CA

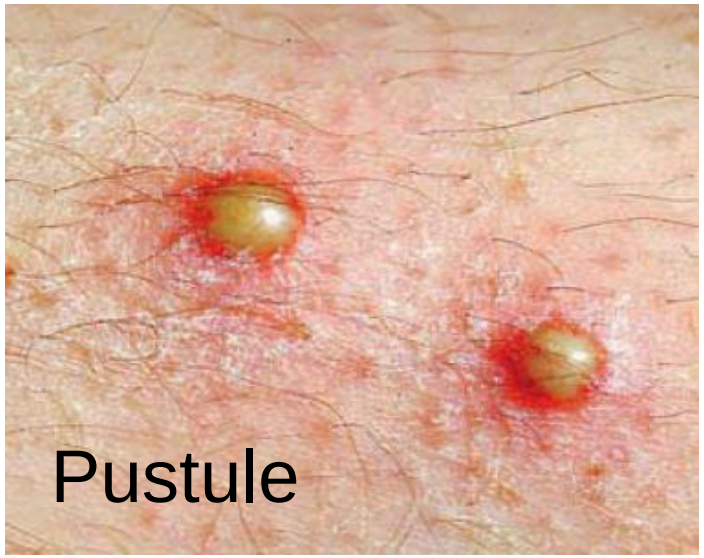

Umbilication, Molluscum

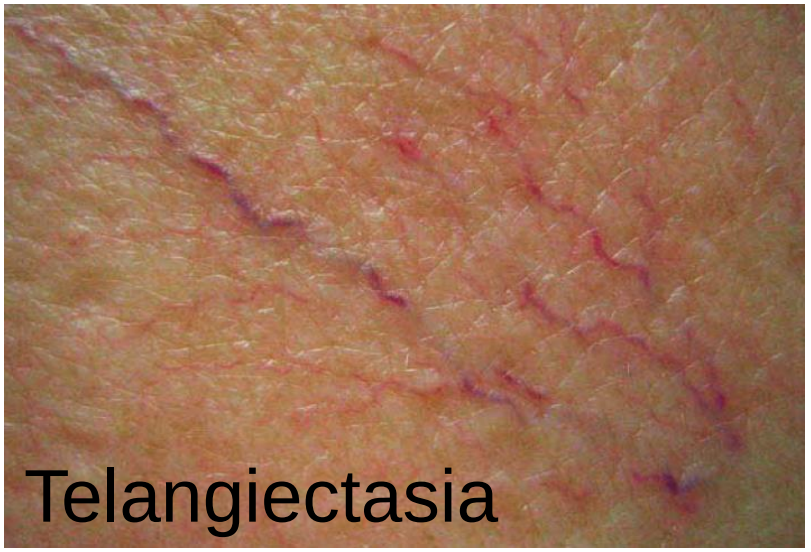

Atrophy

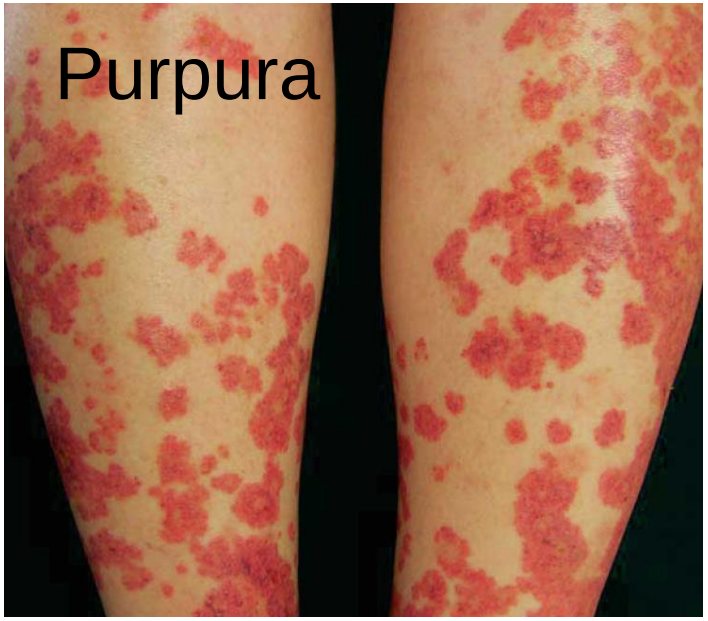

Sinus tract

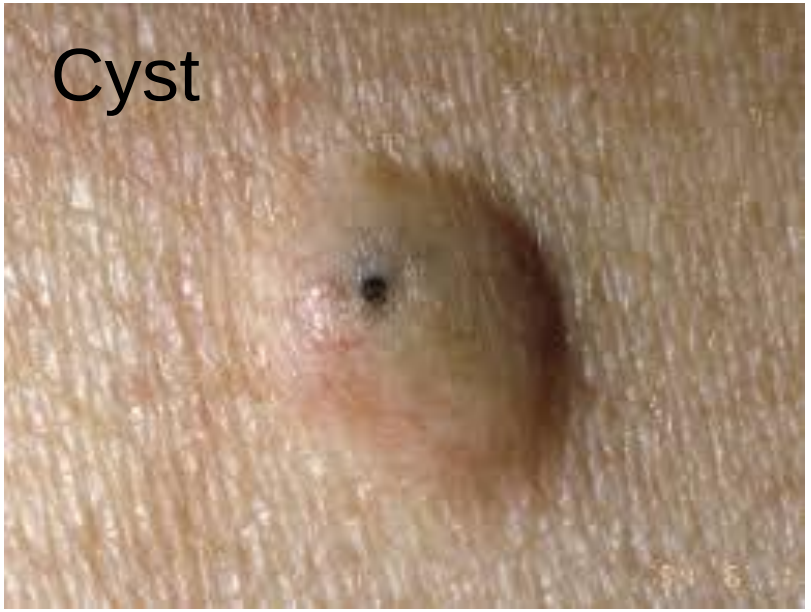

Burrow


Sclerosis


Pustule


Telangiectasia


Purpura


Cyst

Configuration of skin disorders

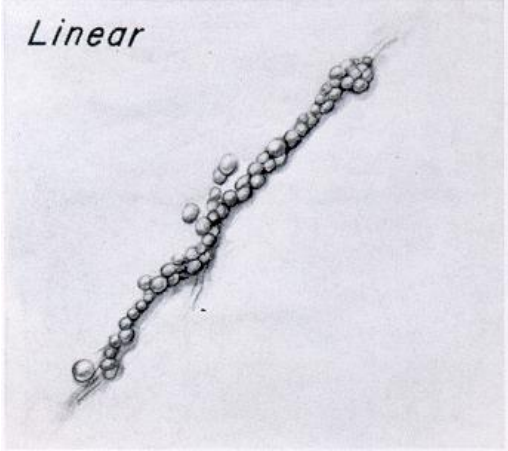
-Annular or arciform or polycyclic: tinea coporis, pityriasis versicolor, leprosy, psoriasis, subacute cutaneous lupus erythematosus (SCLE), granuloma annulare

-Linear: excoriation, psoriasis, scabies

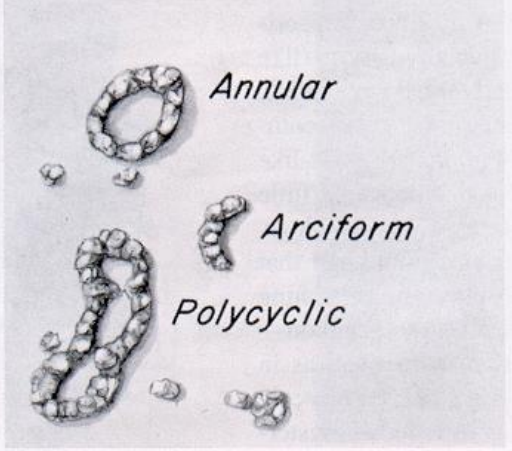
-Zosteriform: herpes zoster

-Iris or target: erythema multiforme

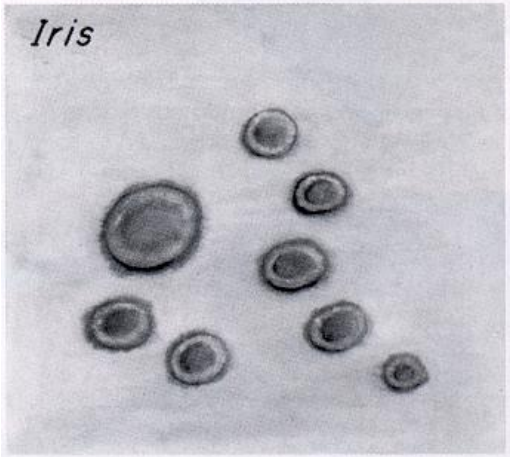
-Herpetiform: herpes simplex


Linear

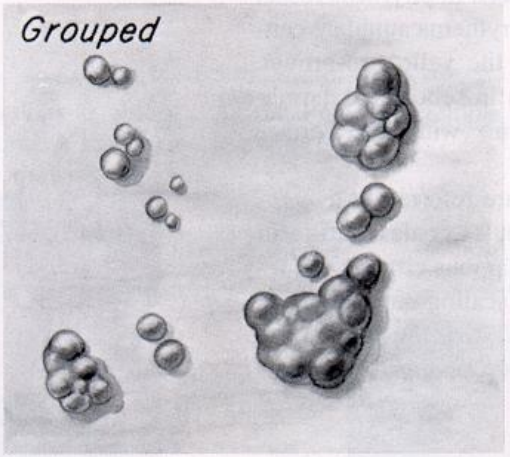
A.


Annular
Arciform
Polycyclic

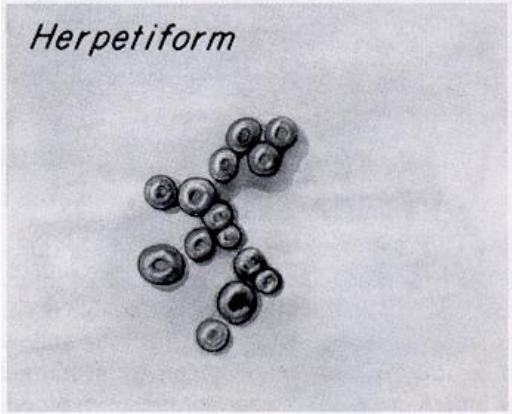
B.

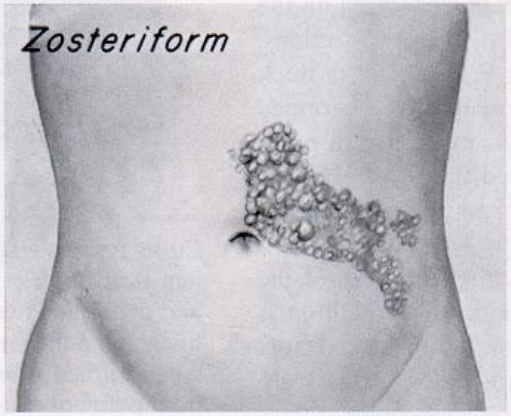

Iris

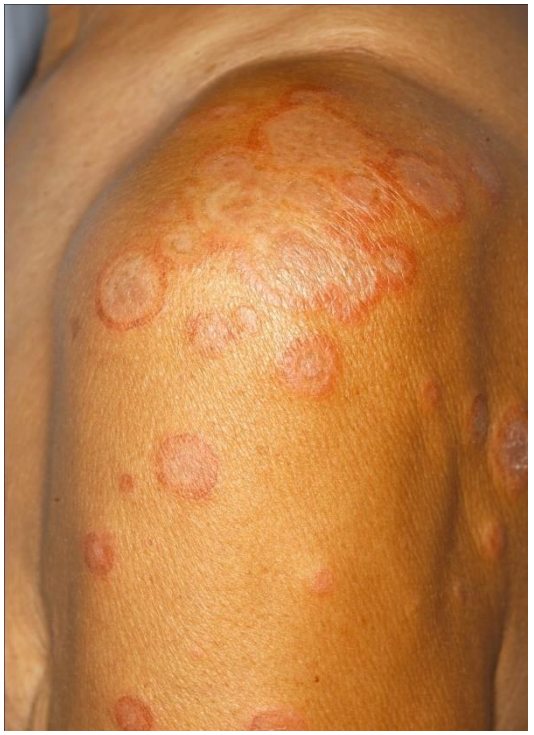
C.

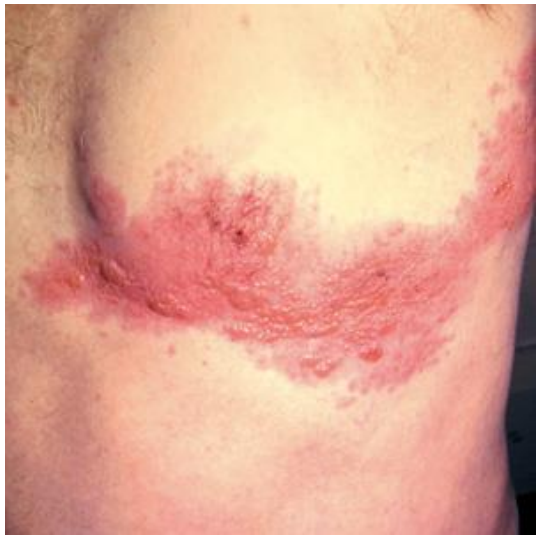

Grouped

D.


Herpetiform


Zosteriform





Configuration of skin disorders

-Morbilliform: measles, drug eruption

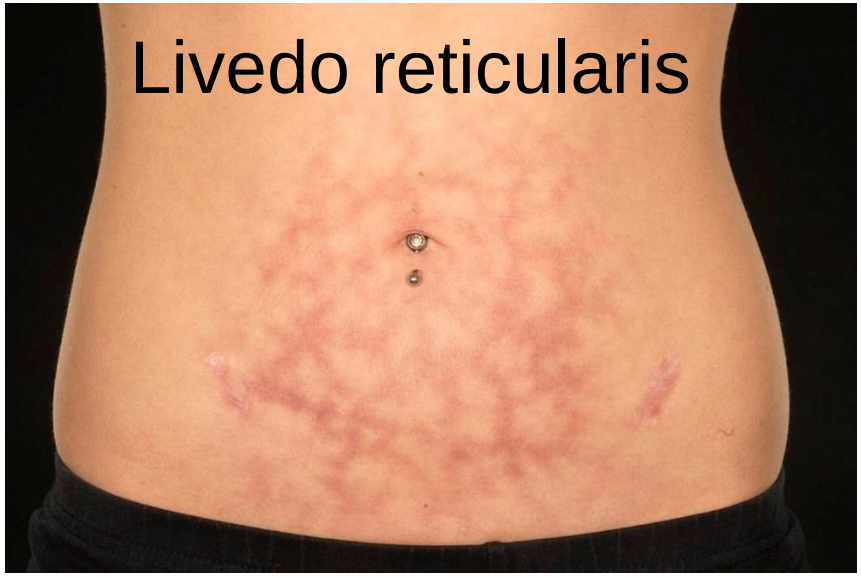
-Discrete

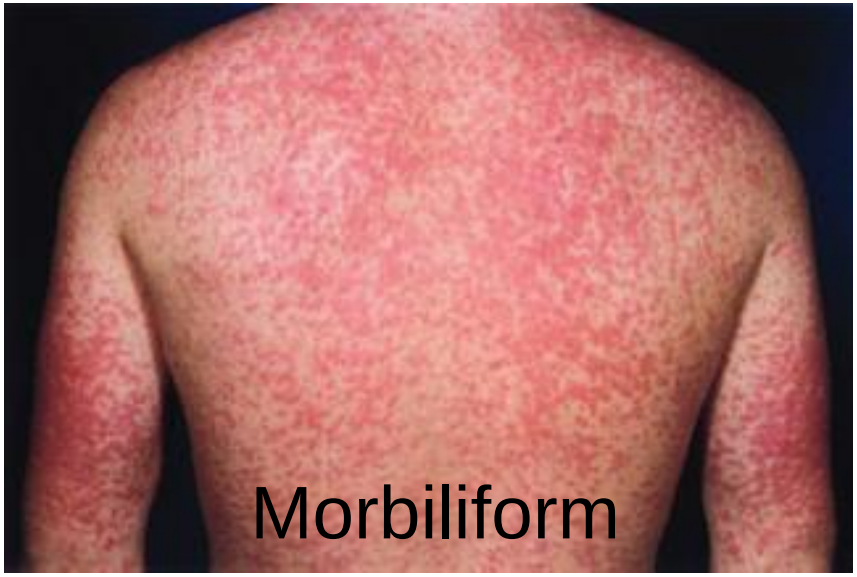
-Confluent

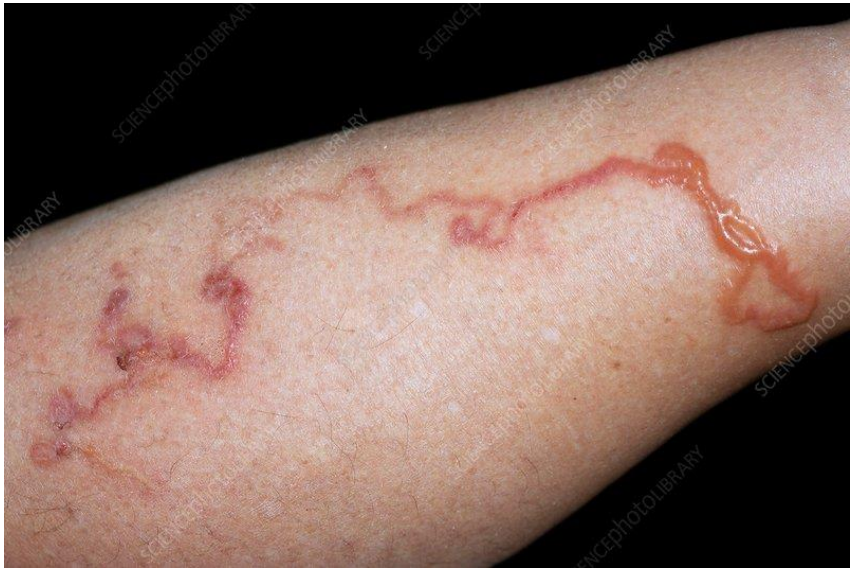
-Reticulate: livedo reticularis, lichen planus

-Serpiginous: creeping eruption

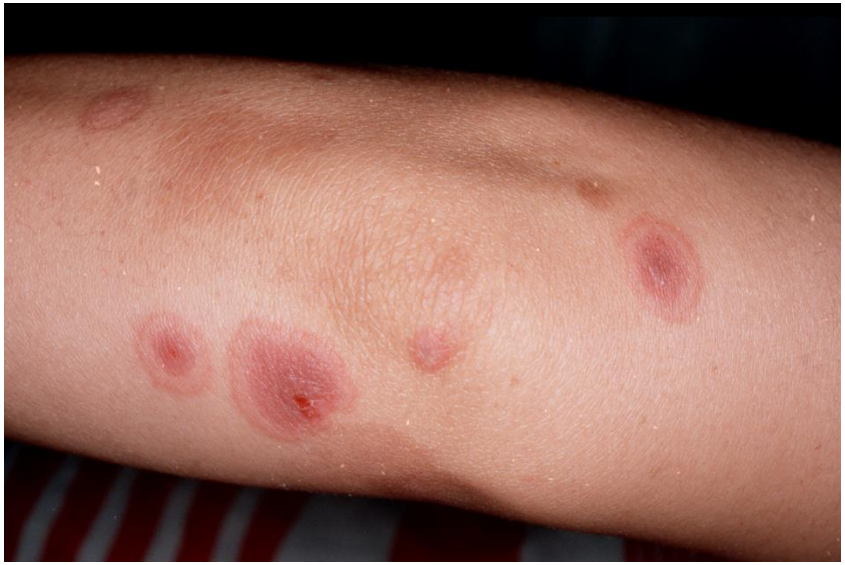
-Oval: nummular eczema, fixed drug eruption, psoriasis







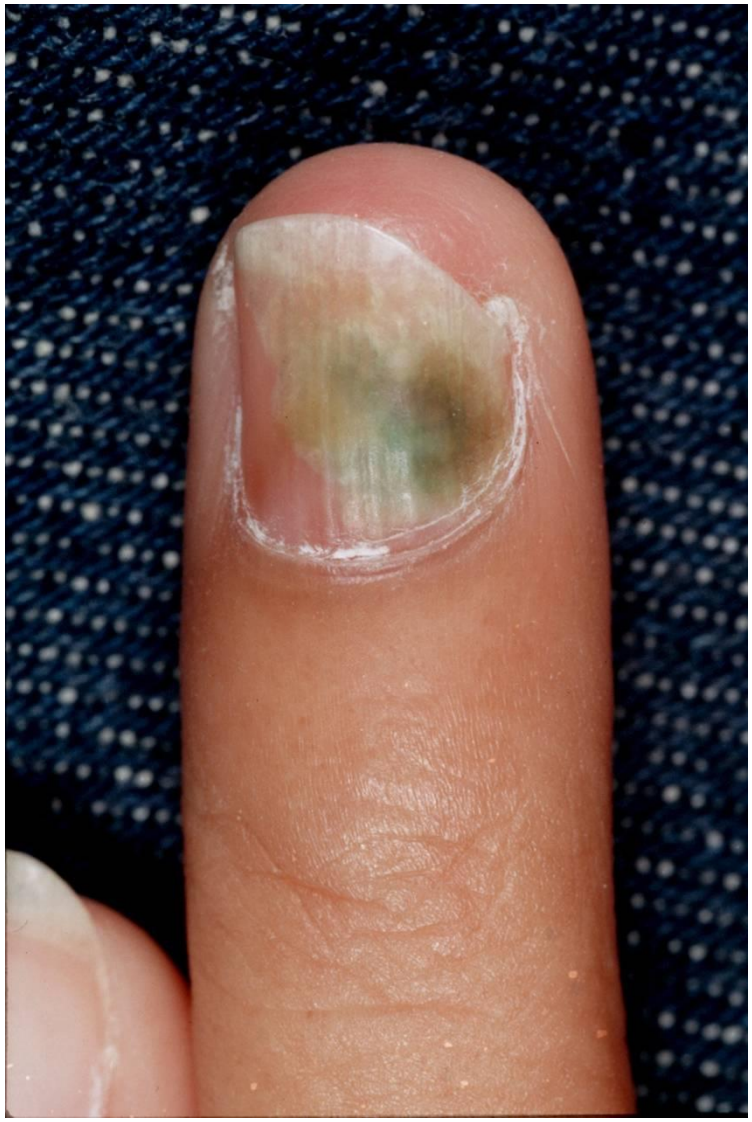
Serpiginous



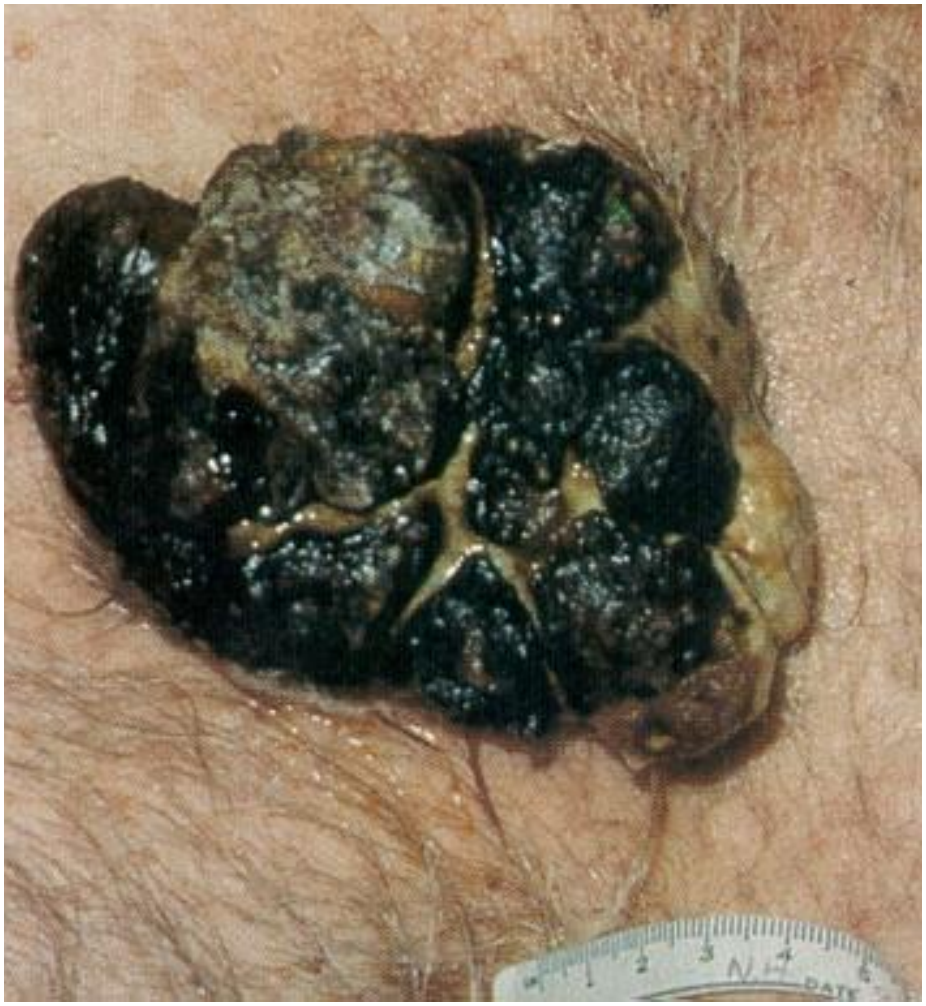
Target lesion

Color of the lesions

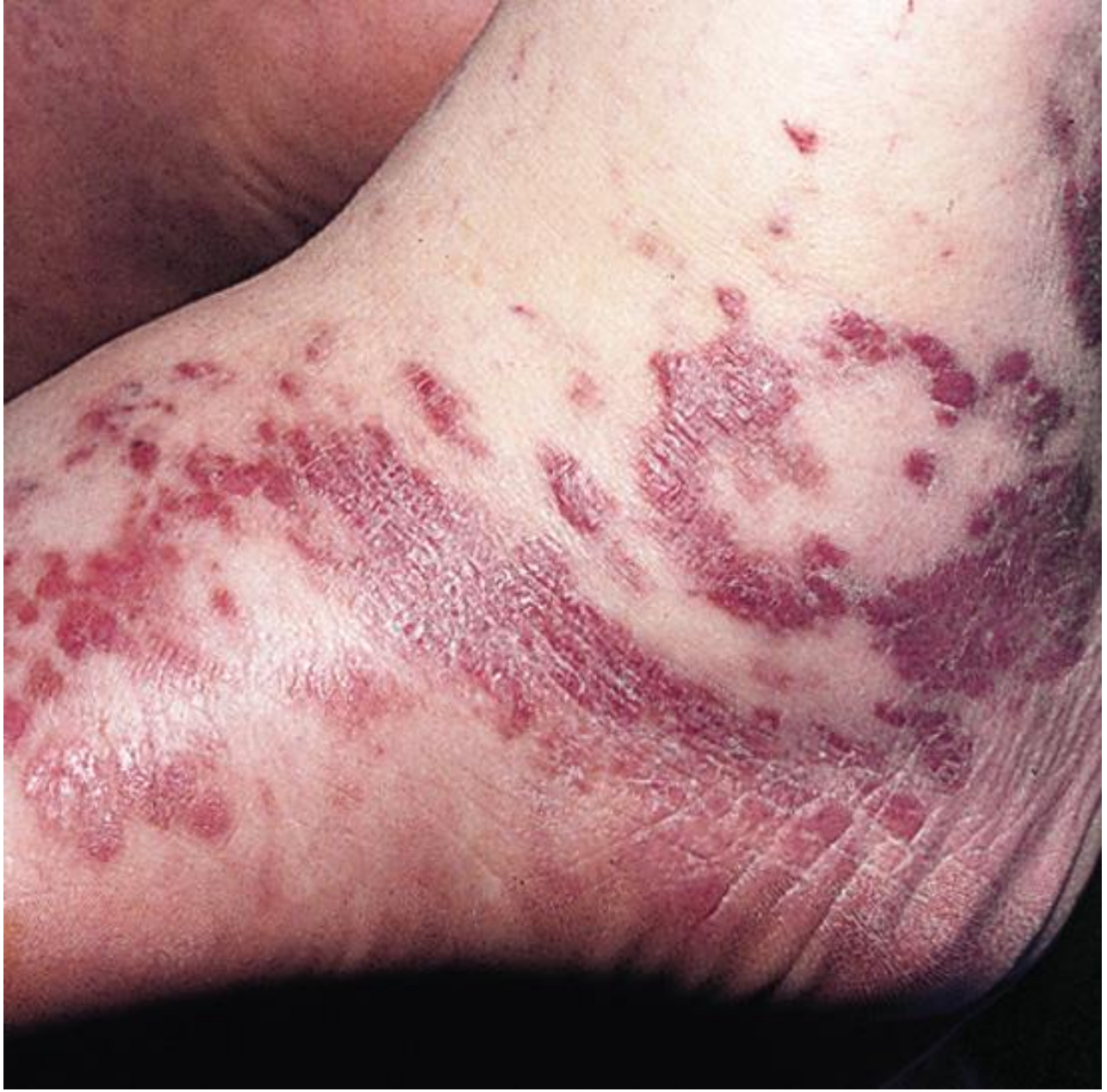
- **Violaceous or purplish**: discoid LE, Gottron's papules in dermatomyositis, lichen planus, Kaposi's sarcoma
- **Green**: Pseudomonas infection of nail
- **Yellow**: xanthoma, xanthelasma
- **Black**: melanoma, pigmented BCC, mole, seborrheic keratosis
- **Hyperpigmented**: melasma, pityriasis versicolor, postinflammatory hyperpigmentation
- **White** : vitiligo
- **Hypopigmented:** P. versicolor, P. alba, indeterminate or tuberculoid leprosy, postinflammatory hypopigmentation
- **Red**: psoriasis, cellulitis



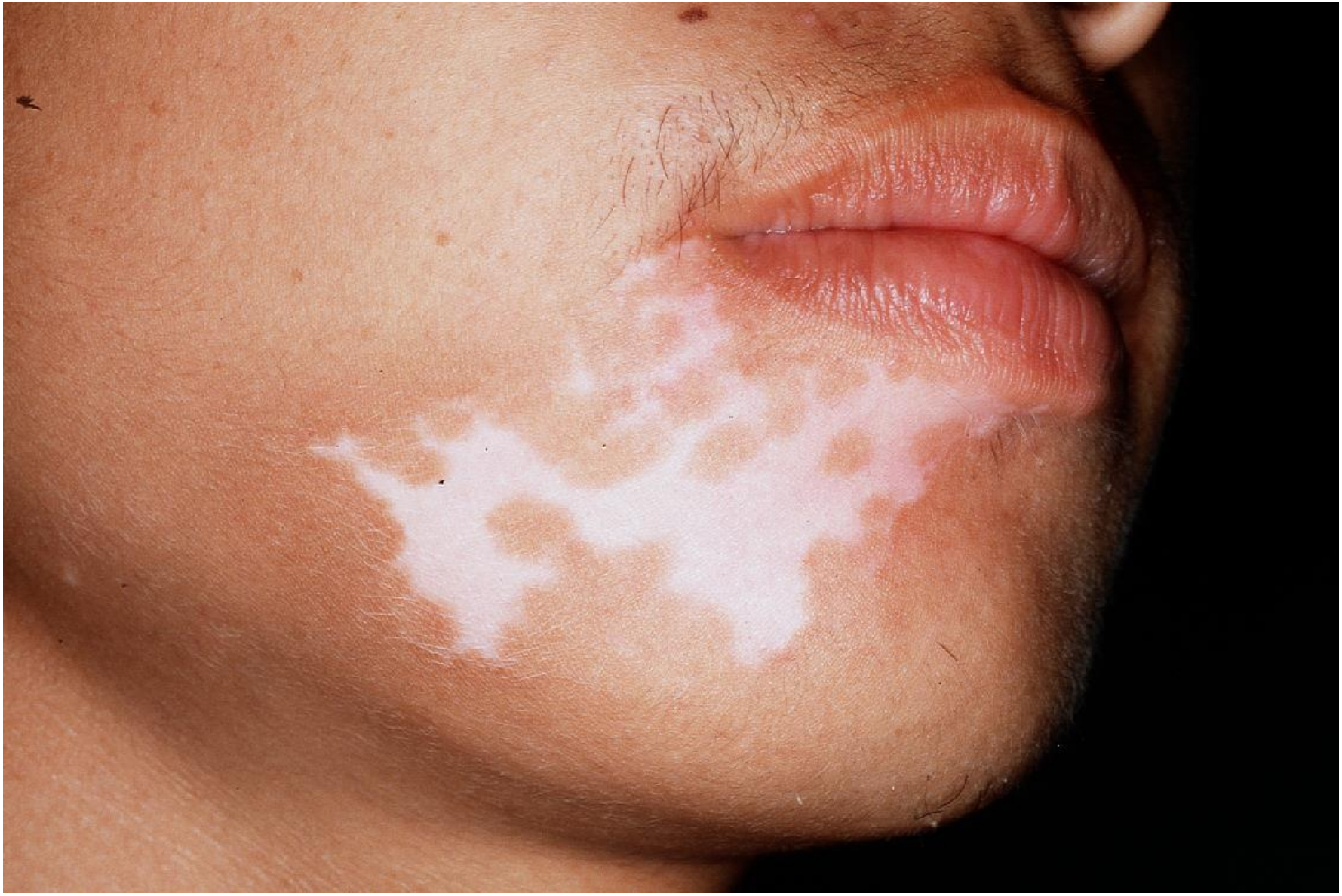
Green nail: Pseudomonas infection



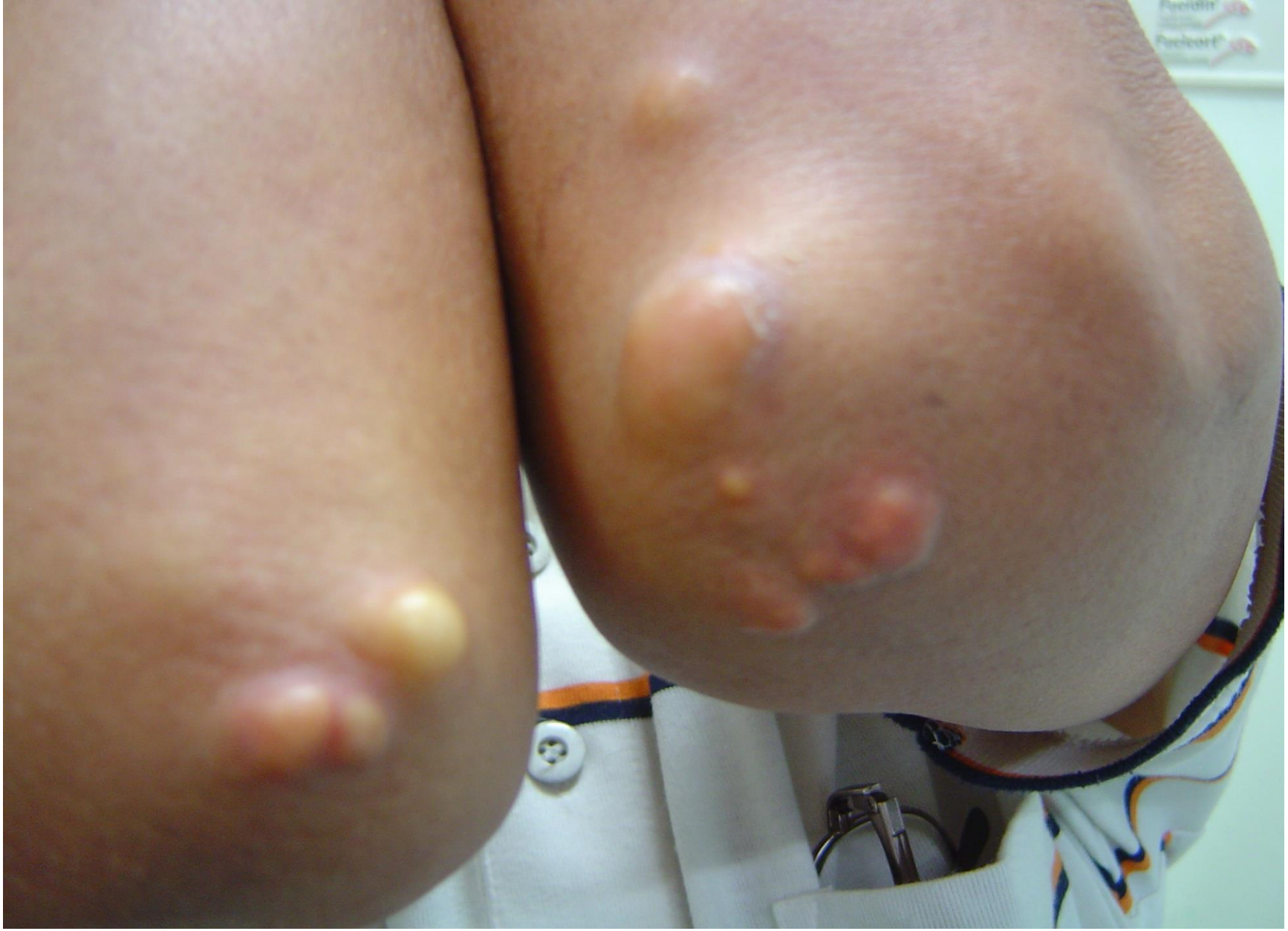
Black nodule: malignant melanoma



Violaceous papules : Kaposi's sarcoma



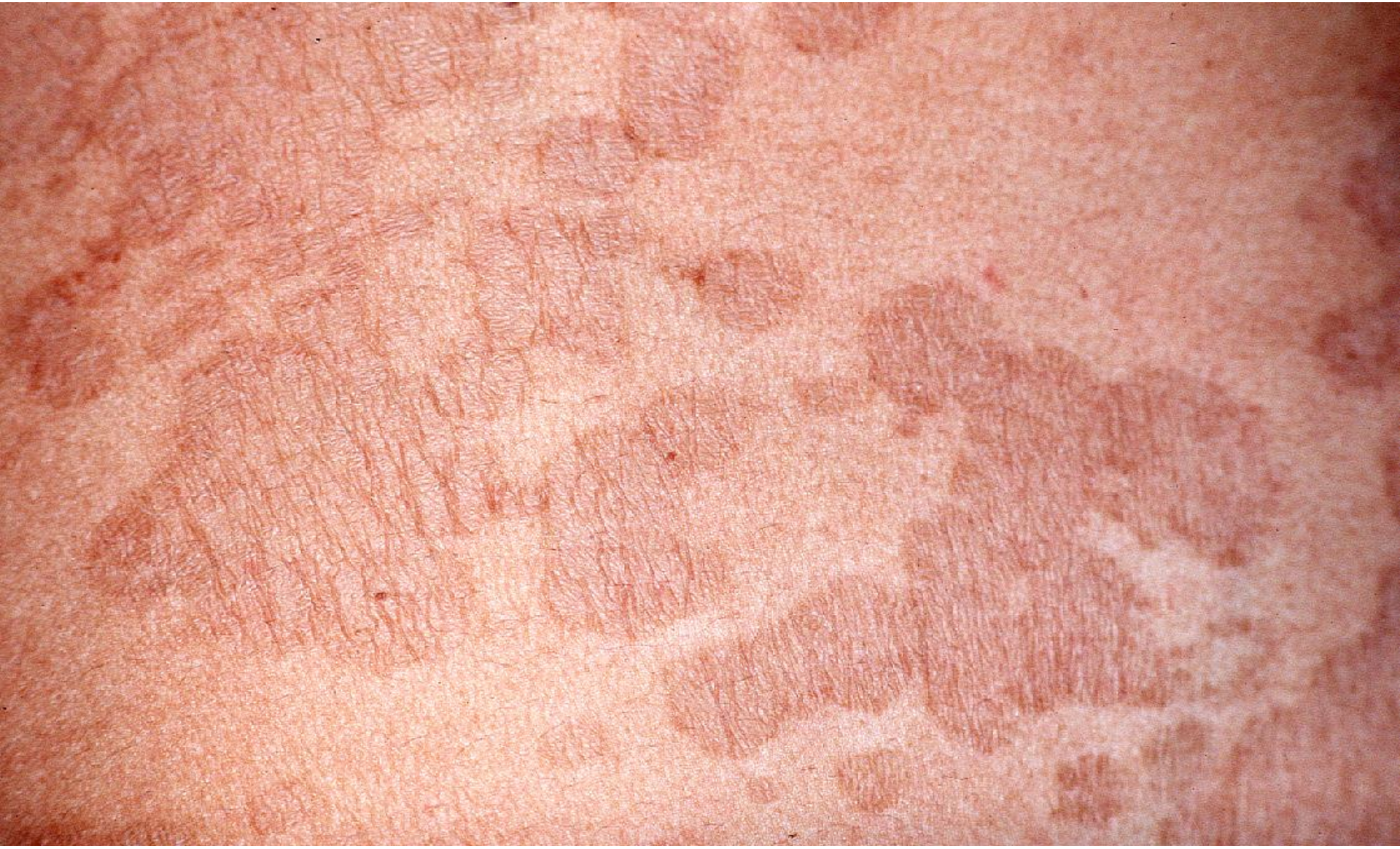
Depigmentation: vitiligo



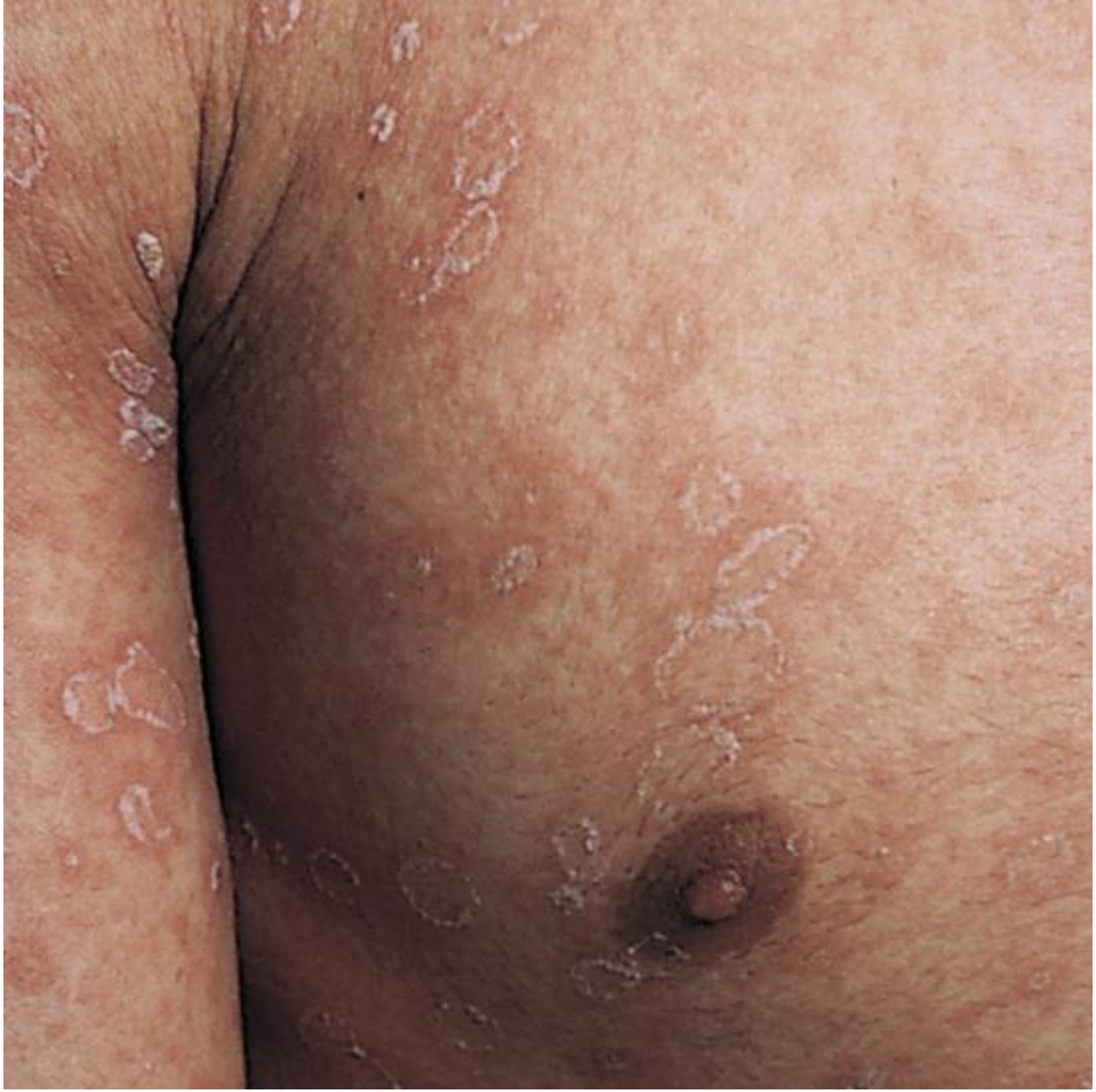
Yellowish nodule: xanthoma

Scale

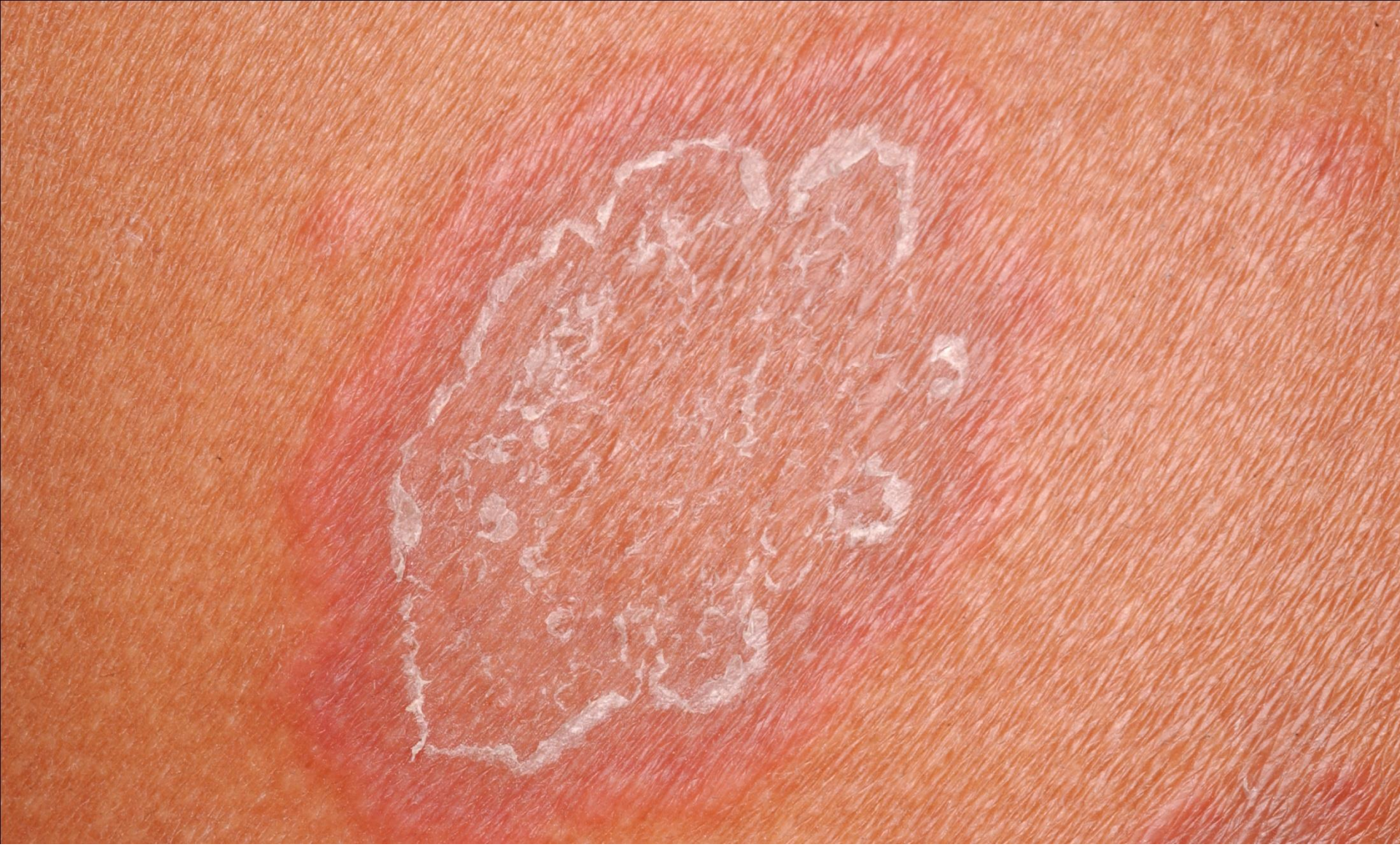
- Thick silvery scale: psoriasis
- Fine wrinkle scale: pityriasis versicolor
- Fish-like scale: ichthyosis
- Greasy scale: seborrheic dermatitis
- Collarette scale : pityriasis rosea
- Trailing scale: erythema annulare centrifugum



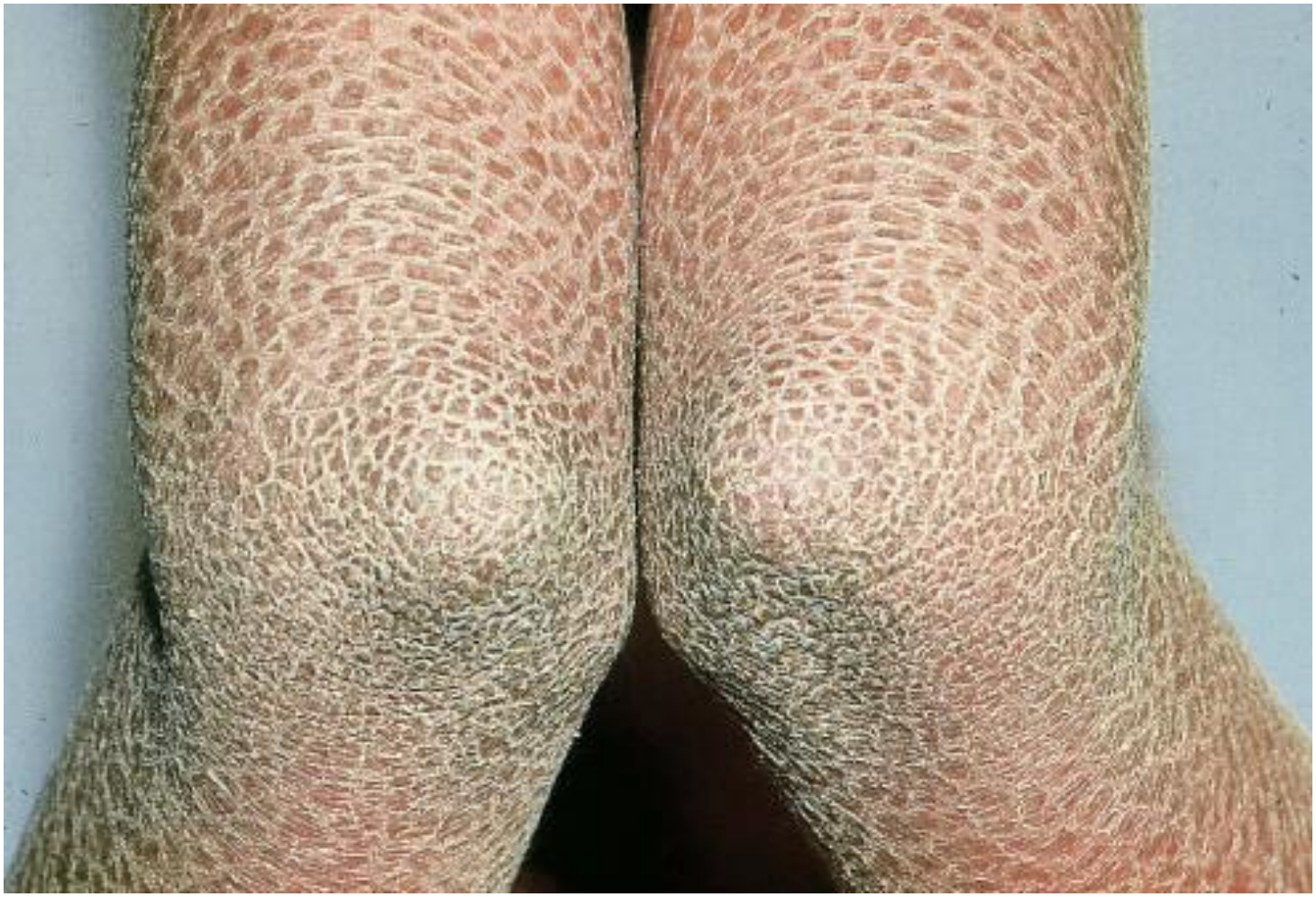
Fine wrinkle scale: pityriasis versicolor



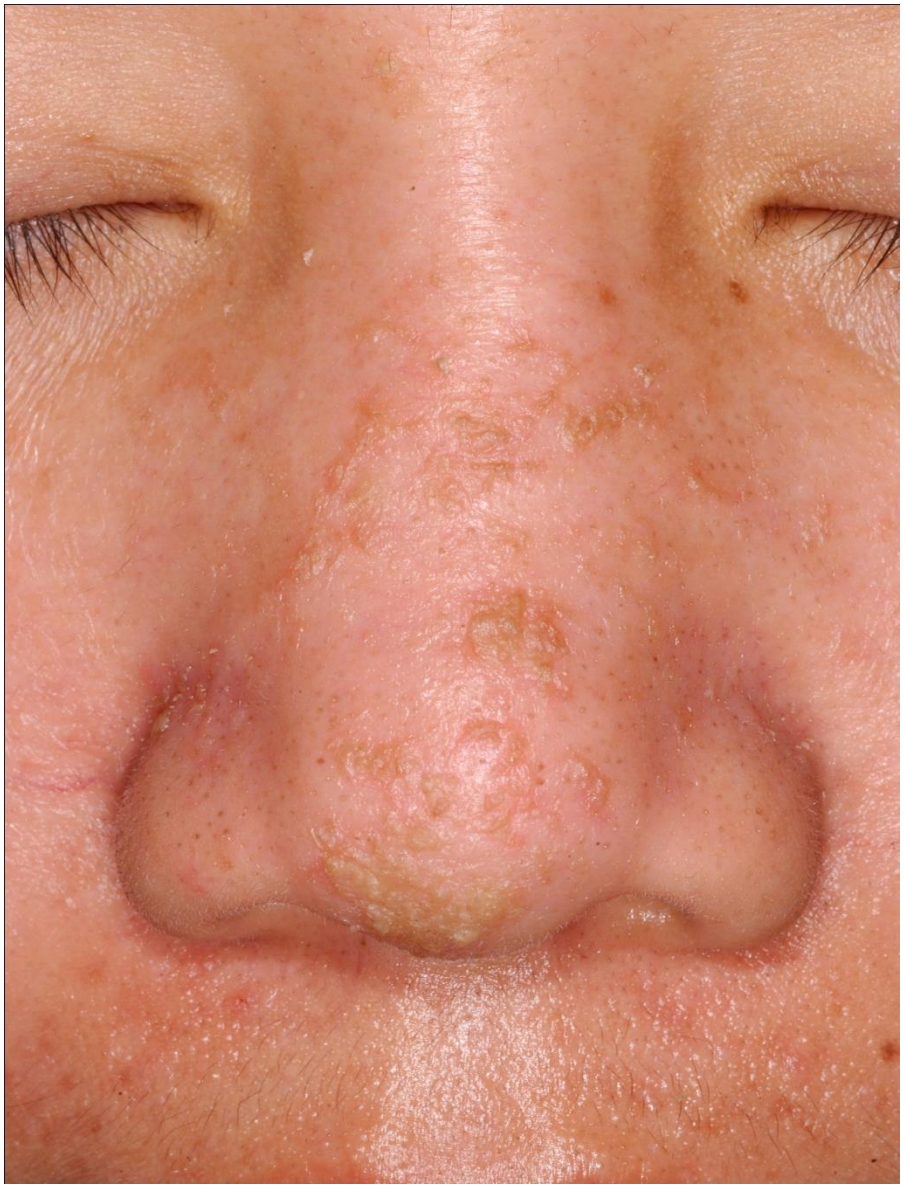
Collarette scale : pityriasis rosea



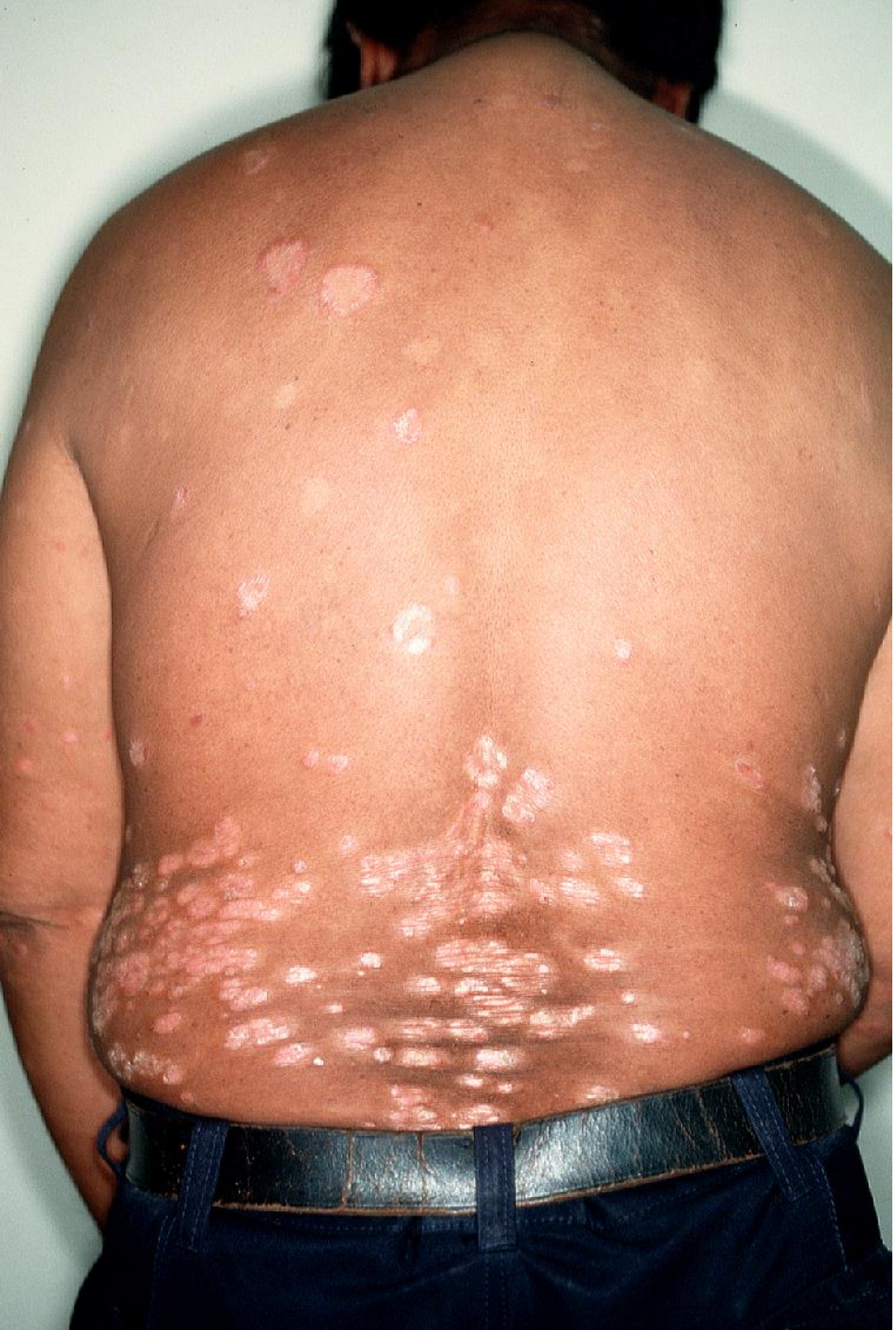
Trailing scale: erythema annulare centrifugum



Fish-like scale: ichthyosis

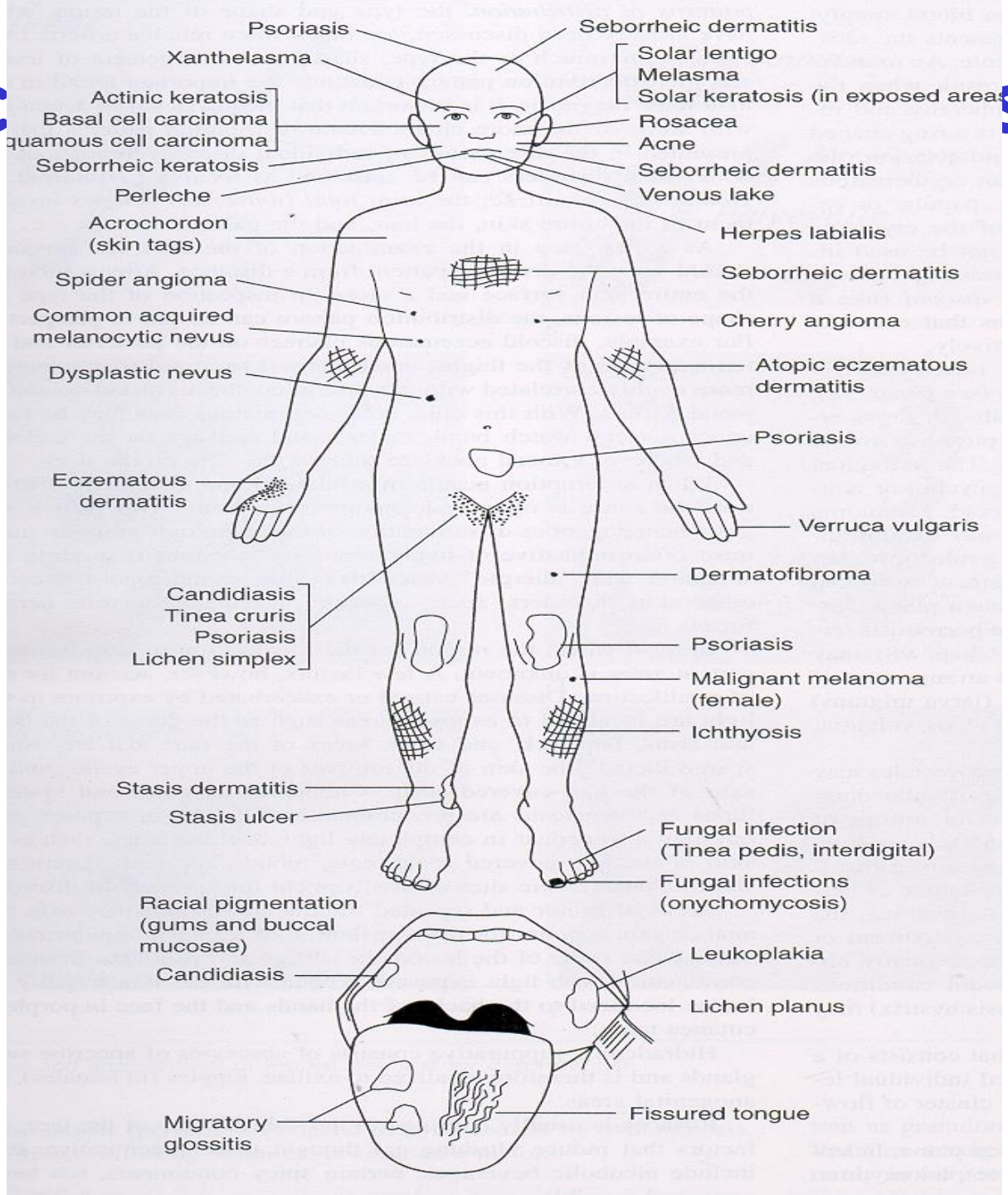


Greasy scale:
seborrheic dermatitis

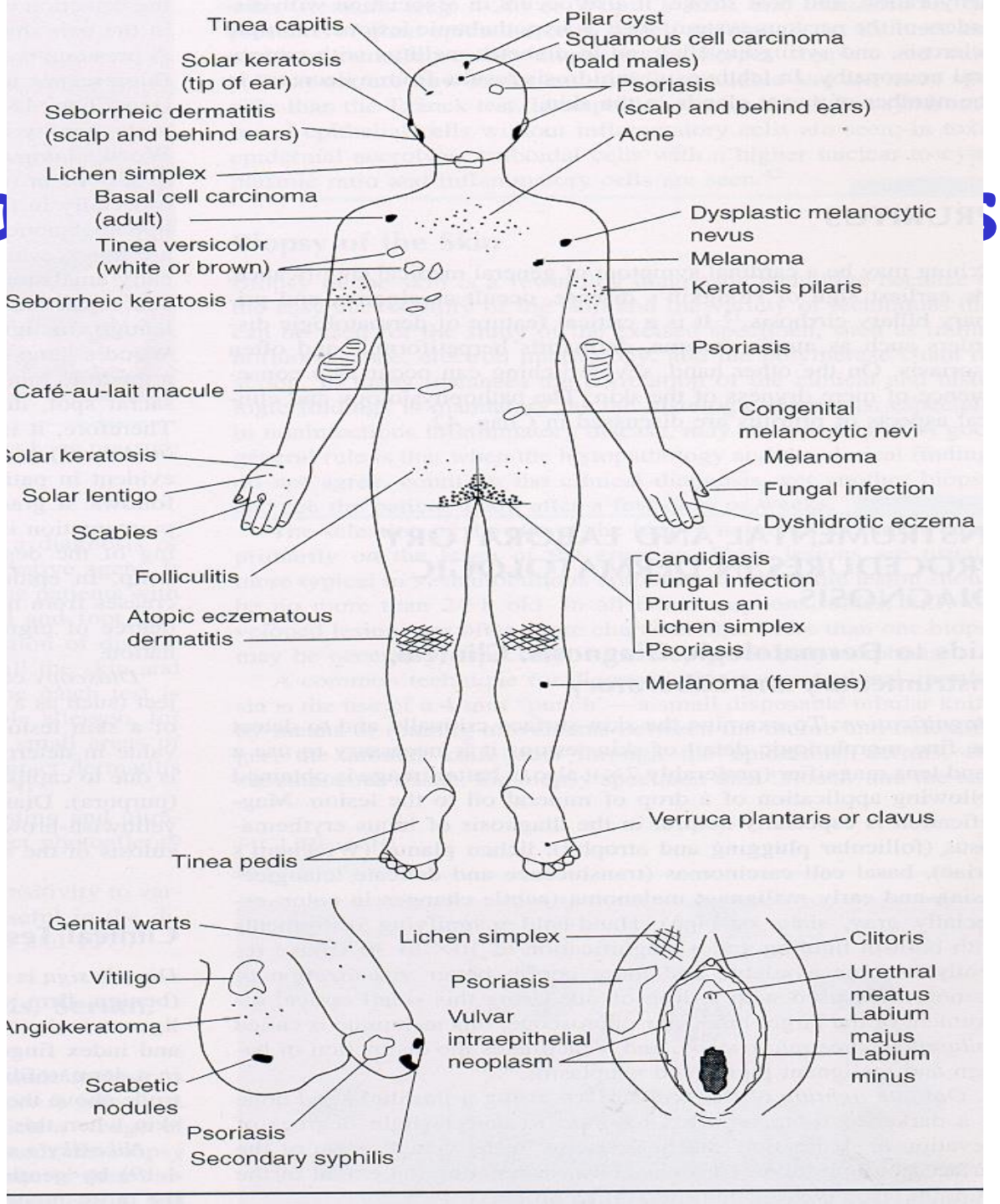


Thick silvery scale:
psoriasis

Loc ses

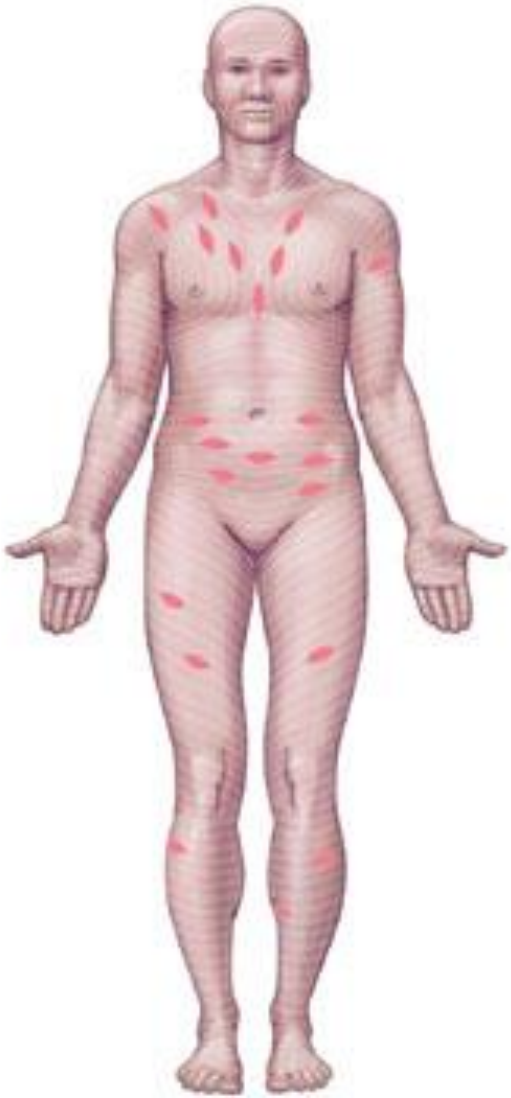

Psoriasis
Xanthelasma
Actinic keratosis
Basal cell carcinoma
quamous cell carcinoma
Seborrheic keratosis
Perleche
Acrochordon
(skin tags)
Spider angioma
Common acquired
melanocytic nevus
Dysplastic nevus
Eczematous
dermatitis
Candidiasis
Tinea cruris
Psoriasis
Lichen simplex
Stasis dermatitis
Stasis ulcer
Racial pigmentation
(gums and buccal
mucosae)
Candidiasis
Migratory
glossitis
Seborrheic dermatitis
Solar lentigo
Melasma
Solar keratosis (in exposed areas
Rosacea
Acne
Seborrheic dermatitis
Venous lake
Herpes labialis
Seborrheic dermatitis
Cherry angioma
Atopic eczematous
dermatitis
Psoriasis
Verruca vulgaris
Dermatofibroma
Psoriasis
Malignant melanoma
(female)
Ichthyosis
Fungal infection
(Tinea pedis, interdigital)
Fungal infections
(onychomycosis)
Leukoplakia
Lichen planus
Fissured tongue

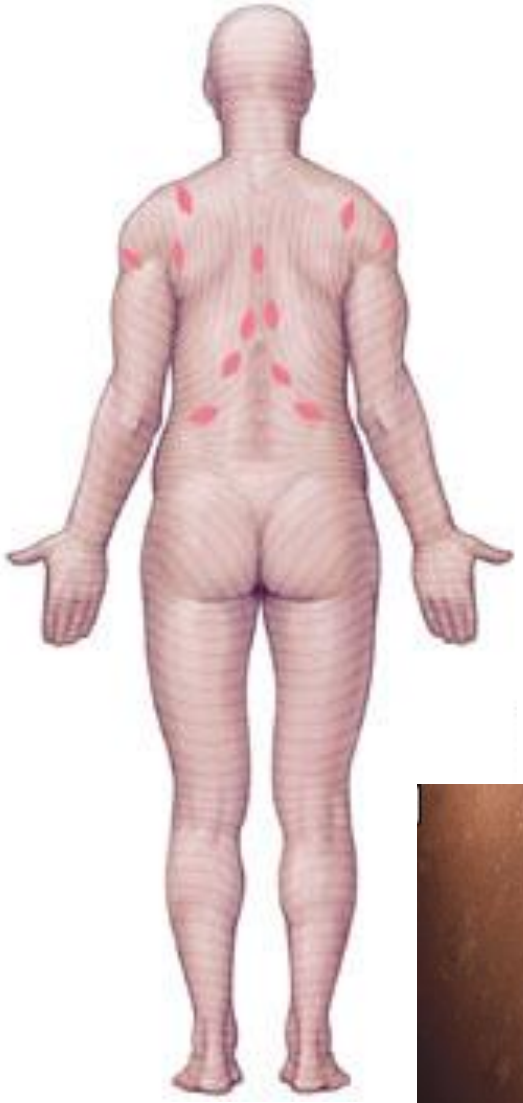
Loca ses

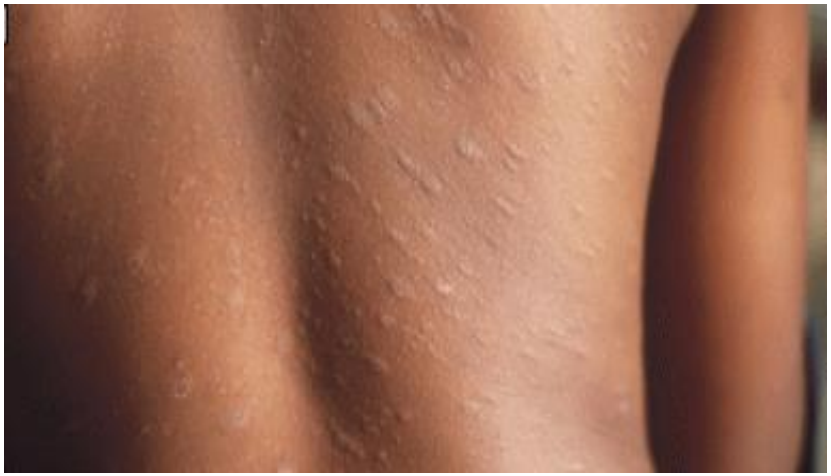

Tinea capitis
Pilar cyst
Squamous cell carcinoma
(bald males)
Solar keratosis
(tip of ear)
Psoriasis
(scalp and behind ears)
Seborrheic dermatitis
(scalp and behind ears)
Acne
Lichen simplex
Basal cell carcinoma
(adult)
Dysplastic melanocytic
nevus
Tinea versicolor
(white or brown)
Melanoma
Keratosis pilaris
Seborrheic keratosis
Psoriasis
Café-au-lait macule
Congenital
melanocytic nevi
olar keratosis
Melanoma
Solar lentigo
Fungal infection
Scabies
Dyshidrotic eczema
Candidiasis
Fungal infection
Pruritus ani
Lichen simplex
Psoriasis
Folliculitis
Atopic eczematous
dermatitis
Melanoma (females)
Verruca plantaris or clavus
Tinea pedis
Genital warts
Lichen simplex
Clitoris
Vitiligo
Psoriasis
Urethral
meatus
ngiokeratoma
Vulvar
intraepithelial
neoplasm
Labium
majus
Labium
minus
Scabetic
nodules
Psoriasis
Secondary syphilis

Distribution of the lesions

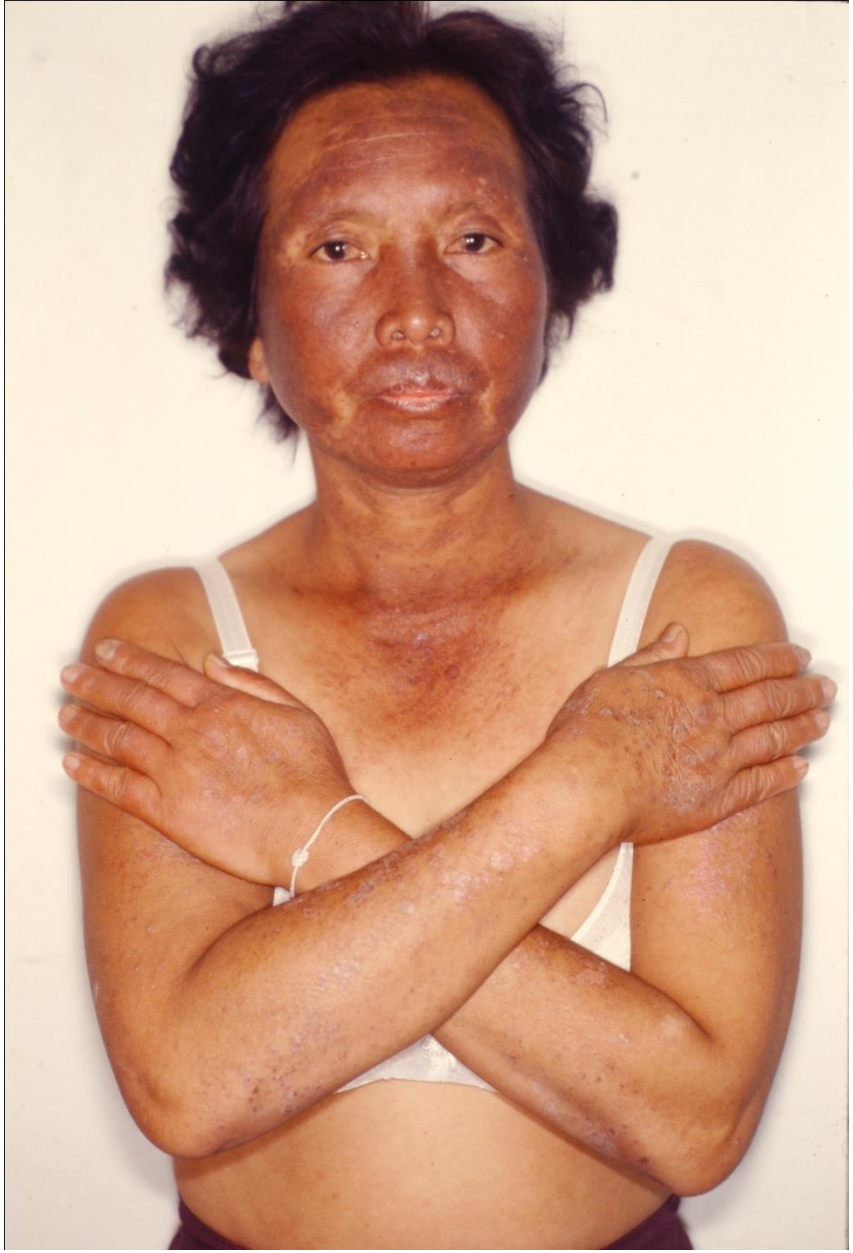
- **Along skin crease (Christmas tree pattern):** pityriasis rosea, psoriasis, pityriasis lichenoides, Kaposi's sarcoma
- **Photodistribution:** sparing areas(periorbital, nasolabial, below chin, flexural areas): drug allergy, CNT disease
- **Air-borne distribution:** no sparing area : air-borne contact dermatitis
- **Axillae, umbilicus, perineum, toe and finger webs:** scabiasis

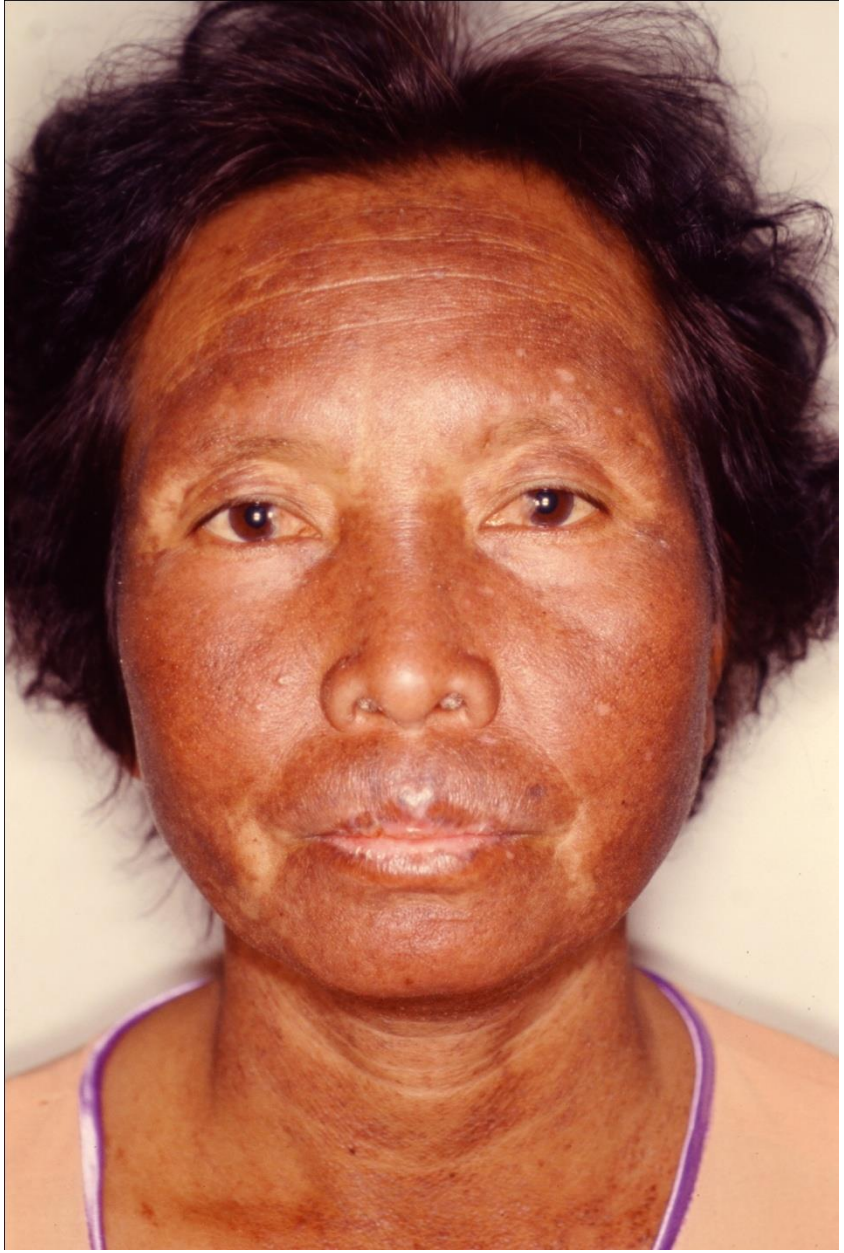




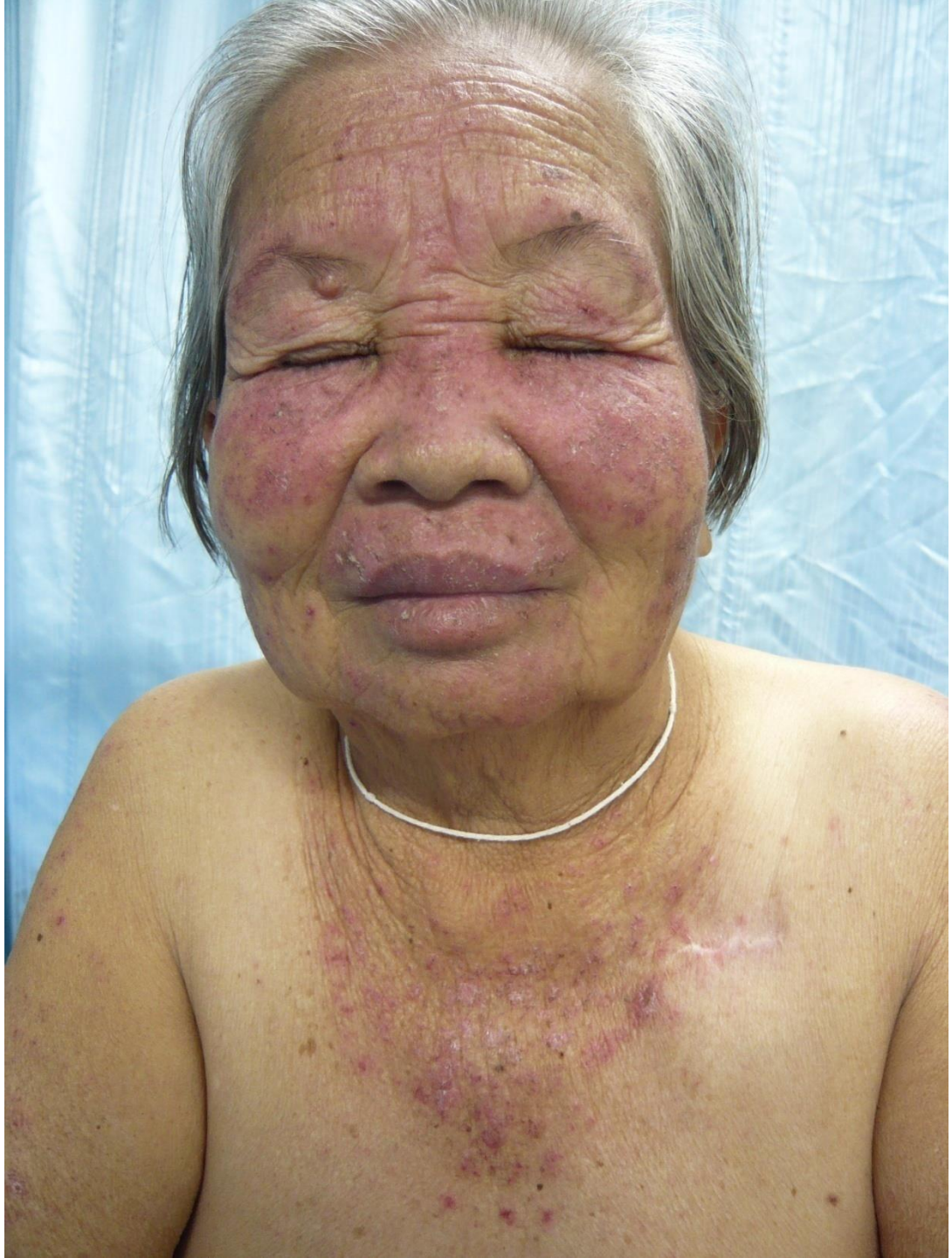


Christmas tree pattern





Photodistribution

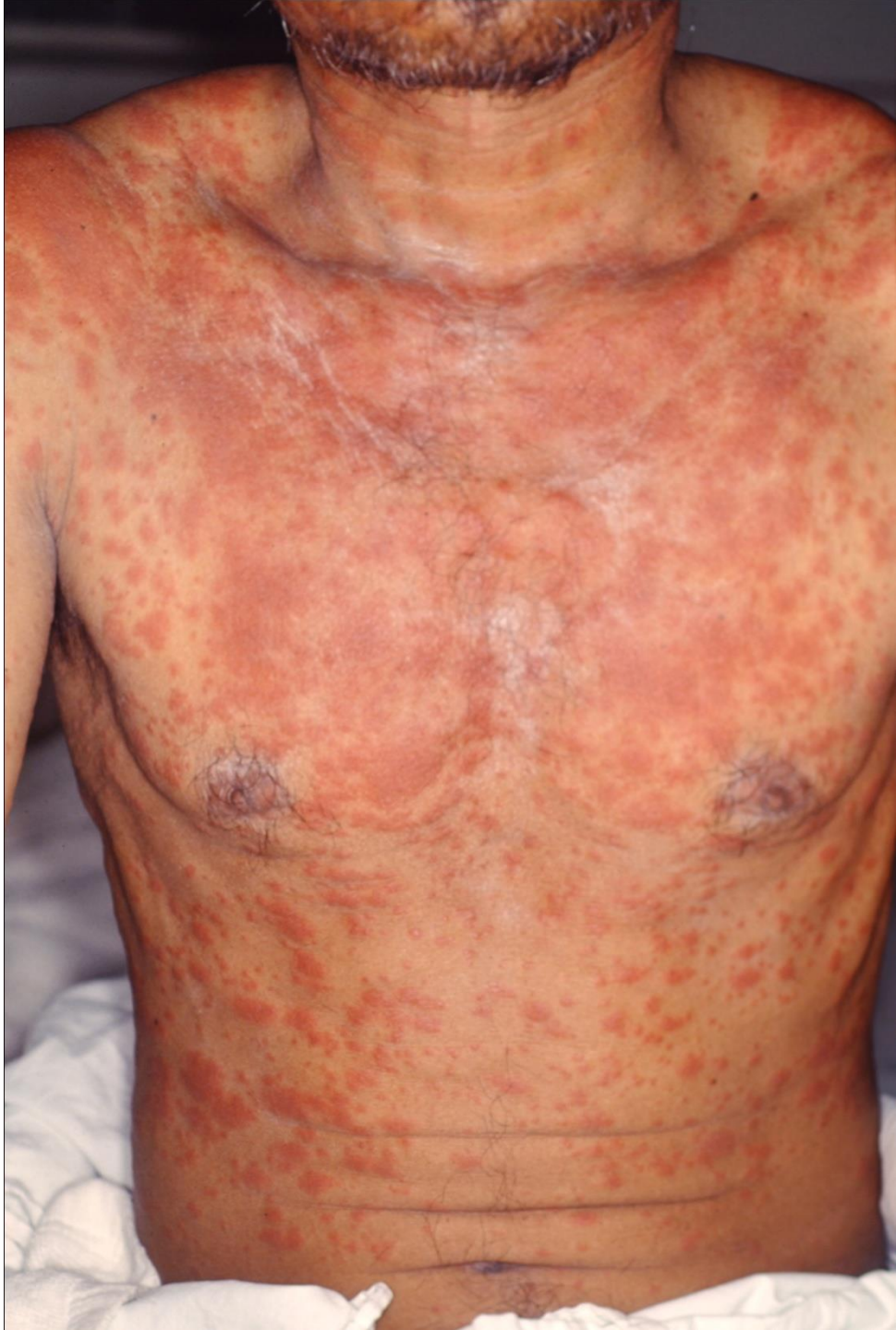


Photodistribution

Maculopapular rash:

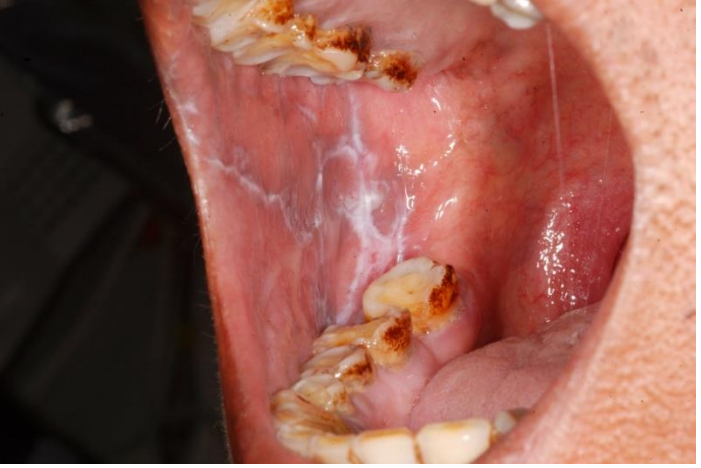
(exanthematous)

1. drug eruption
2. autoimmune disease
3. systemic infection
   viral exanthem

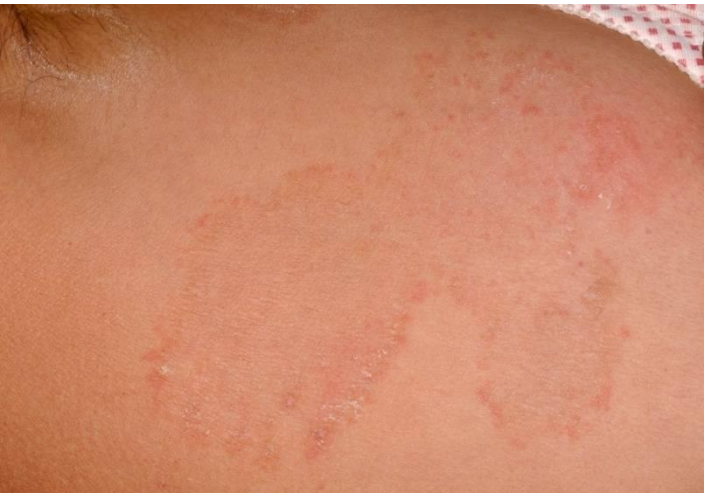


Describe skin lesions

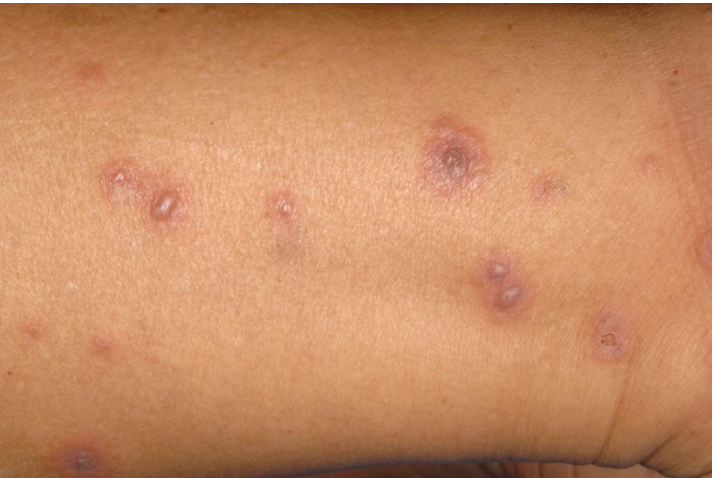
- Primary skin lesions
- Surface change or secondary lesion eg. scale, erosion
- Color
- Configuration for specific disease
- Location
- Distribution



White reticular lesion : oral lichen planus



Annular erythematous patchs :
tinea corporis



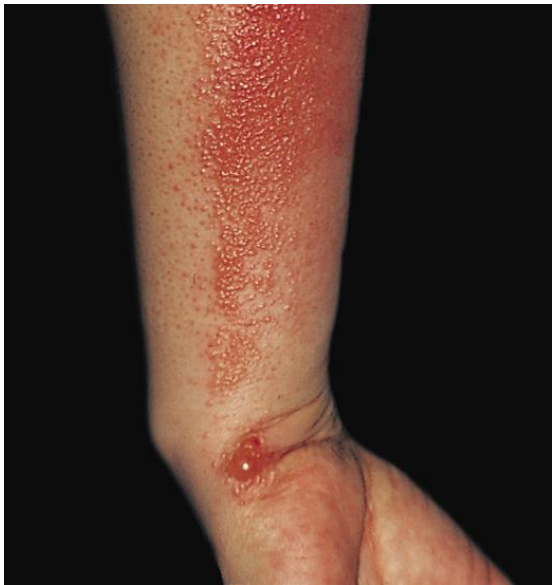
Target-like papules with central vesicles
: erythema multiforme

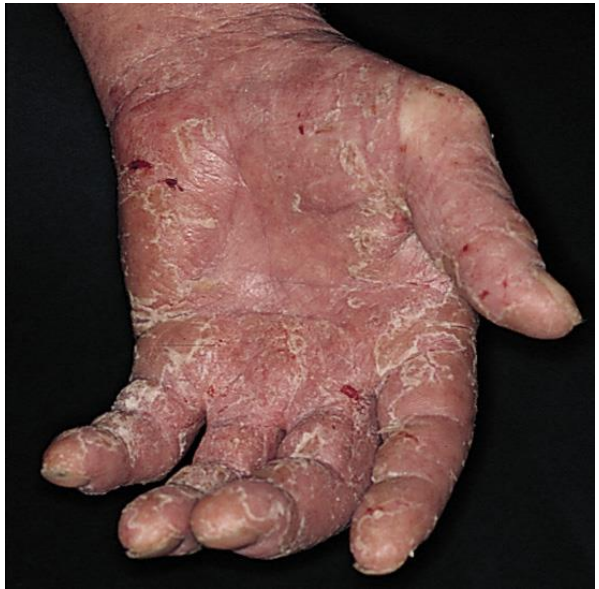
Papulosquamous disease

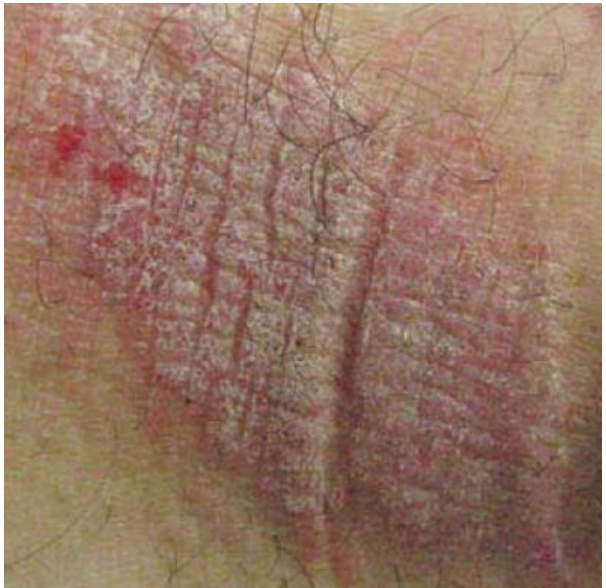
1. Eczema
2. Psoriasis
3. Pityriasis rosea

Classification 3 stages

1. Acute-vesiculobullous,serum oozing
2. Subacute-crusting,scaly plaque
3. Chronic-lichenified, hyperkeratotic plaque







Eczema

Endogenous

- Atopic dermatitis
- Seborrheic dermatitis
- Nummular dermatitis
- Dyshidrosis
- Prurigo nodularis
- Lichen simplex chronicus
- Stasis

Exogenous (contact)

Related to ultraviolet

- Phototoxic CD
- Photoallergic CD

Not related to ultraviolet

- Irritant CD
- Allergic CD

Atopic dermatitis

3 phases

1. Infant : 2 months-2 years
2. Childhood : 3-11years
3. Adult : 12-30 years

Atopic dermatitis, allergic rhinitis, asthma

"Atopic march"

Atopic dermatitis

ESSENTIAL FEATURES—Must be present:

- Pruritus
- Eczema (acute, subacute, chronic)
  - -Typical morphology and age-specific patterns*
  - -Chronic or relapsing history

*Patterns include:

1. Facial, neck, and extensor involvement in infants and children
2. Current or previous flexural lesions in any age group
3. Sparing of the groin and axillary regions

IMPORTANT FEATURES—Adding support to the diagnosis:

- Early age of onset
- Atopy : personal and/or family history, Ig E reactivity
- Xerosis

Atopic dermatitis

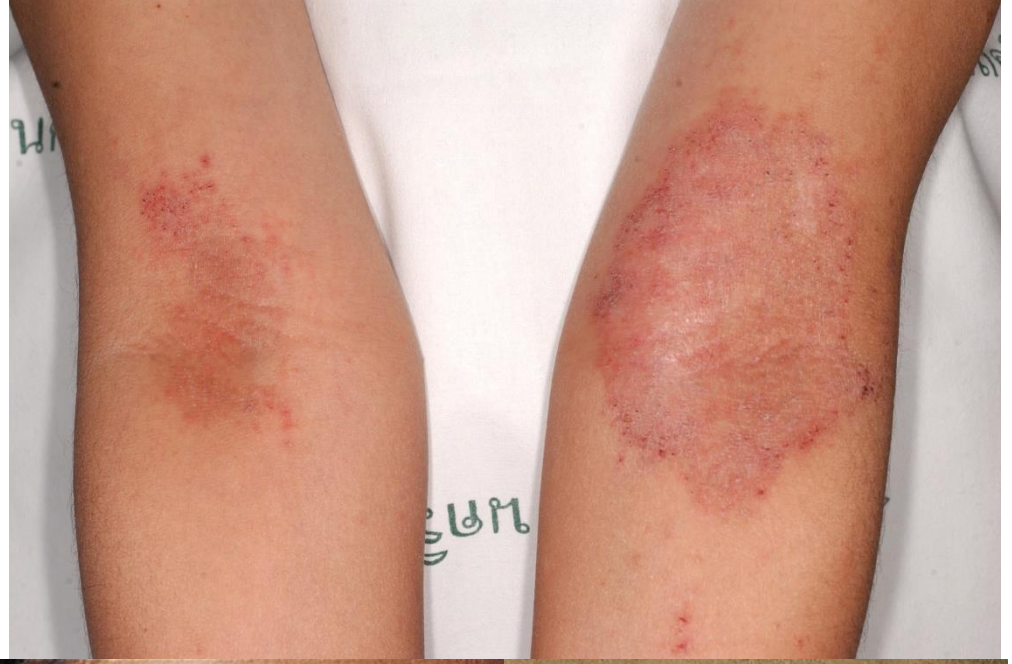
Pathogenesis: complex interaction of

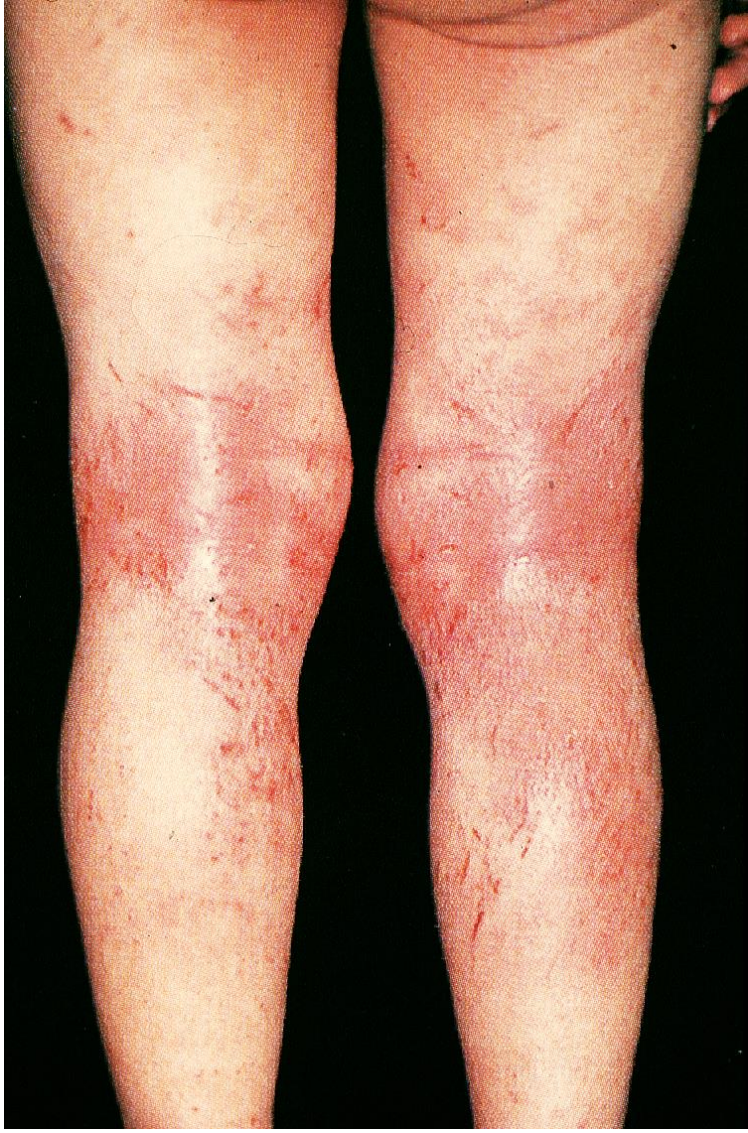
1. Skin barrier disruption: impaired filaggrin, reduced ceramide level, increased transepidermal water loss

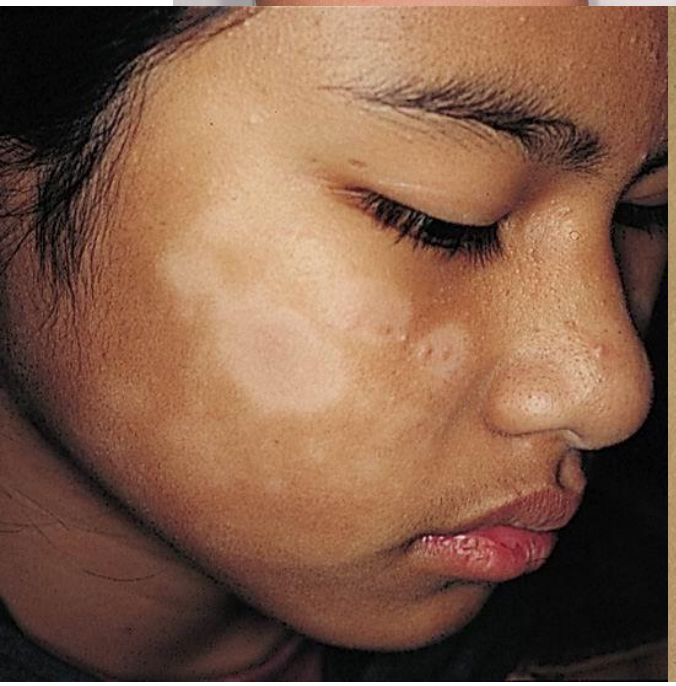
2. Genetic: uncertain inheritance pattern (AD adult-60% children with AD, both AD parents-81% AD children)

3. Environmental:infection (*S.aureus, pityrosporum sp.*),food,inhalants,season,clothing,stress

4. Immunologic factor: IgE, Th1, Th2, Th17



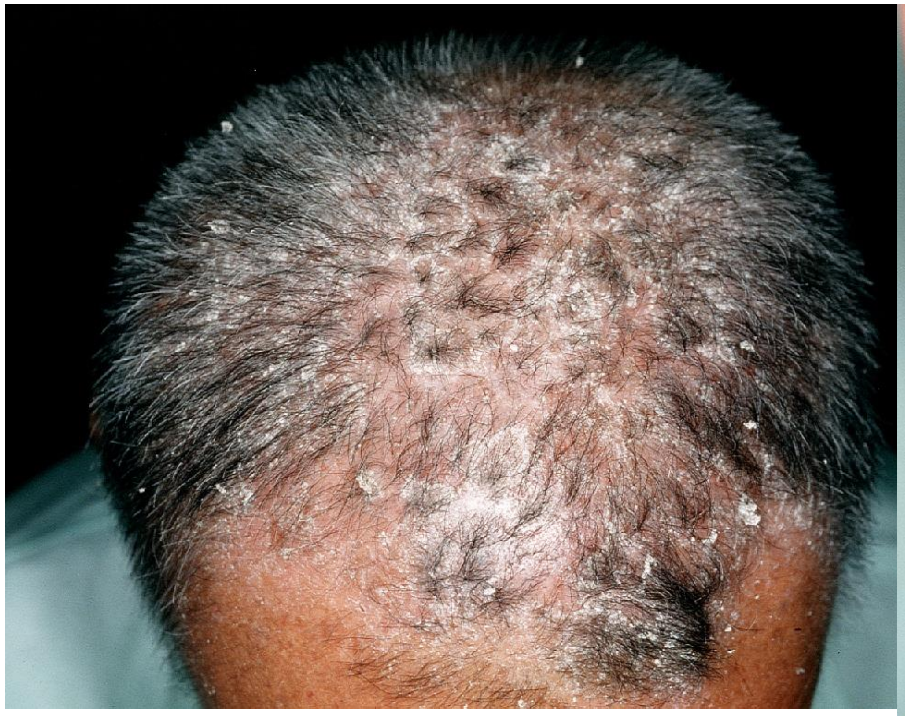


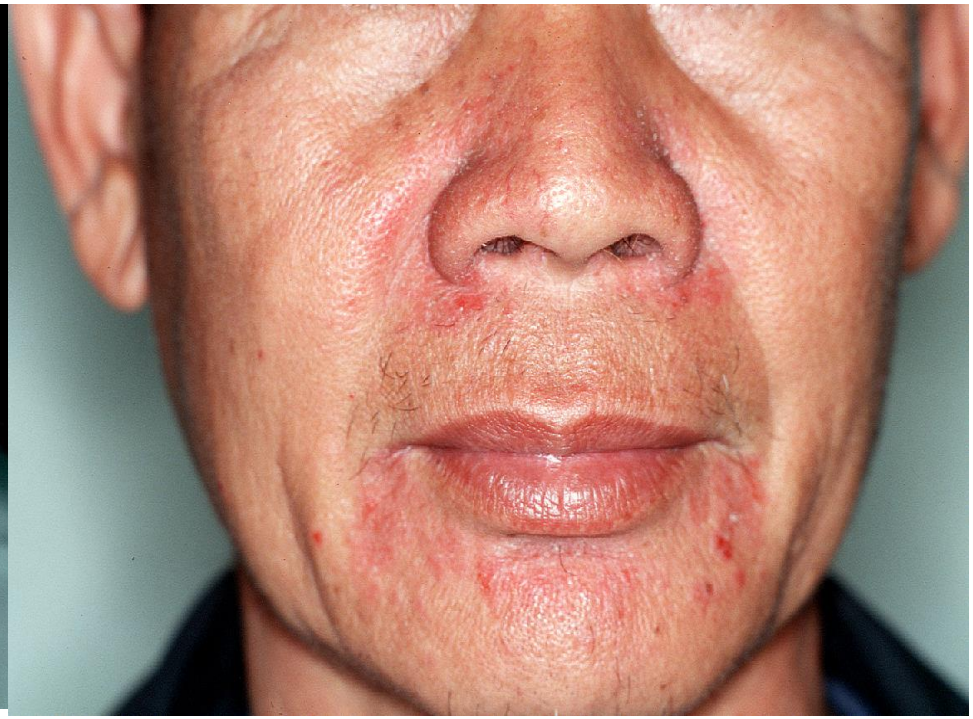


2. Seborrheic dermatitis

greasy scale erythema on face, scalp (dandruff), chest wall, upper back, axillae and inguinal area

Risk: HIV patient, stroke, facial palsy, parkinsonism

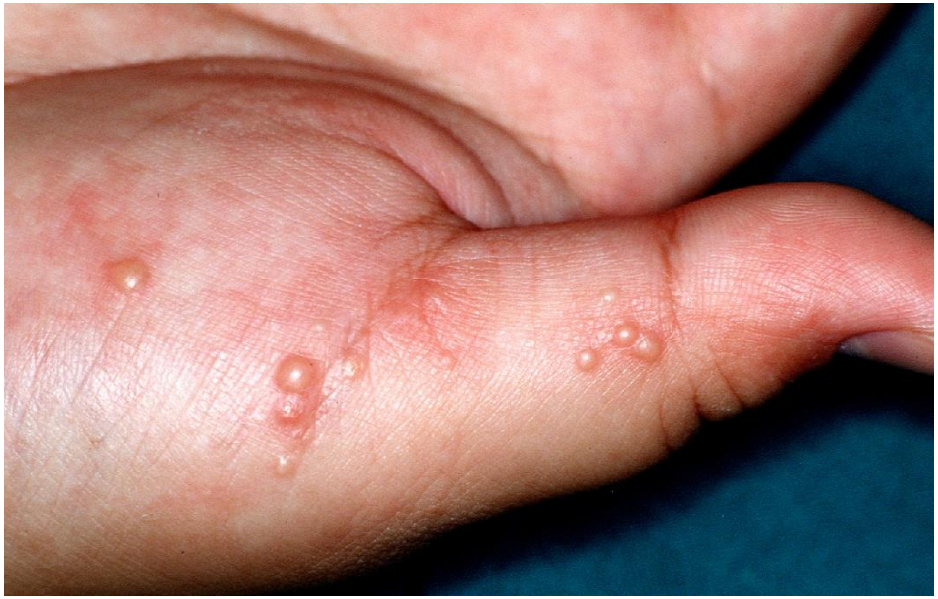


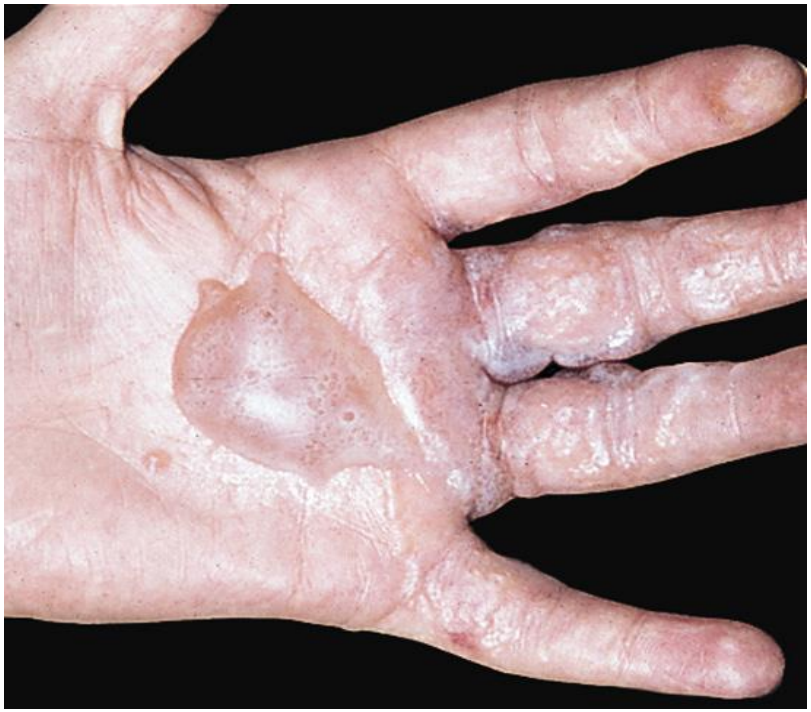


3. Dyshidrotic dermatitis (pompholyx)

deep-seated vesicles (sago grain) on palm and sole

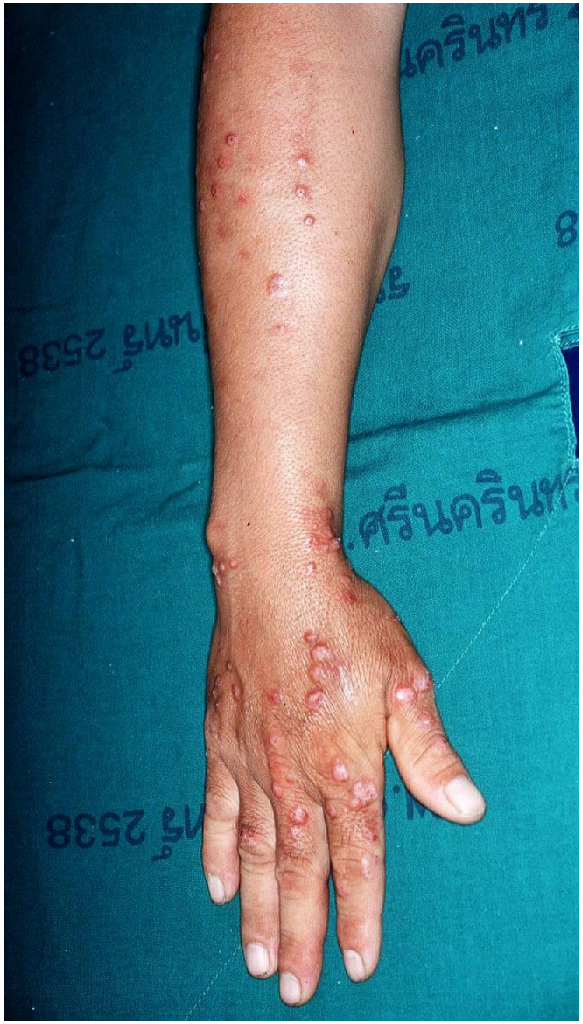
Risk: nickle allergy, stress

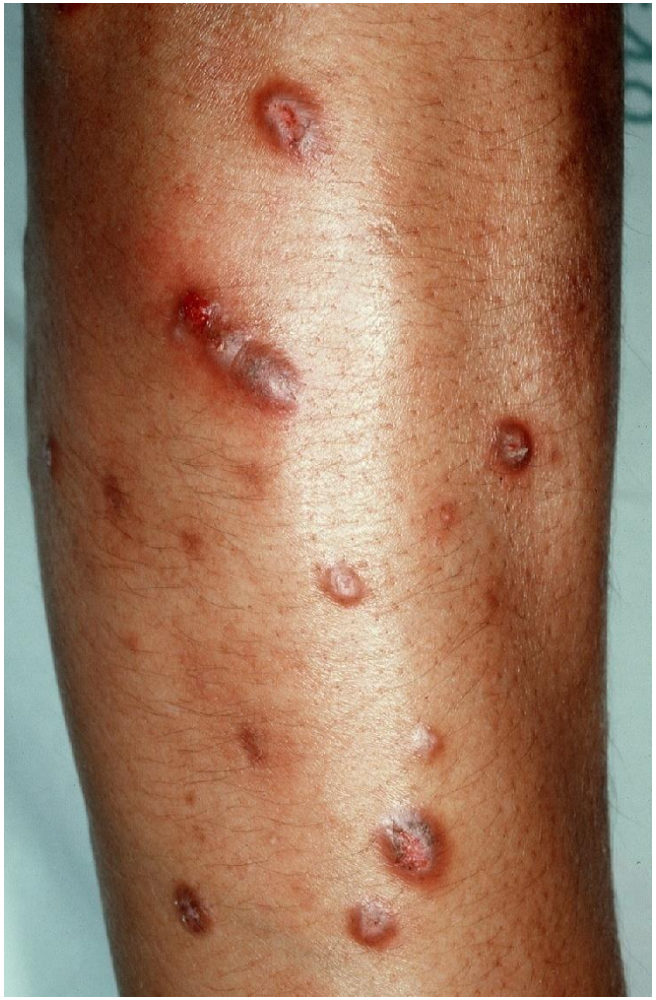




4. Prurigo nodularis

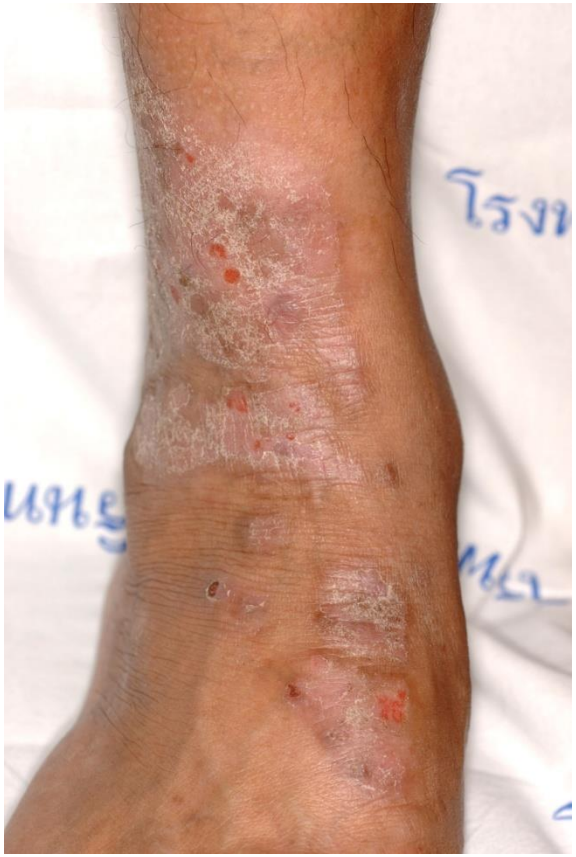
indurated, hyperkeratotic, excoriated papules on extremities

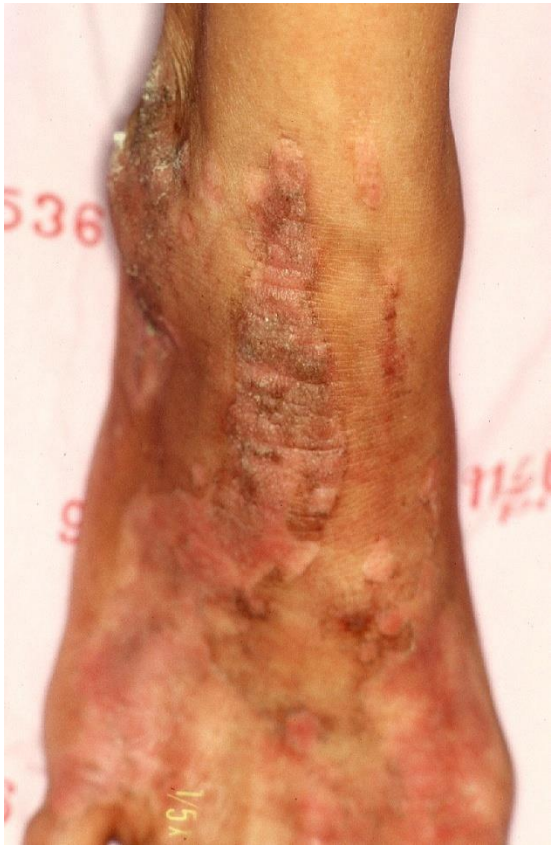




5. Lichen simplex chronicus

lichenified plaque usually on ankels and knees

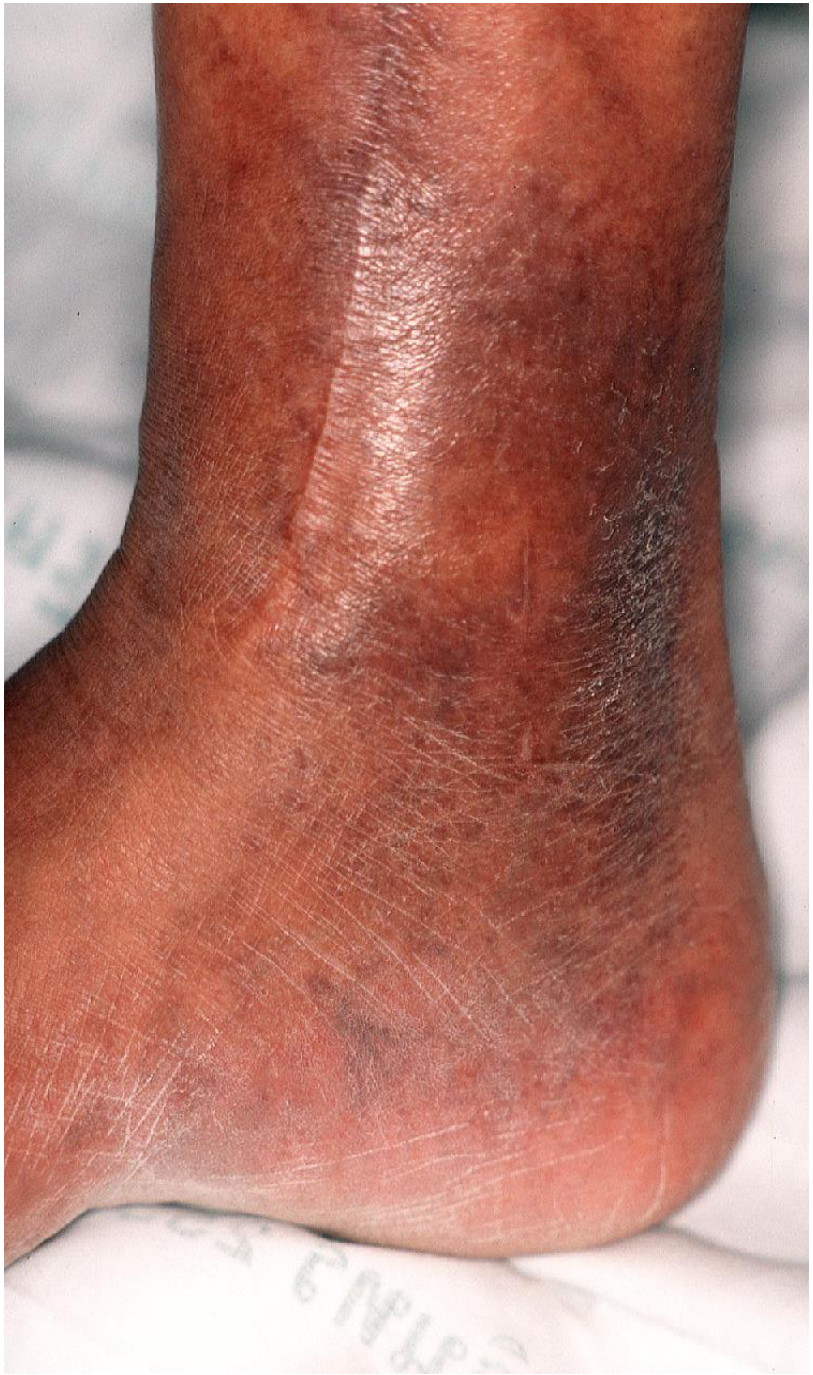




6. Stasis dermatitis

brownish or purpuric scaly patch commonly located on medial side of ankles

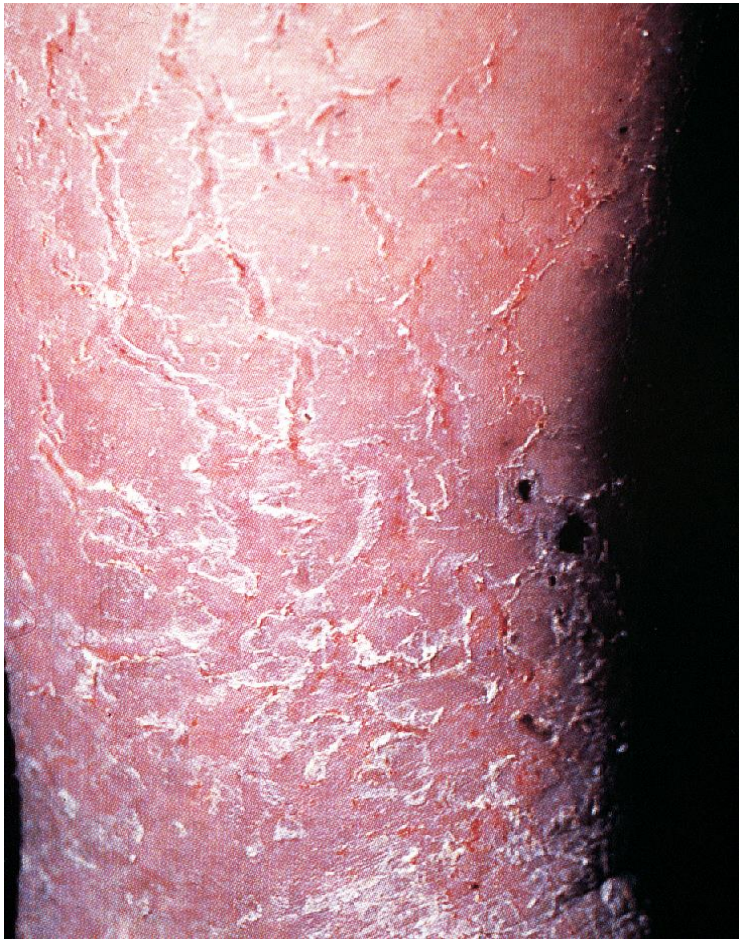
Risk: venous insufficiency



7. Asteatotic or xerotic dermatitis

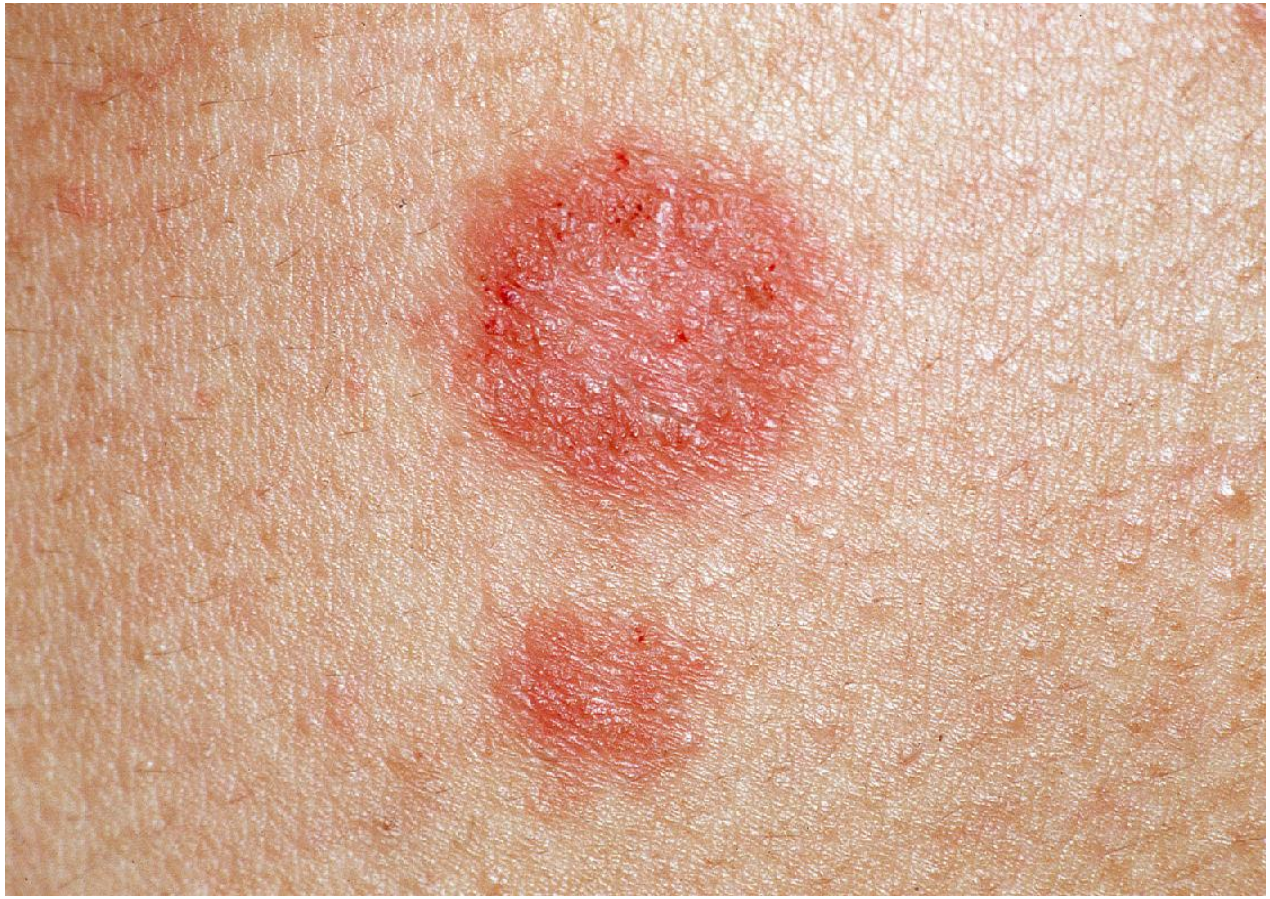
fish-like scale and cracking skin, usually on flank, thighs, and legs

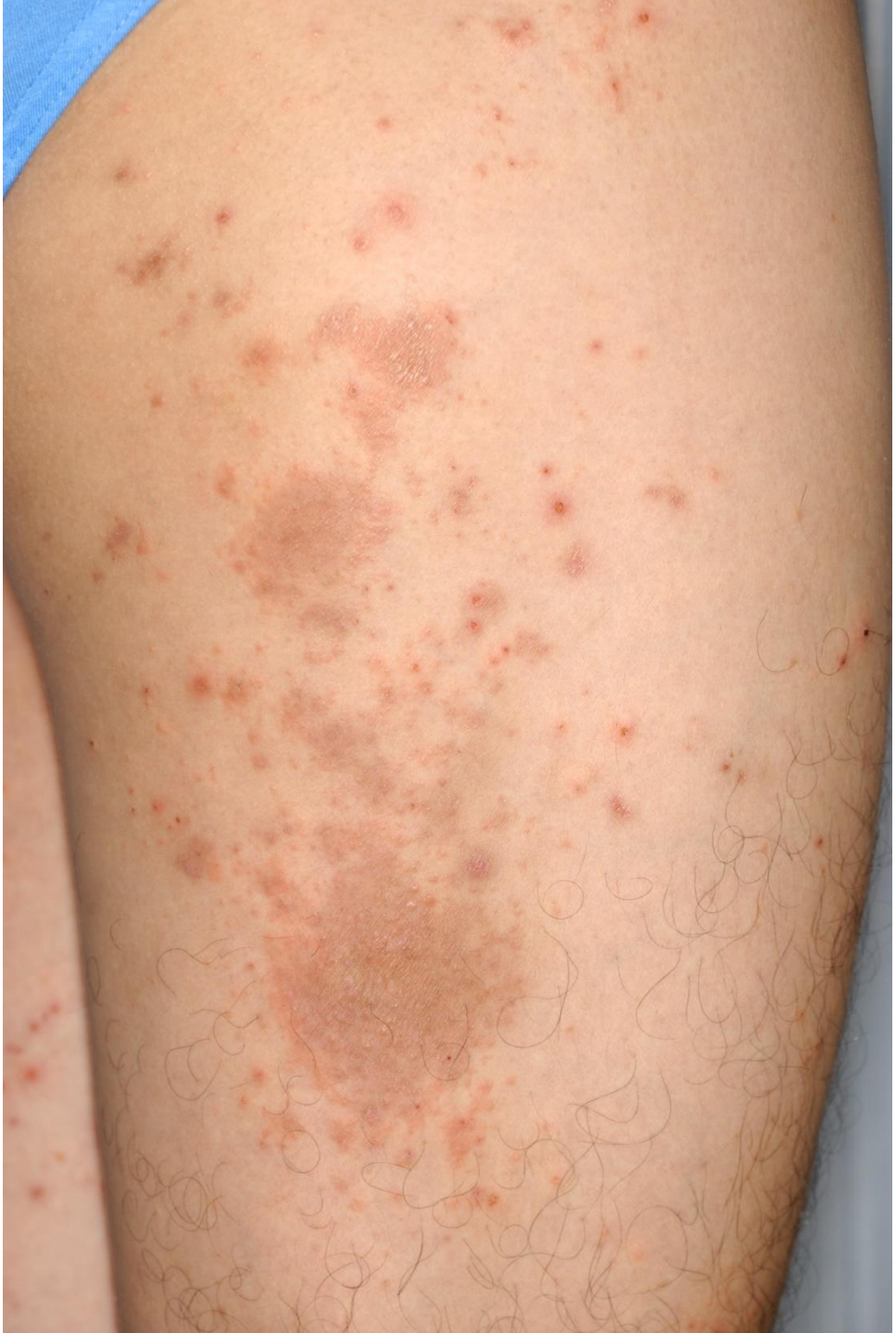
Risk: atopy, elder, ichthyosis, malnutrition



8. Nummular dermatitis

Coin-shaped lesion, vary in size





Id reaction:

Autosensitization from pre-existing eczematous lesions presenting with generalized papulvesicles

Nummular dermatitis with Id eruption

Contact dermatitis

1. Irritant contact dermatitis

   or phototoxic dermatitis

2. Allergic contact dermatitis

   or photoallergic dermatitis

Differentiation between irritant and allergic contact dermatitis

Feature	Allergic	Irritant
Susceptibility	Somebody	Everybody
Duration	7-14 d	0-2 d
Remission after discotinuing	Slow	Rapid
Symptoms		
Icthing	++++(early)	+++ (late)
Pain/burning	++	++++ (early)
Concentration of agent	-	High
Stimulating agent	Ag and T cell	Keratinocytes
Patch test	Positive	Negative

Allergic contact dermatitis

Pathogenesis:

- Delayed,cell-mediated hypersensitivity

-Langerhans cell (Ag-presenting cell) in epidermis
-T cell (MHC class II)in lymph node - Sensitized T cells back to skin

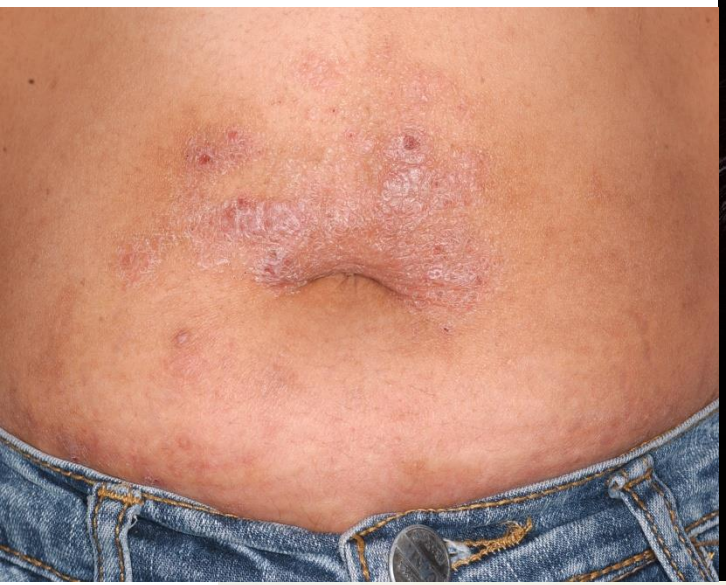
Allergic contact dermatitis

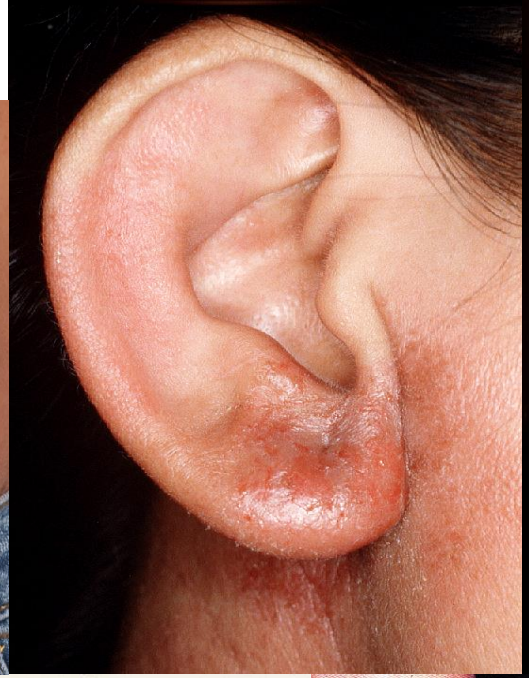
Lesion usually develop after 1-wk exposure to allergen, predominate itching

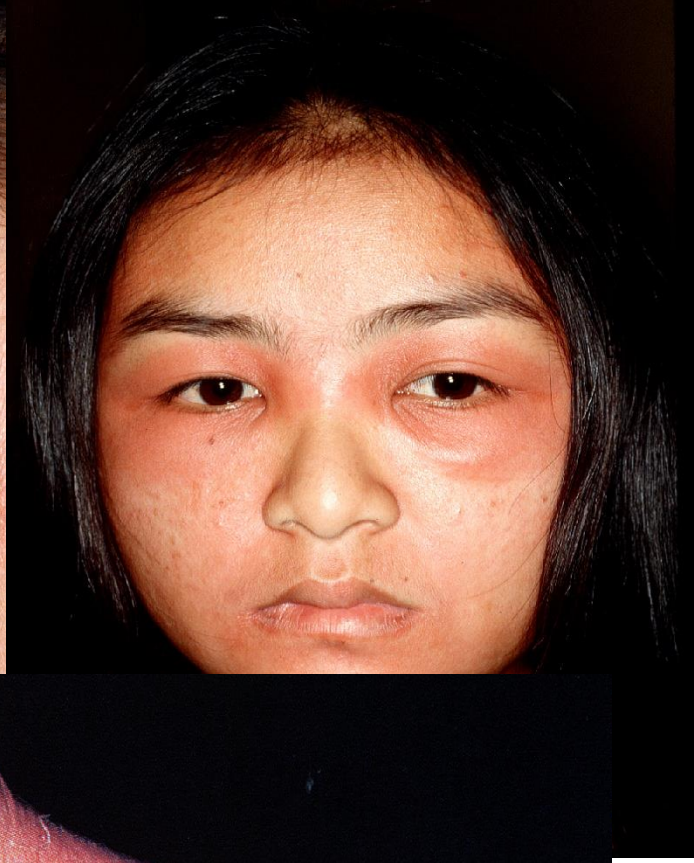
Clinical: depend on stage of lesion, acute-vesicles, subacute-scaly plaque, chronic-lichenified plaques

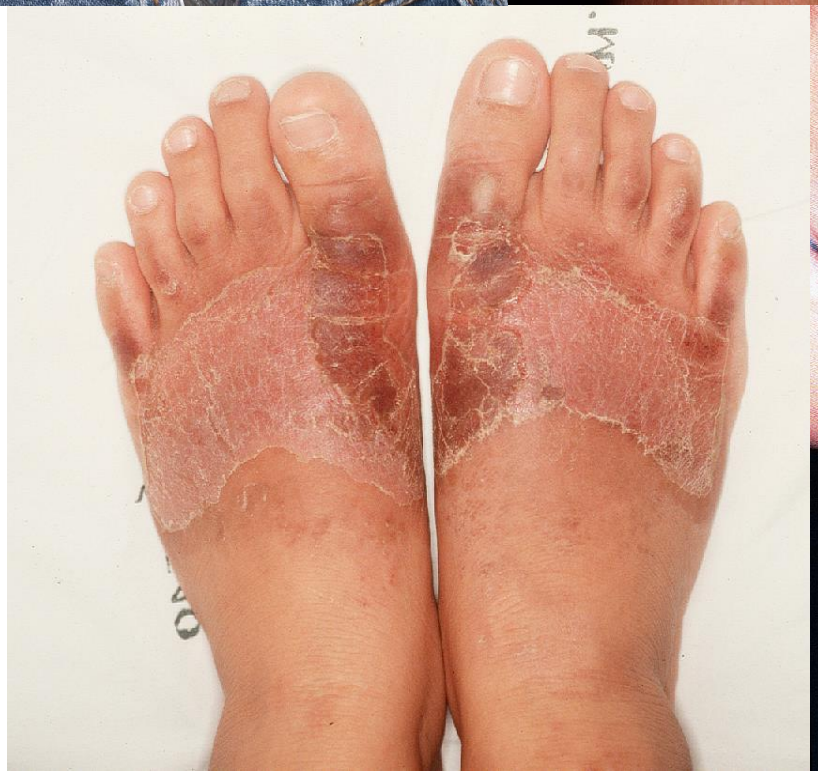
Common allergens: nickle, rubber, fragrance, formaldehyde

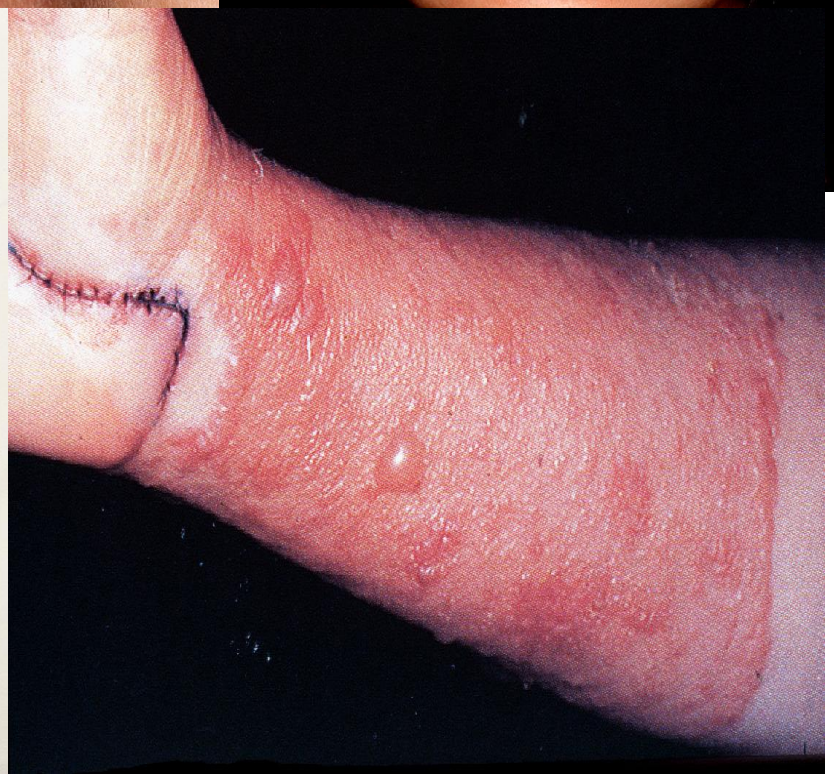
Confirmation: Patch test



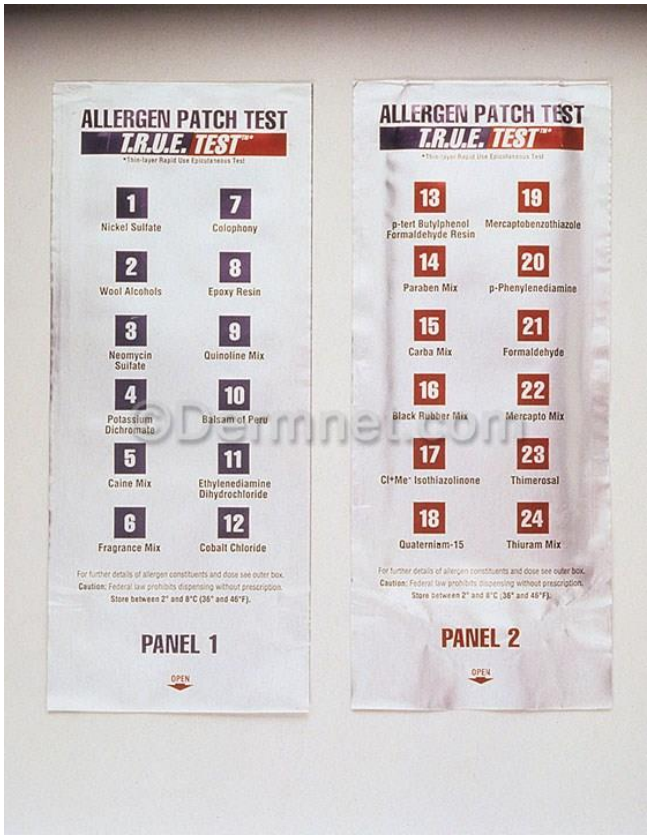


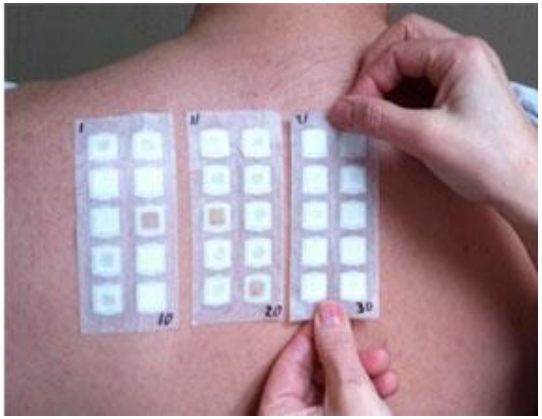


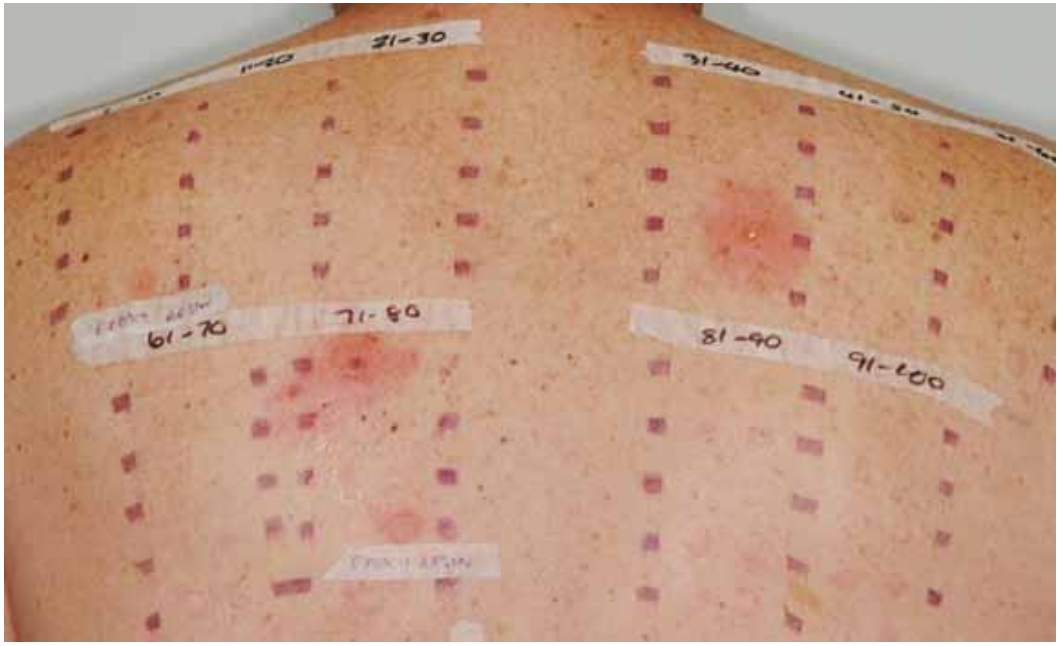




Patch test (allergic CD)







Irritant contact dermatitis

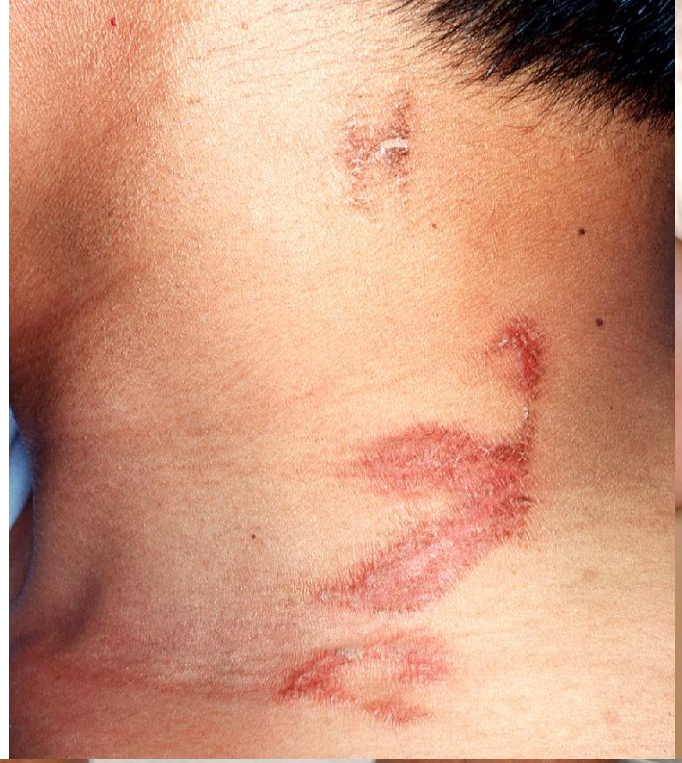
-Occur within hours or days after exposure

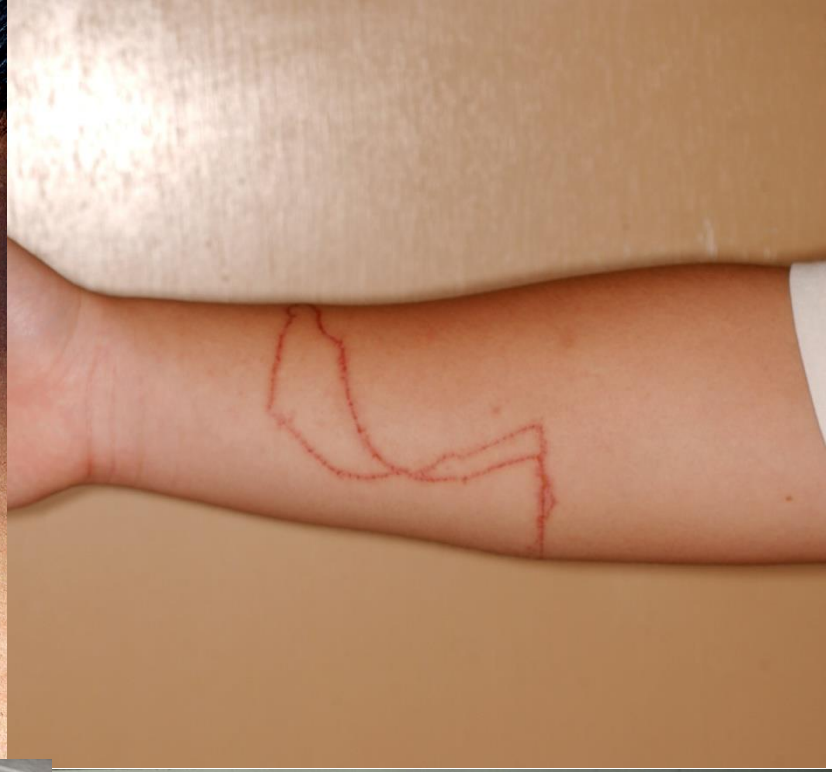
-Depend on concentration of chemical agents

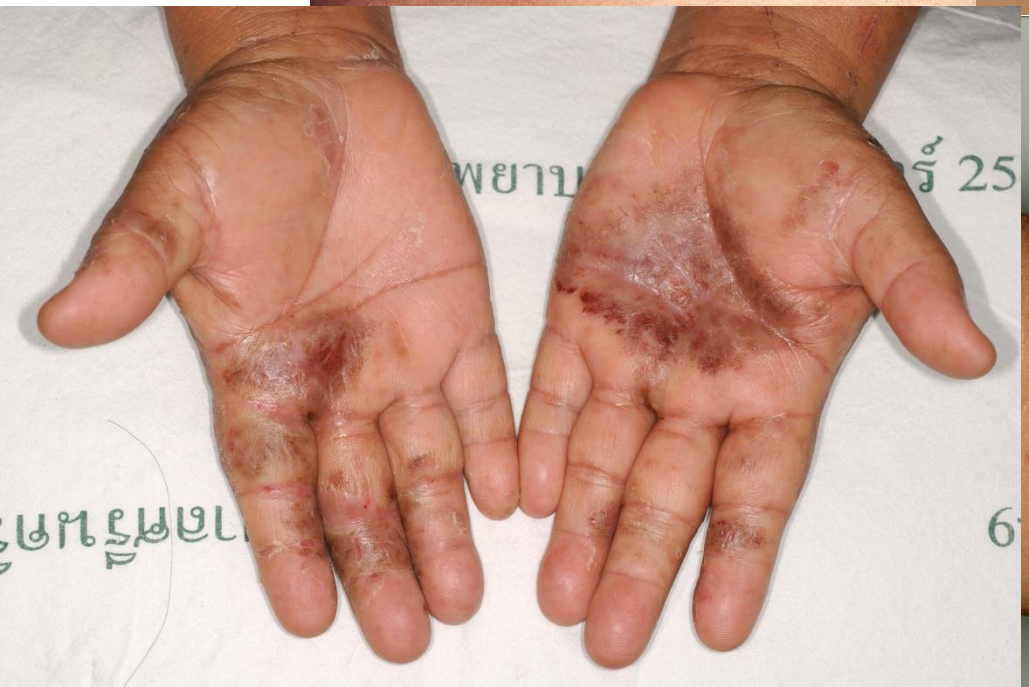
-Clinical: burn-like lesion (high conc.) or dry, scaly plaque with fissure (low conc.)

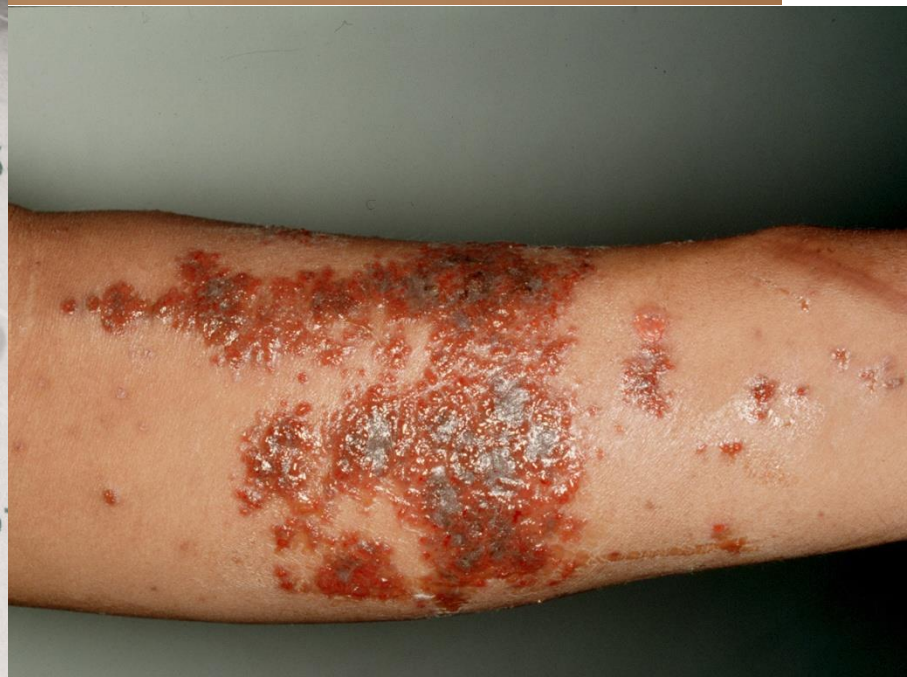
-Usually seen in person with chronic exposure to water

-Paederus dermatitis from chemical substance in Rove beetle presenting with vesicles or pustules









Eczema treatment

- Wet compression (acute)
- Topical corticosteroids (acute, subacute, chronic)
- Antihistamines
- Intralesional corticosteroids (chronic)
- Keratolytics eg. salicylic or urea (chronic)
- Systemic corticosteroids
- Emollients
- Avoidance : contact dermatitis
- Advice

Psoriasis vulgaris

- Chronic inflammatory disease, not cure, genetic influence
- Common association: metabolic syndrome

Clinical features:

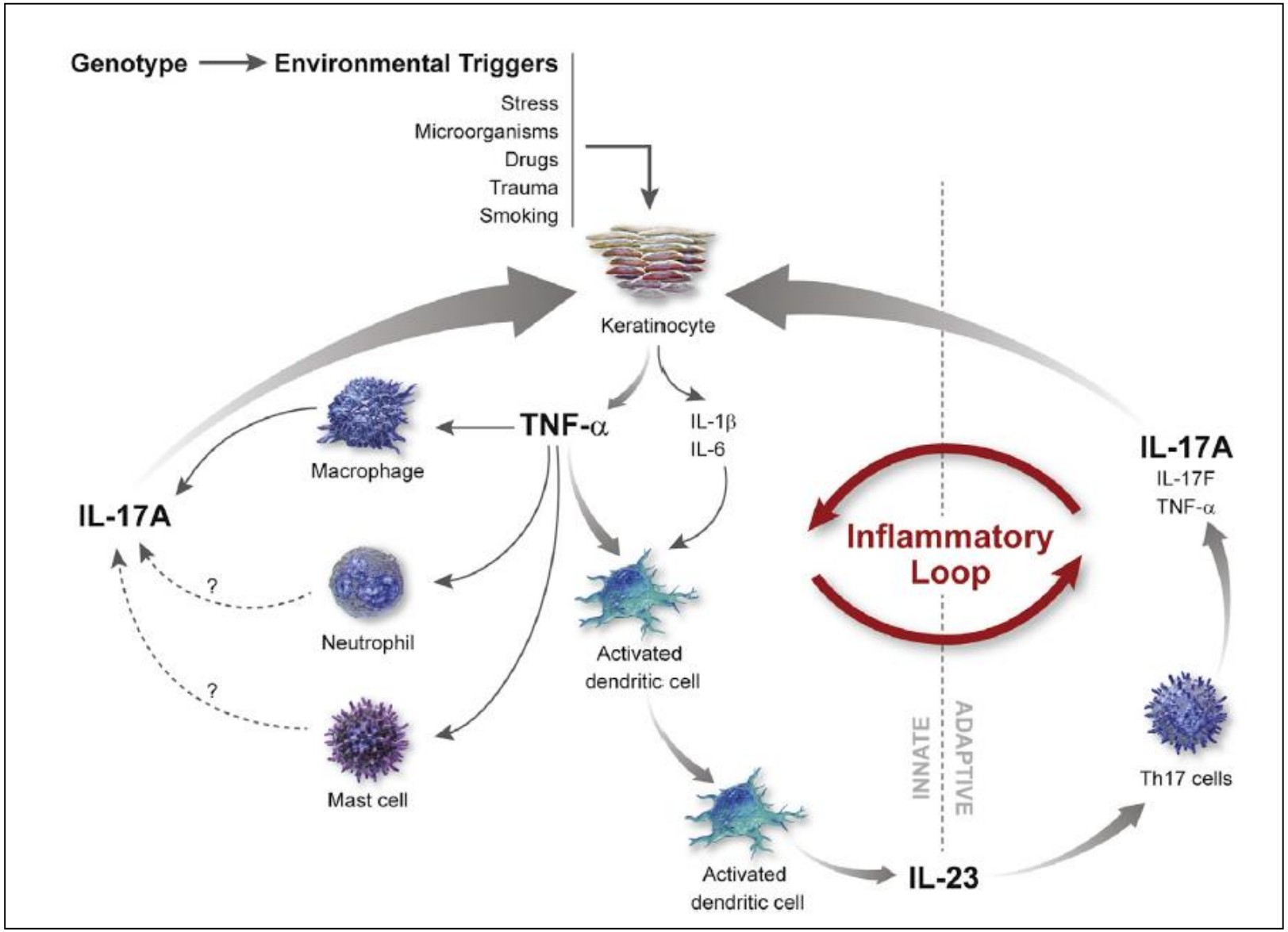
1. Skin: well-demarcated erythematous plaques with silvery scale on trunk, scalp, extremities
2. Nail: pits, oil spots, oncholysis, subungual hyperkeratosis
3. Arthritis: small, large axial joints

Psoriasis vulgaris

Unknown exact etiology

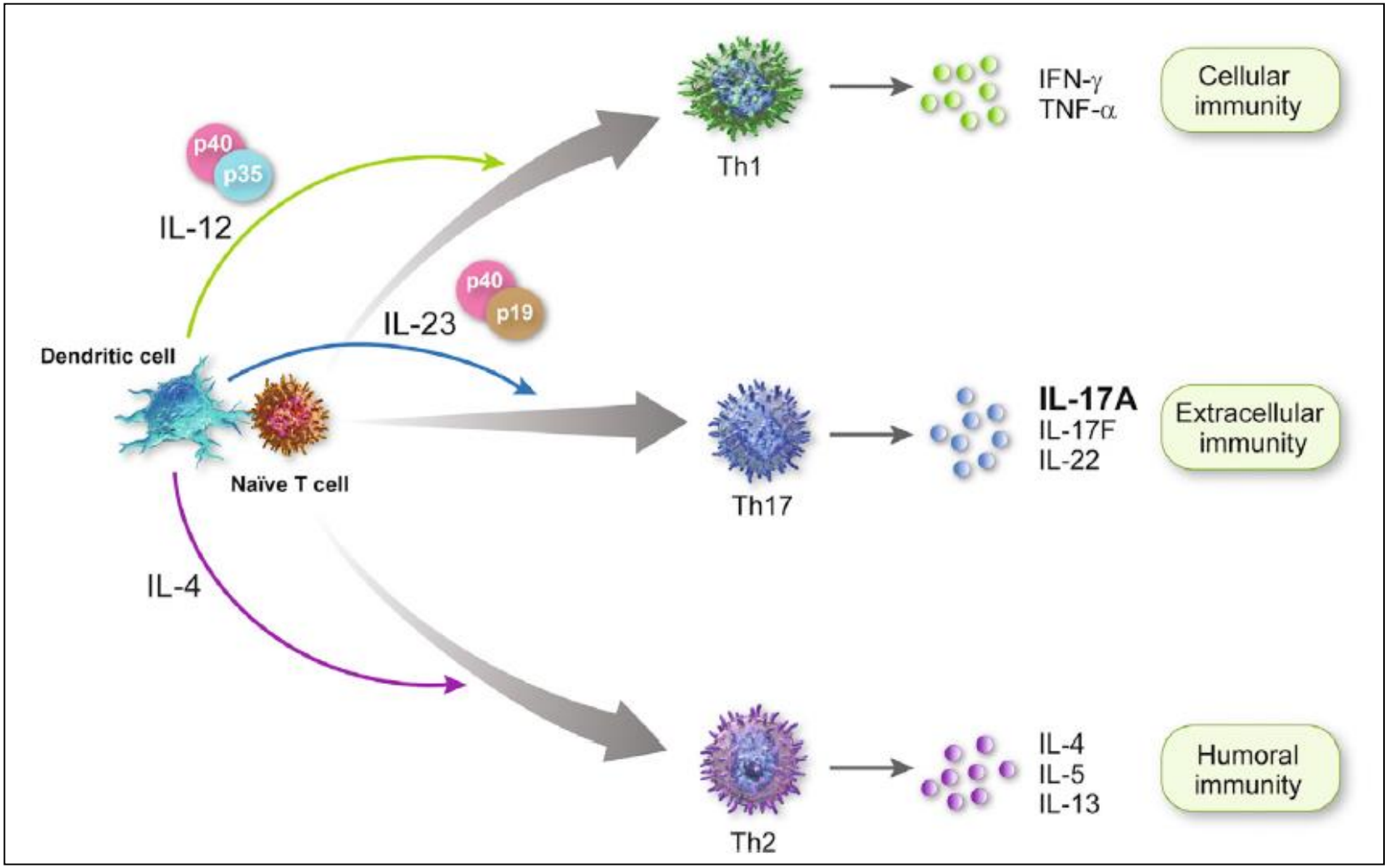
1. Alteration of cell kinetics of keratinocytes (311 vs 36 hr)
2. CD8+ T cells
3. Cytokines from Th1, Th17
4. Environmental factor: physical trauma (Koebner phenomenon), drugs, stress, infection, alcohol ingestion

Current model of psoriasis pathogenesis



Lynde CW, et al. JAAD 2014;71:141-50.

Cytokine environment regulates CD4+ T-cell differentiation into functional subsets



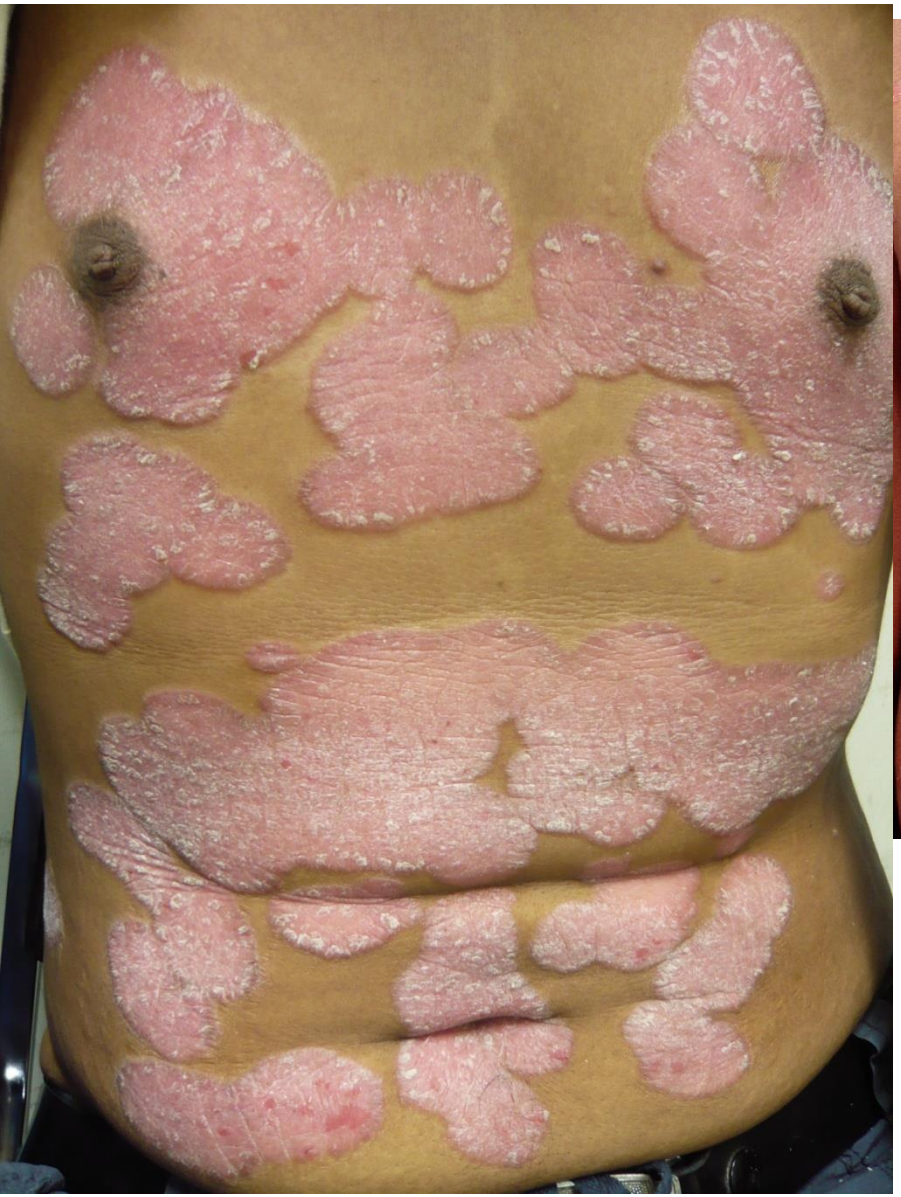
Lynde CW, et al. JAAD 2014;71:141-50.

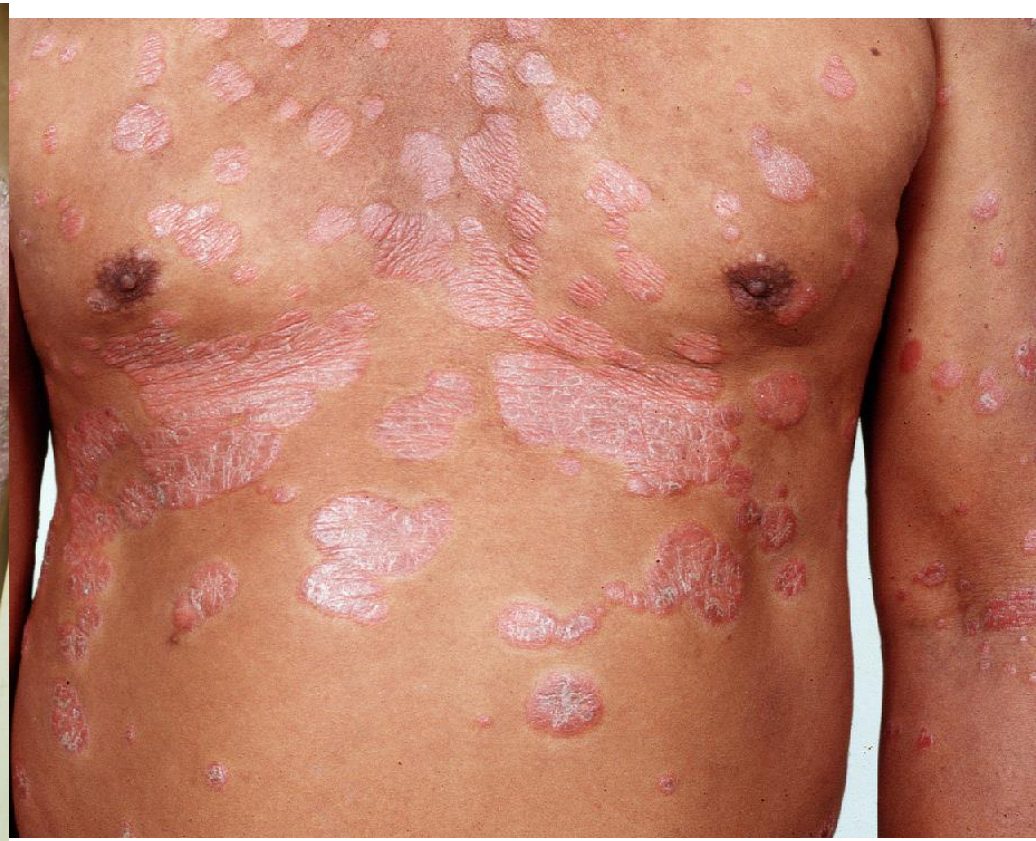
Precipitating factors

1. Trauma "Koebner phenomenon"
2. Infection esp. Streptoccous infection, HIV
3. Stress
4. Drug eg. chloroquine, beta-blocker, lithium, NSAIDs, steroid withdrawal (pustular psoriasis)
5. Alcohol drinking, smoking

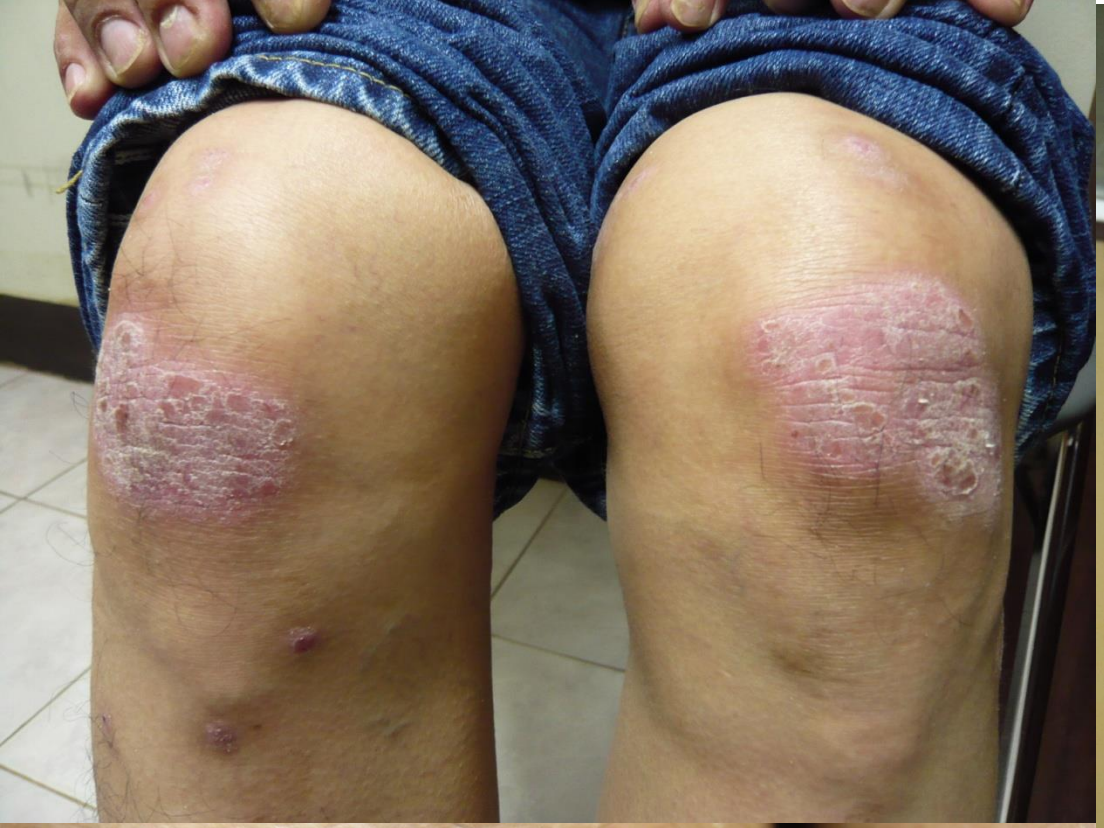
Classification

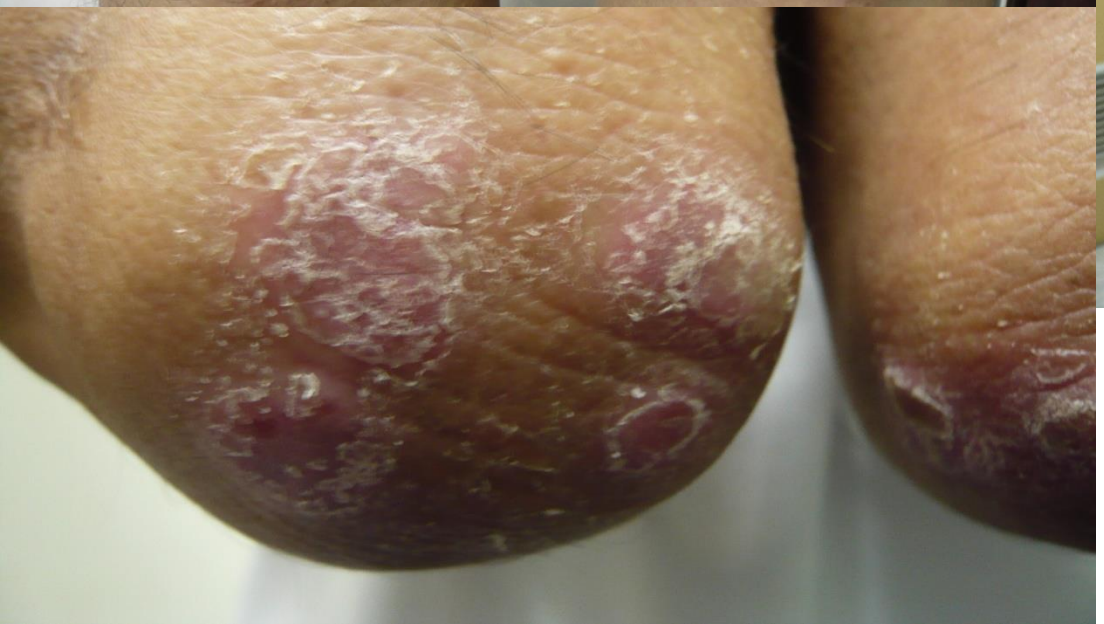
1. Chronic plaque; "psoriasis vulgaris"
2. Guttate; papule
3. Erythrodermic; diffuse
4. Pustular; localized or generalized
5. Inverse; flexural area
6. Nail; oil spot, pits, subungual hyperkeratosis, onycholysis
7. Arthritis/enthesopathy

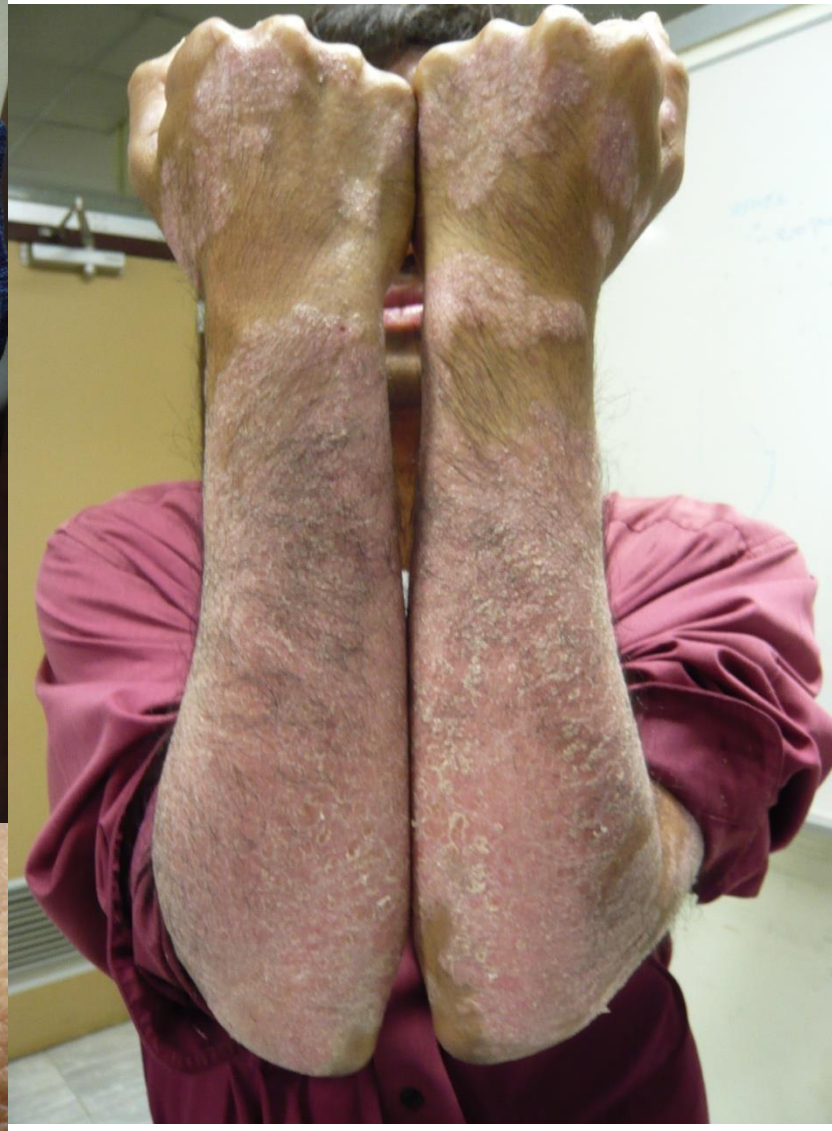




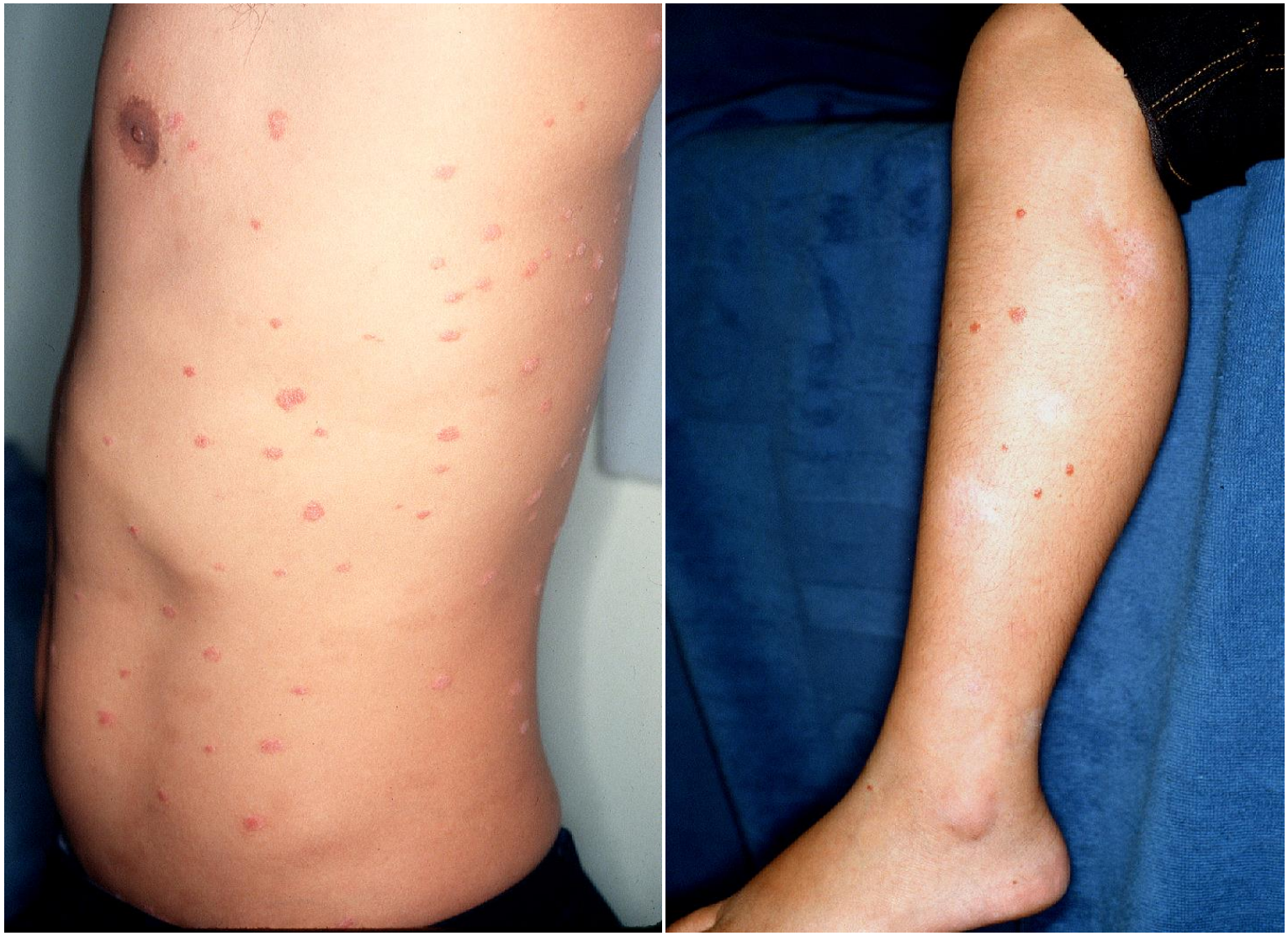
Chronic plaque type



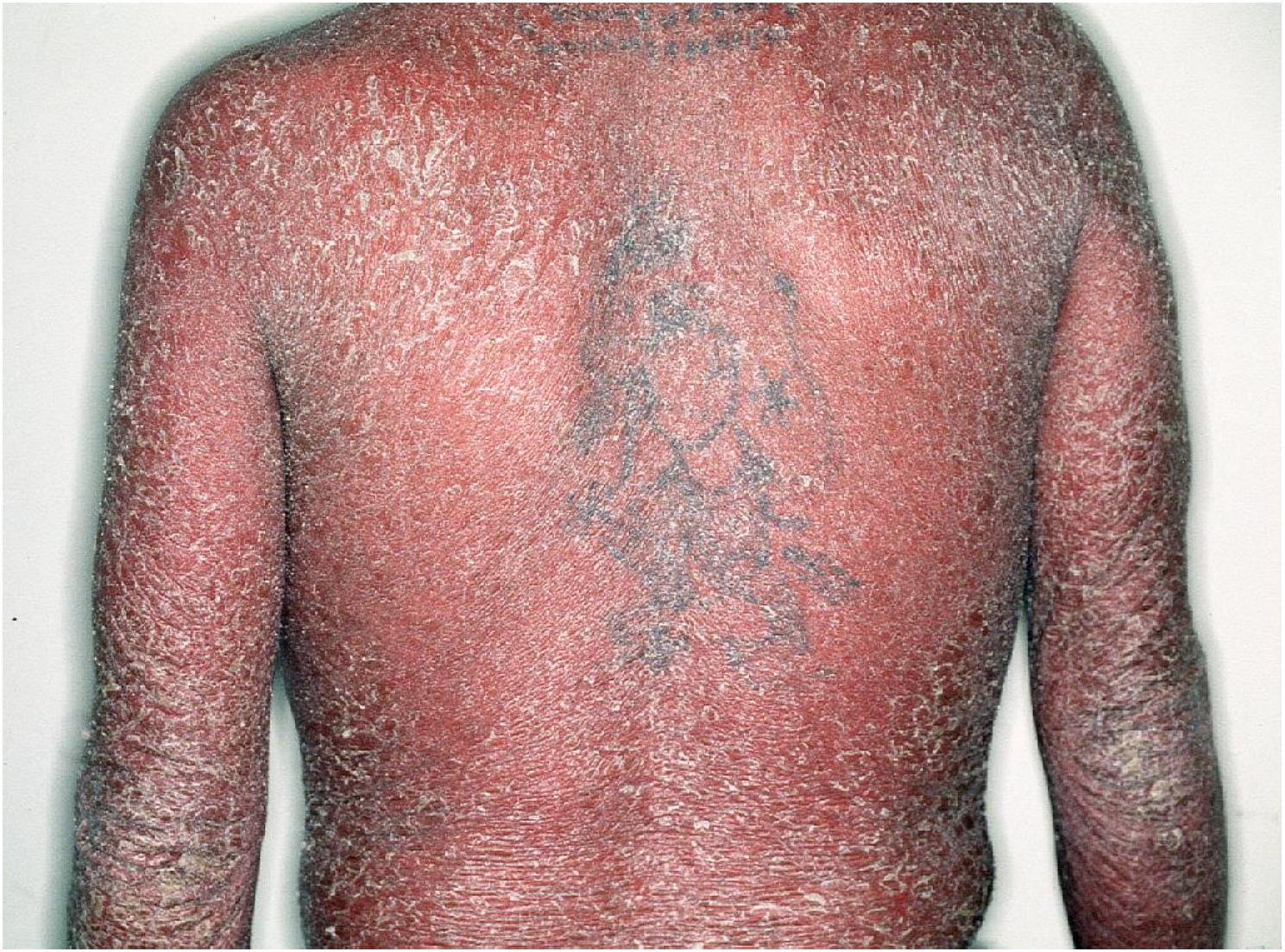




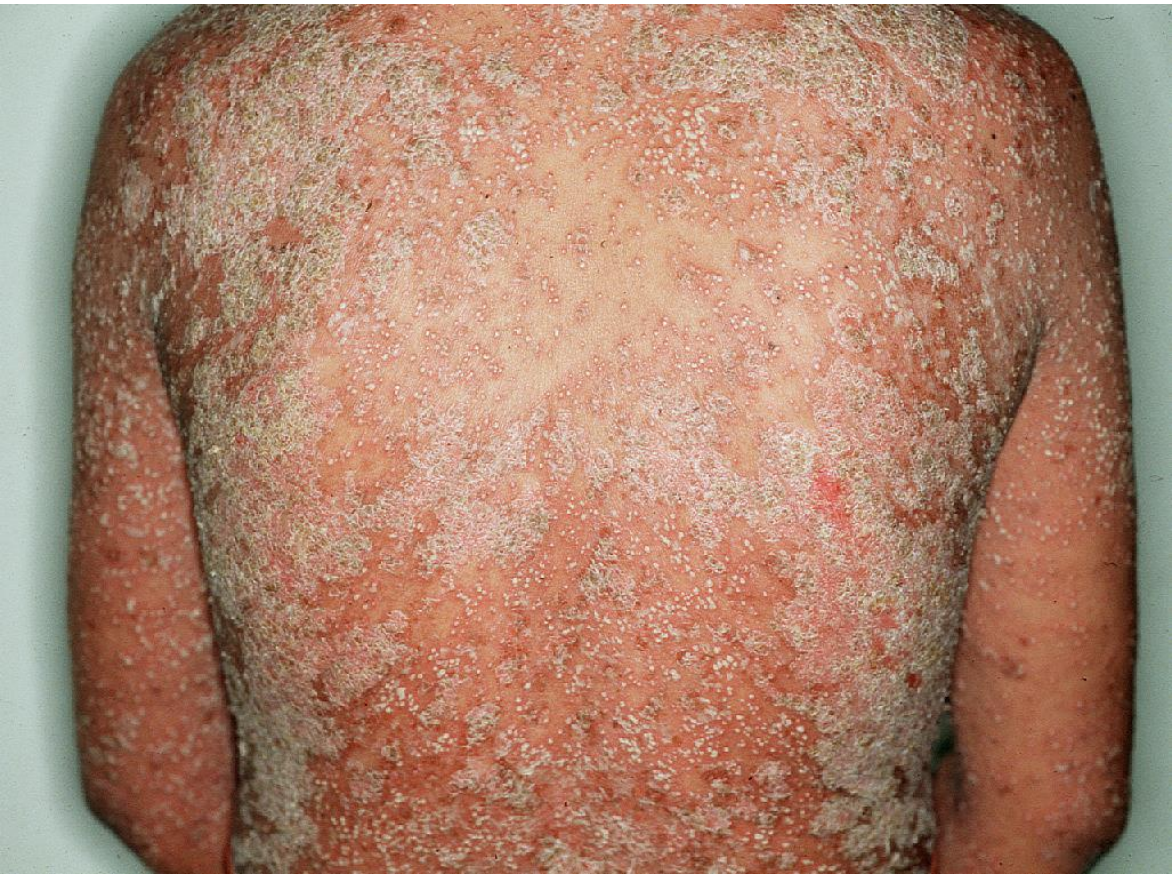
Extensor aspects

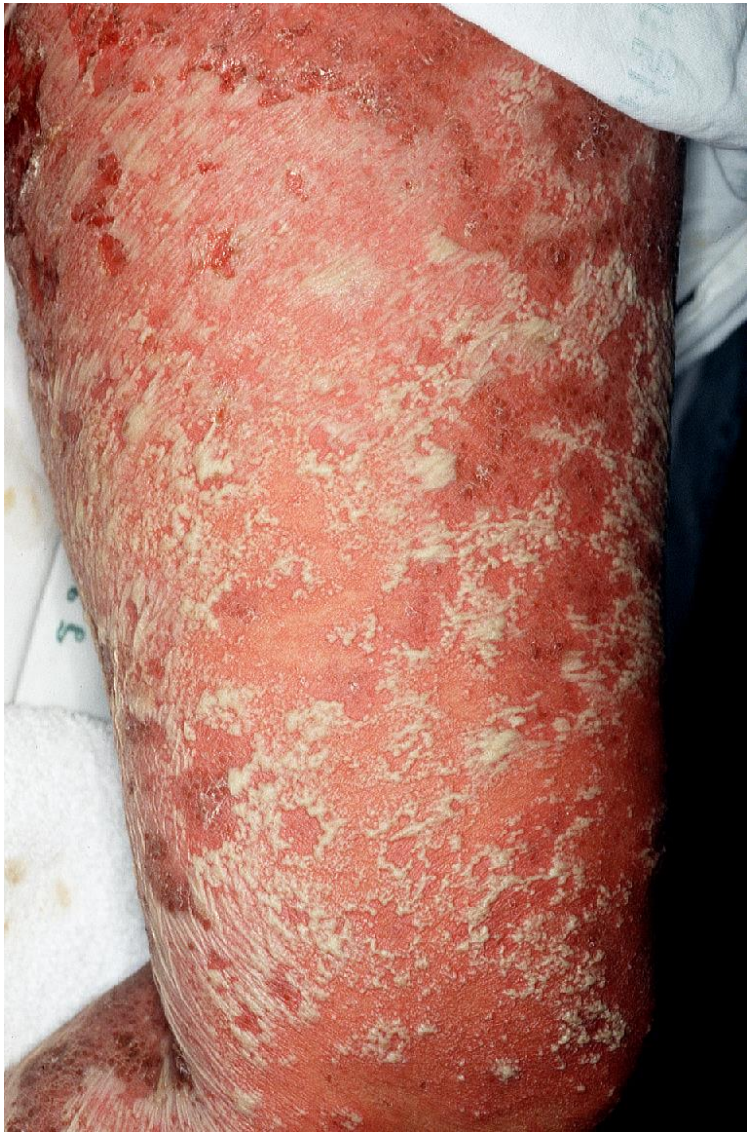


Guttate type

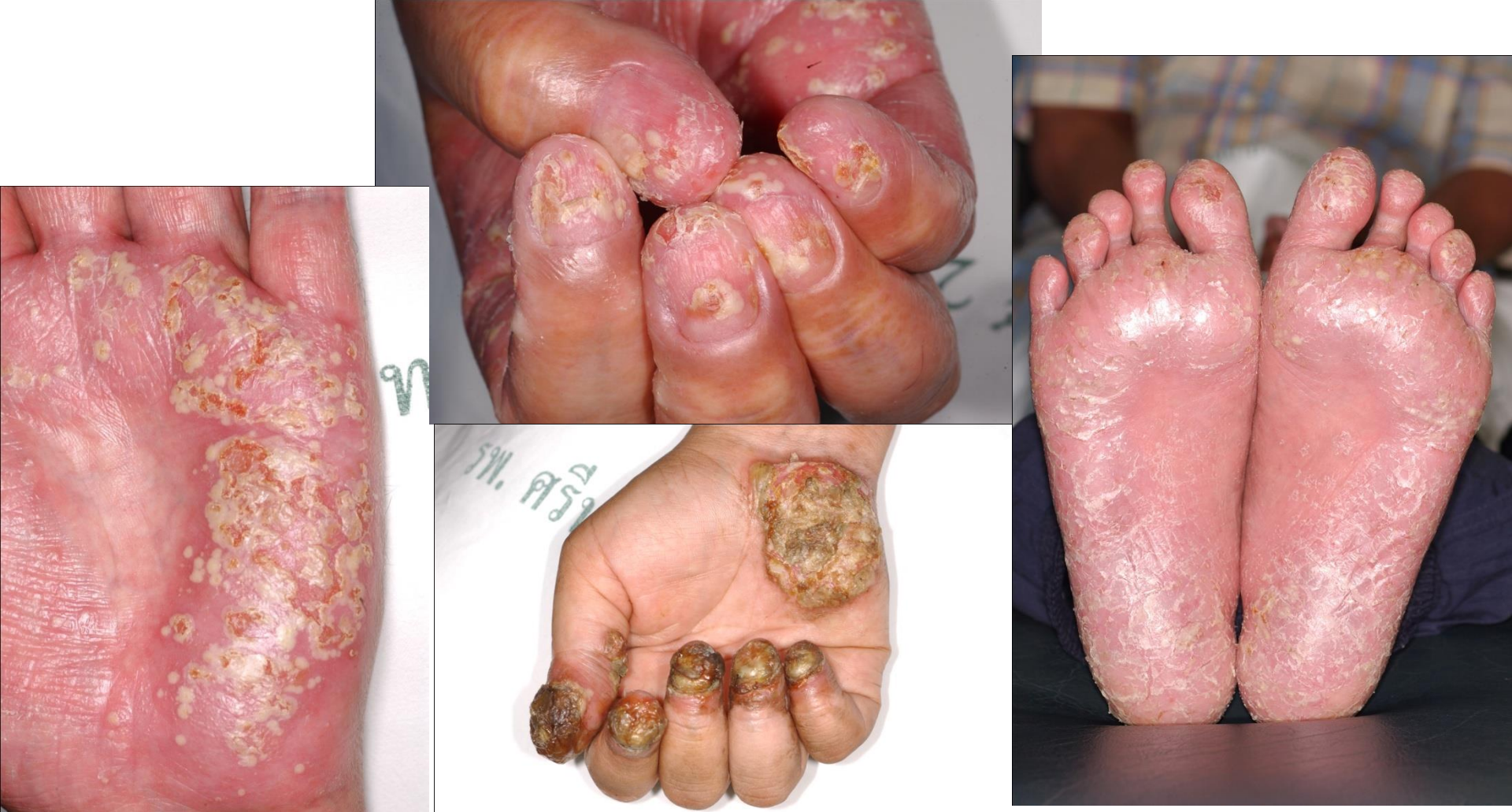


Erythrodermic psoriasis

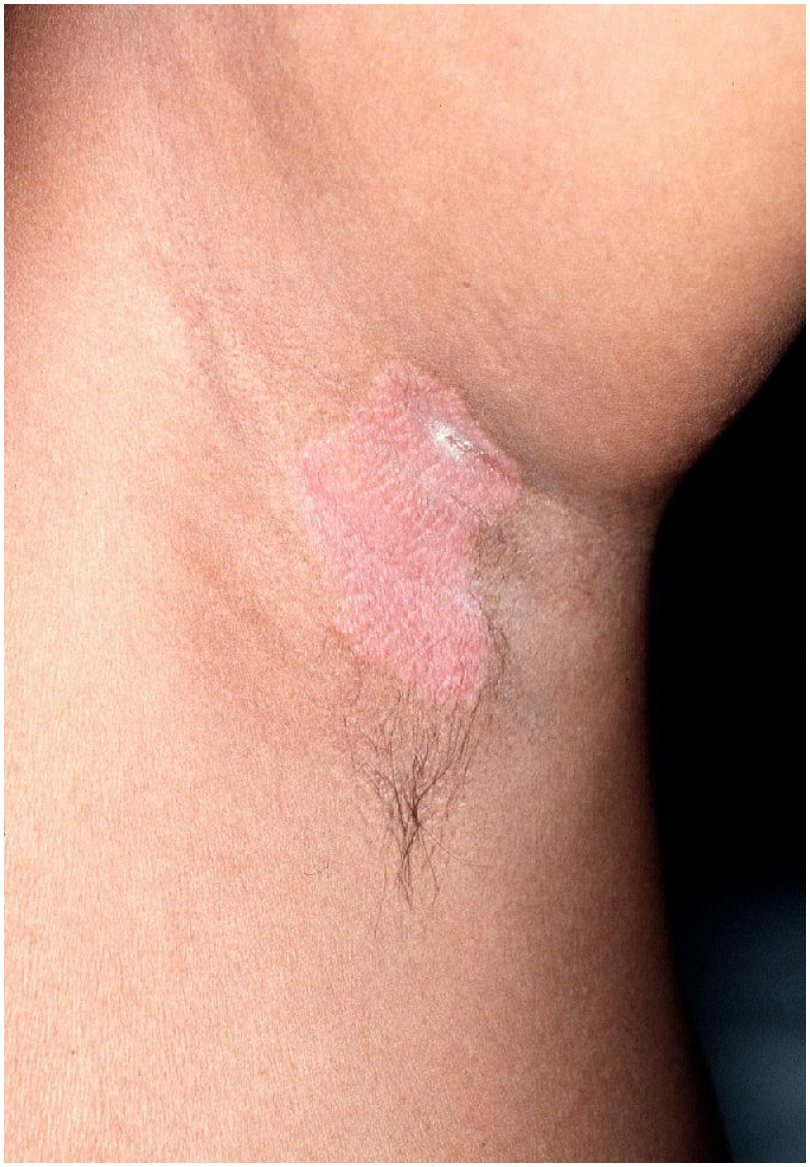


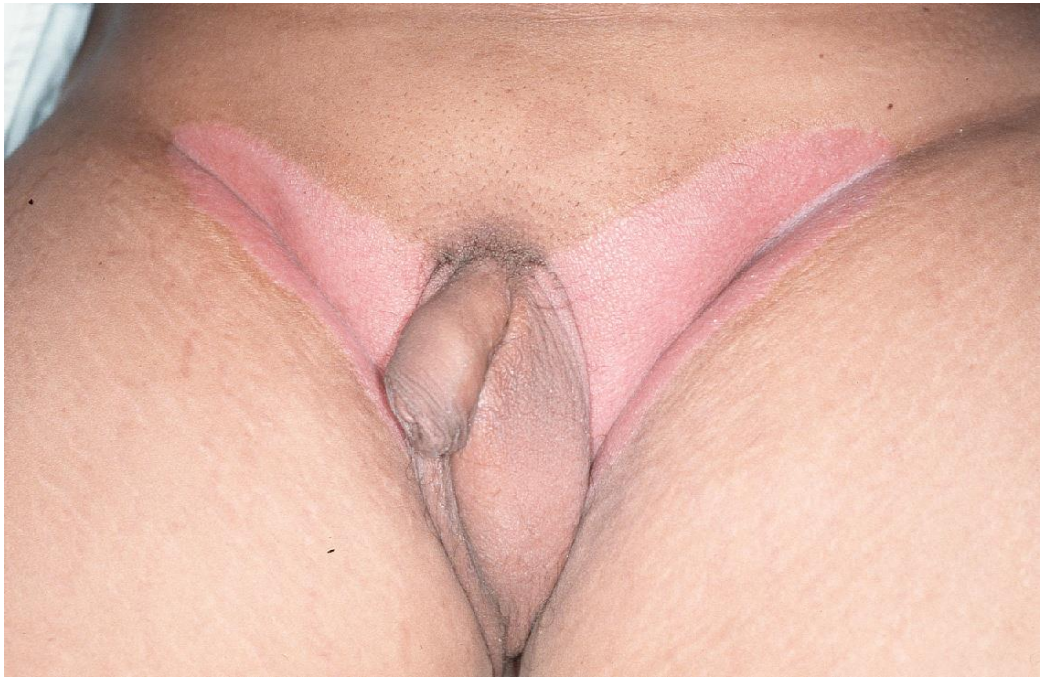


Pustular type, generalized

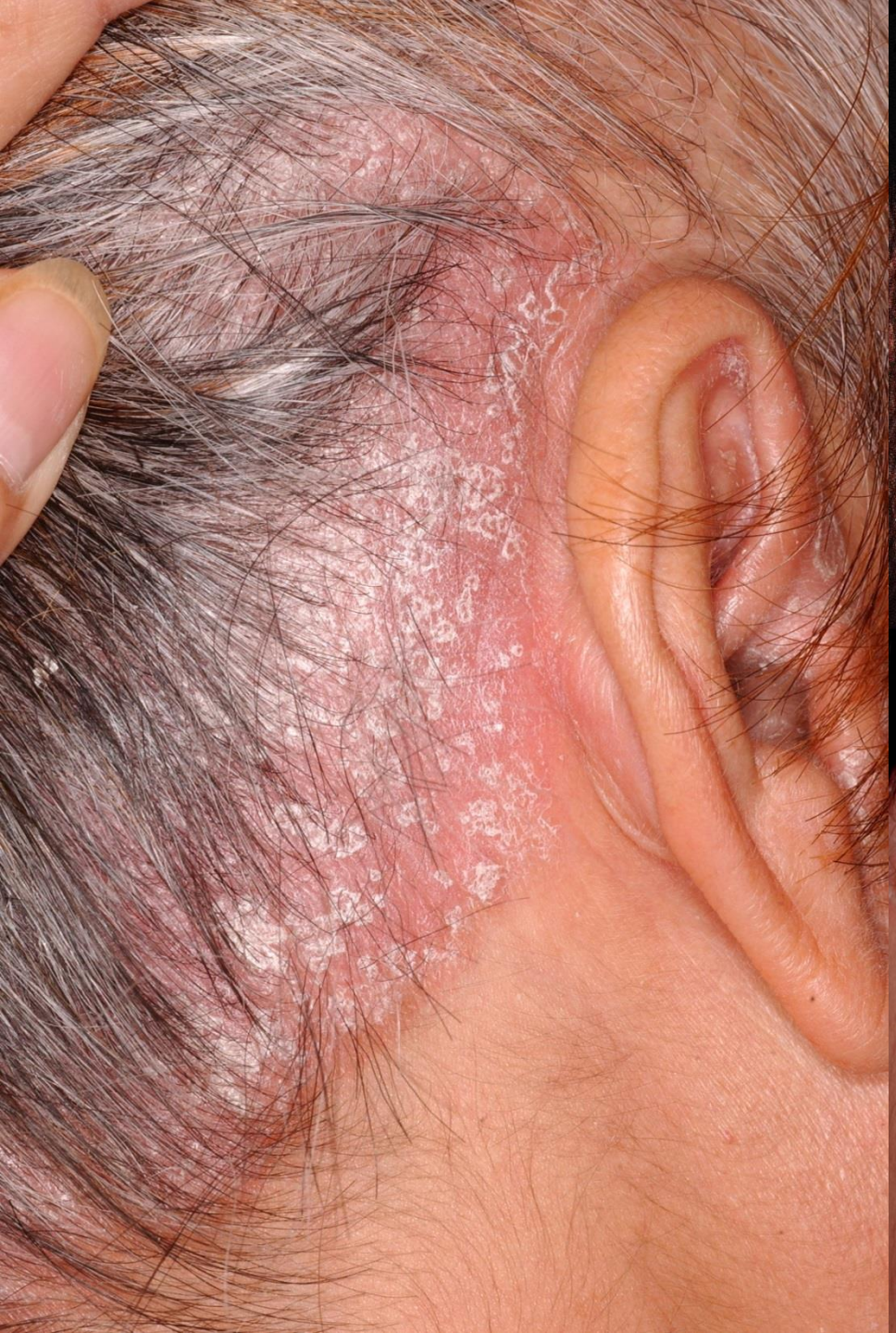
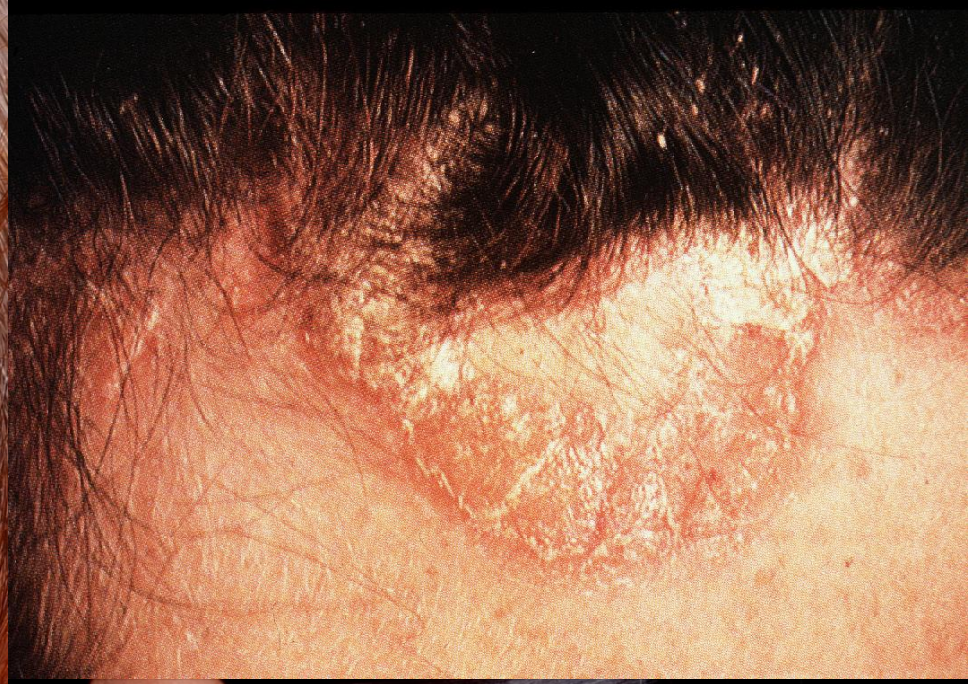
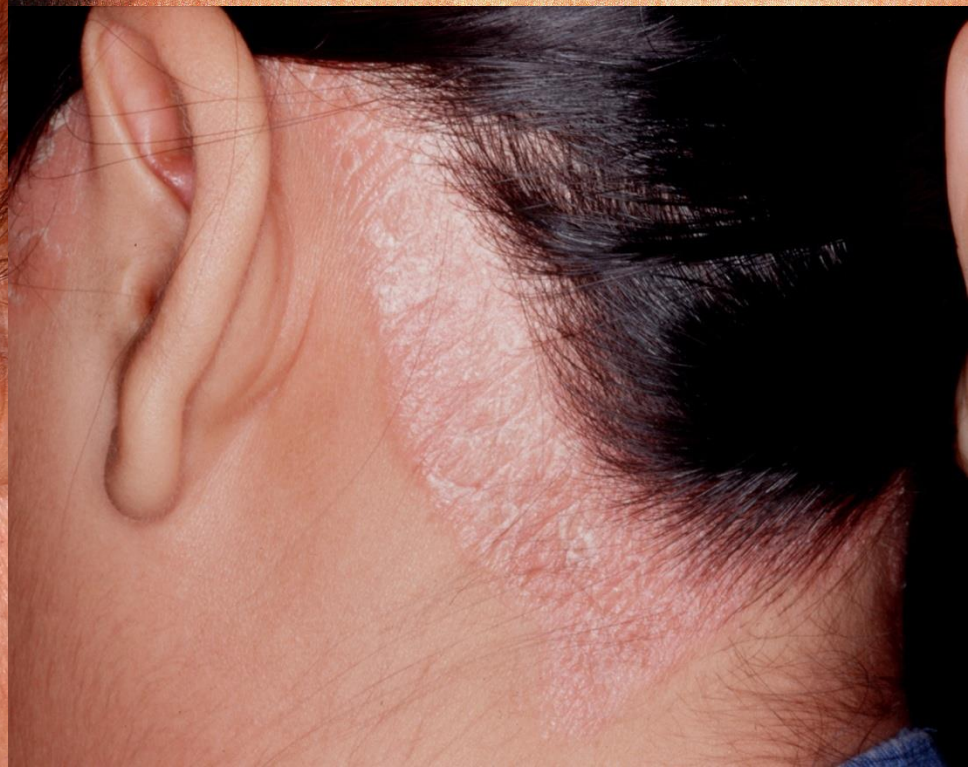


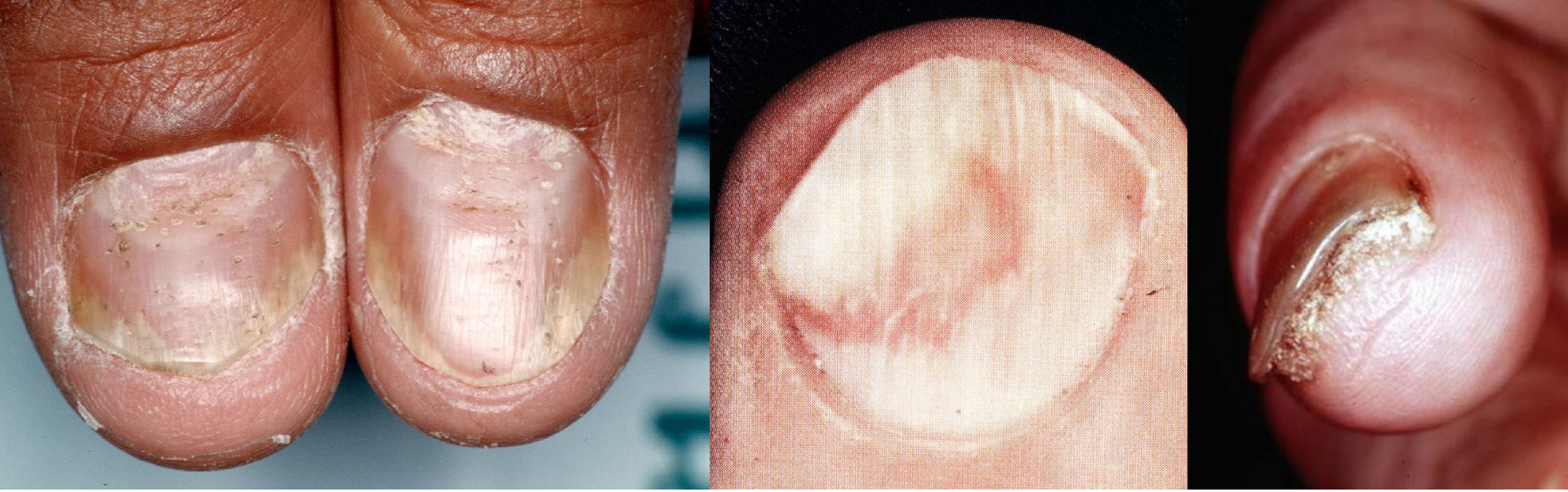
Palmoplantar pustular psoriasis



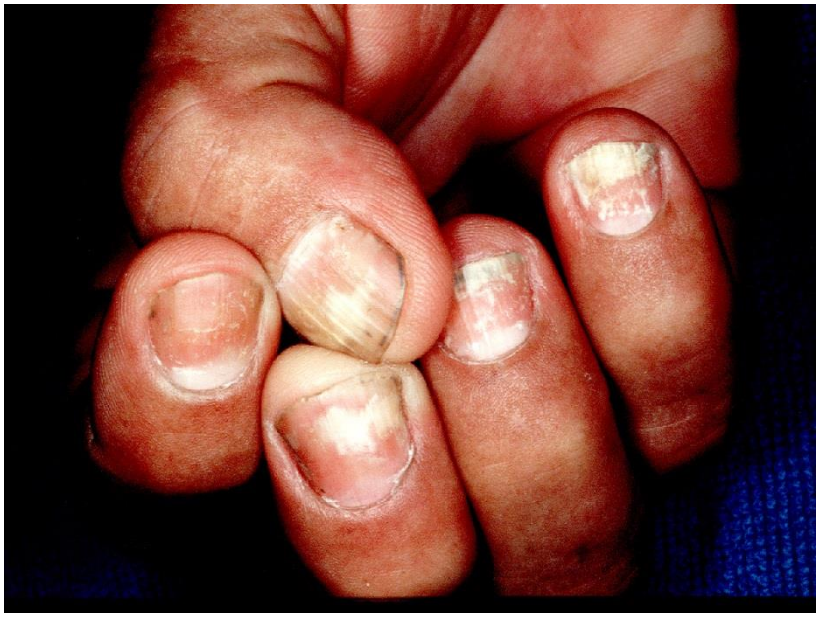


Inverse psoriasis

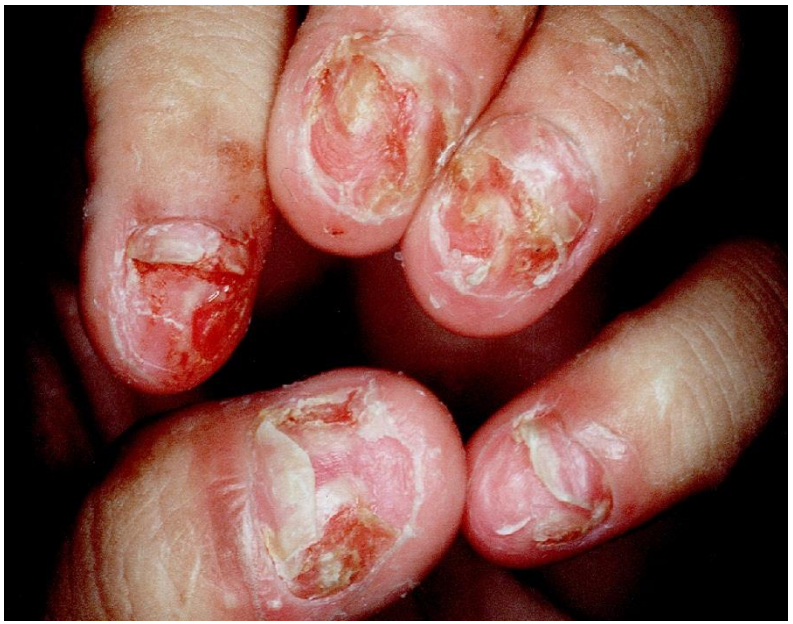






Pits / Oil spot / Subungual hyperkeratosis



Leukonuchia



Pustular nails

Psoriasis treatment

Mild: PASI or BSA <10%

- Topical corticosteroids or vitamin D3 analogue eg. calcipotriol
- Keratolytics eg salicylic or urea
- Coal tar, topical vitamin A

Moderate:10-30%, Severe:>30%

- Systemic agents eg. methotrexate, cyclosporine, acitretin, biologics
- Phototherapy: UVA or UVB

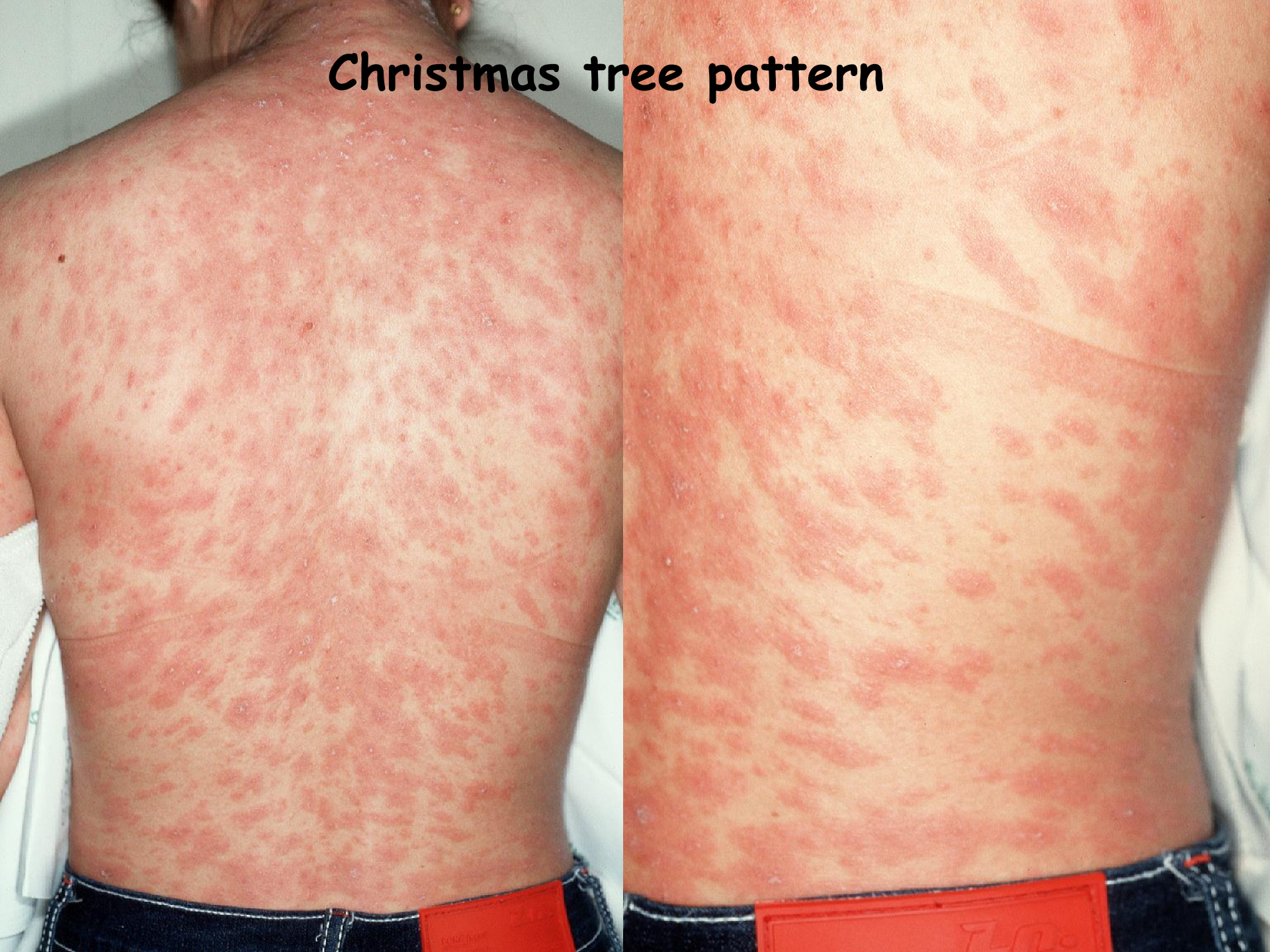
Pityriasis rosea

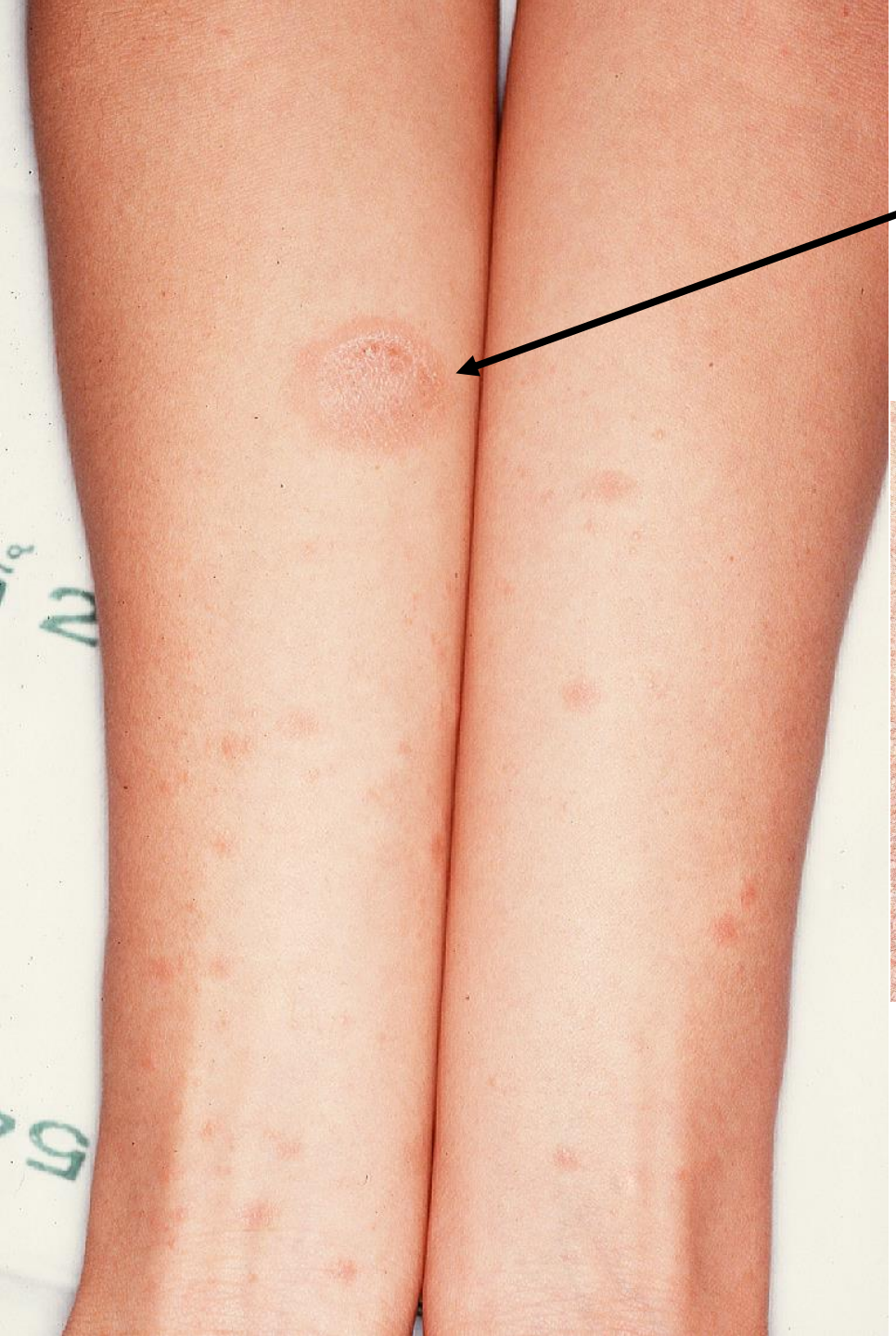
- Age 10-35 years, male = female
- Course: 6-8 weeks
- Unknown etiology: infectious agents:HHV-7, sometimes HHV-6
- DDX; -PR-like drug eruption eg. barbiturates, captopril, gold, metronidazole, clonidine, bismuth
  - Secondary syphilis

Clinical features

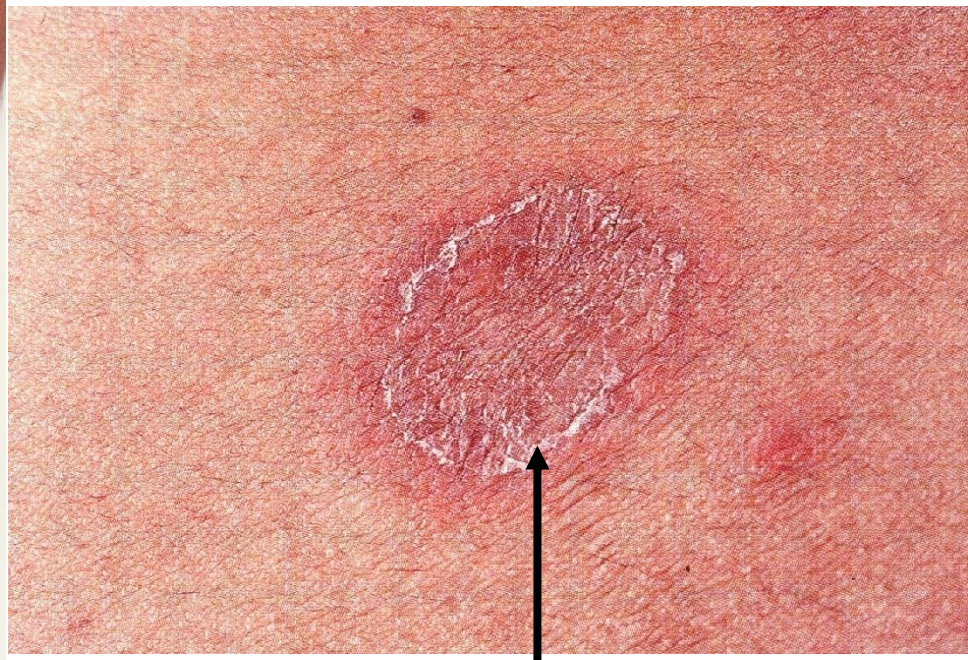
- Round or oval erythematous papules or plaques with collarette scale
- Herald patch or primary medallion or mother patch: 50-90%
- Trunk along skin creases "Christmas tree"
- Itching 75%
- Prodome: fever, malaise, arthralgia, lymphadenopathy
- Rx: topical steroids, antihistamine, acyclovir

Christmas tree pattern





Herald patch



Collarette scale

Urticaria

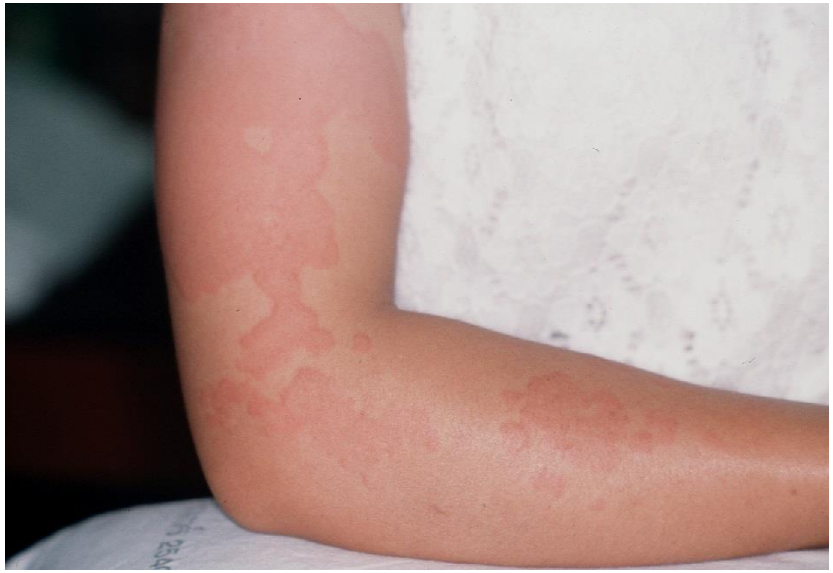
Definition: appearance of wheal and/or angioedema

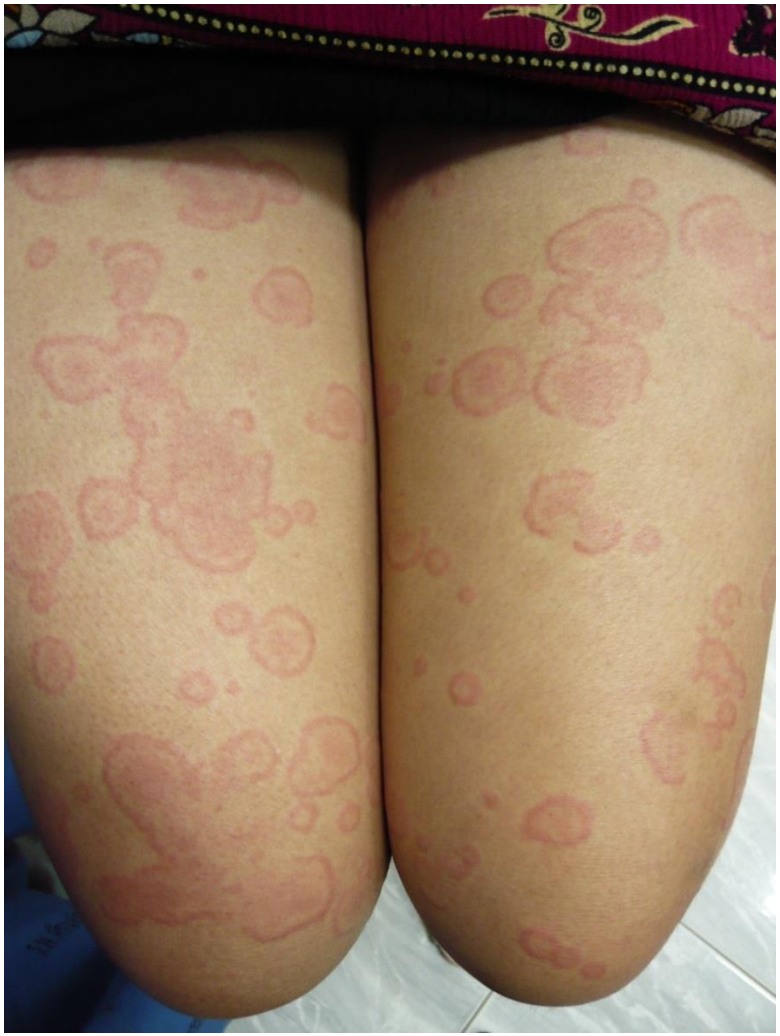
Wheal:

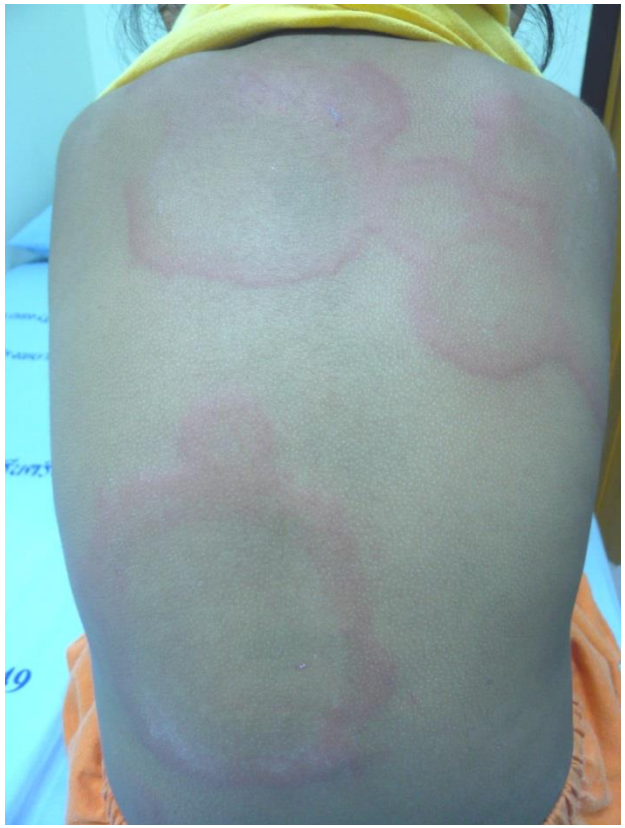
1. Central swelling of variable size surrounded by a reflex erythema
2. Itching, sometimes burning
3. Fleeting nature, returning to normal appearance, usually within 1-24 hr

Angioedema:

1. Sudden, pronounced swelling of the lower dermis and subcutis
2. Frequent mucous membrane
3. Resolution slower than for wheal and can take up to 72 hr

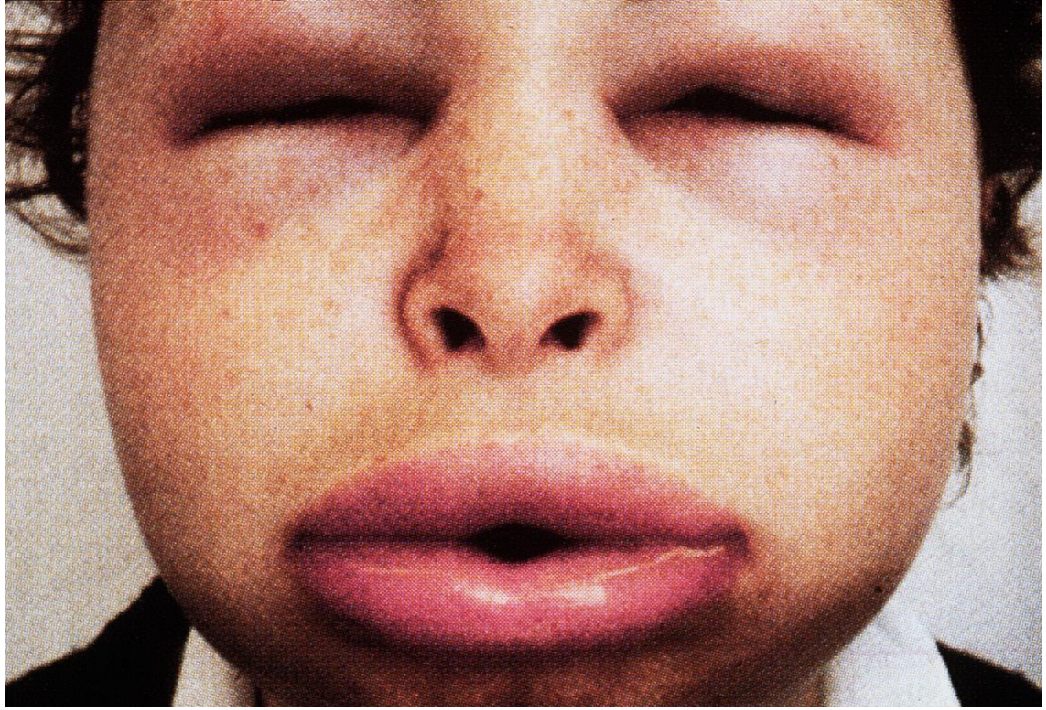


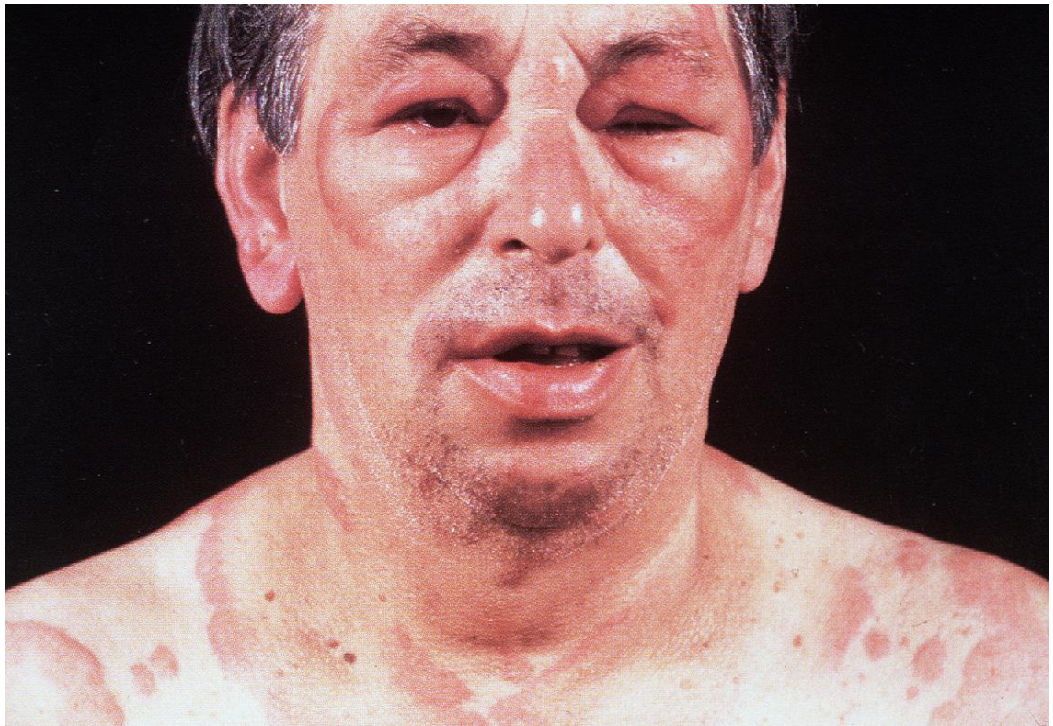




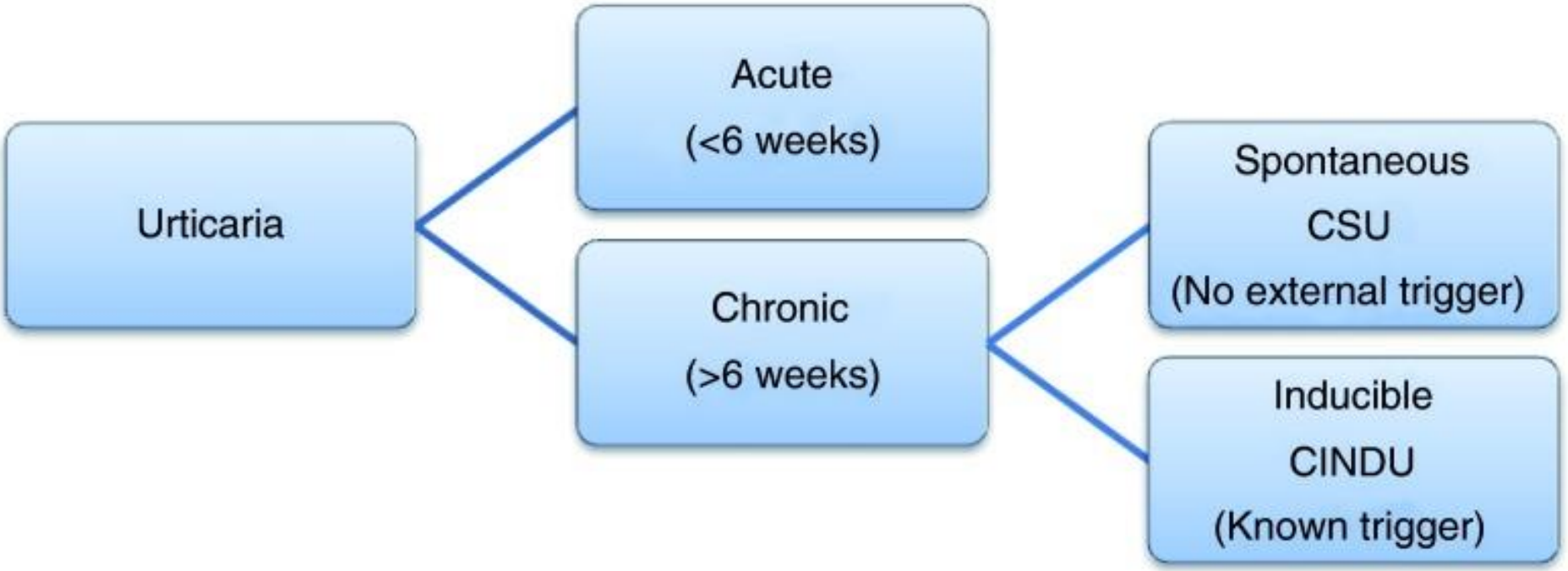
Urticaria

Angioedema





Classification

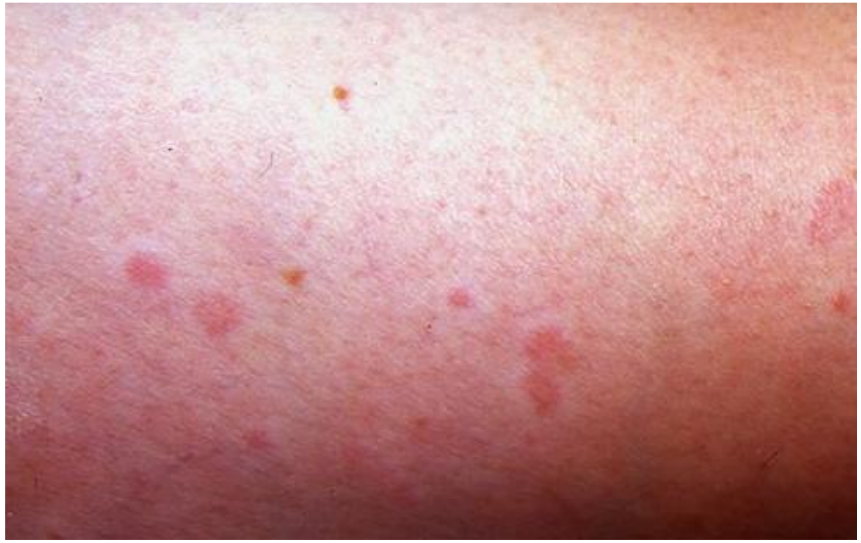


Acute urticaria

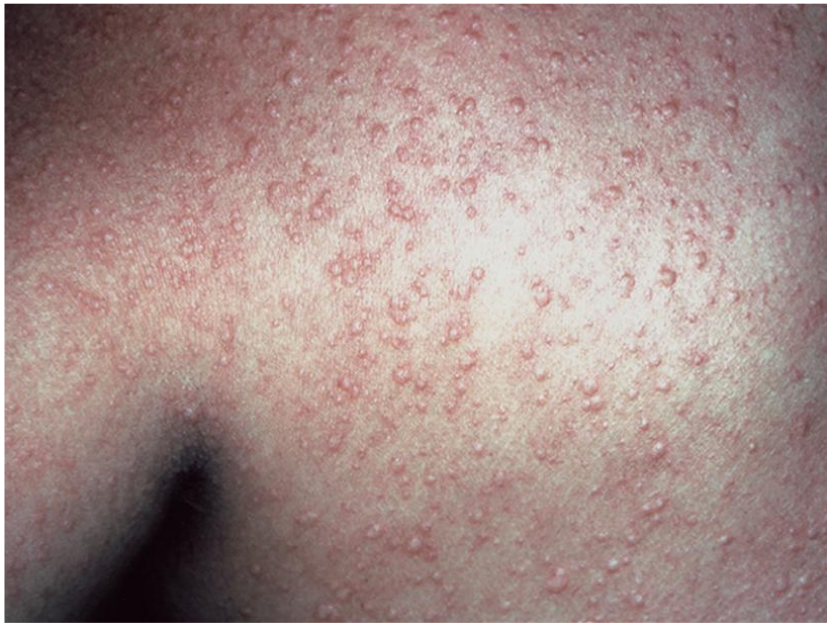
- 2/3 of urticaria
- **Causes**: contact, insect bite (papular urticaria), drugs, foods, viral infection of upper respiratory tract
- 20-30% progress to chronic urticaria

Chronic urticaria

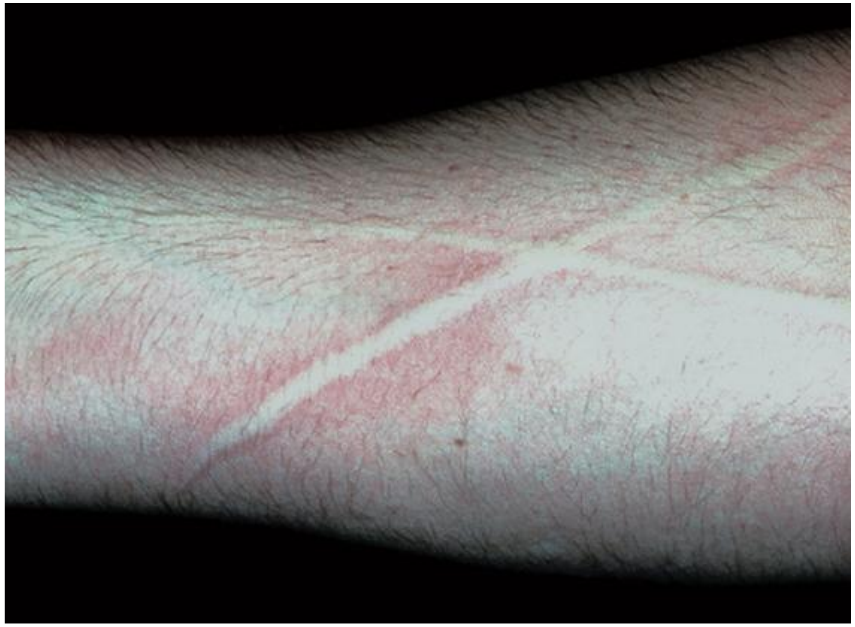
- **Causes**: idiopathic, infections (viral hepatitis, *Helicobacter pylori*,parasites), physical, systemic diseases (SLE,neoplasm)
- **Chronic spontaneous urticaria (CSU)**
  - Chronic persistent
  - Chronic intermittent
- **Inducible urticaria**
  - Dermographism, cold, delayed pressure, solar, heat, vibratory
- **Special types**
  - Cholinergic, contact, aquagenic, adrenergic



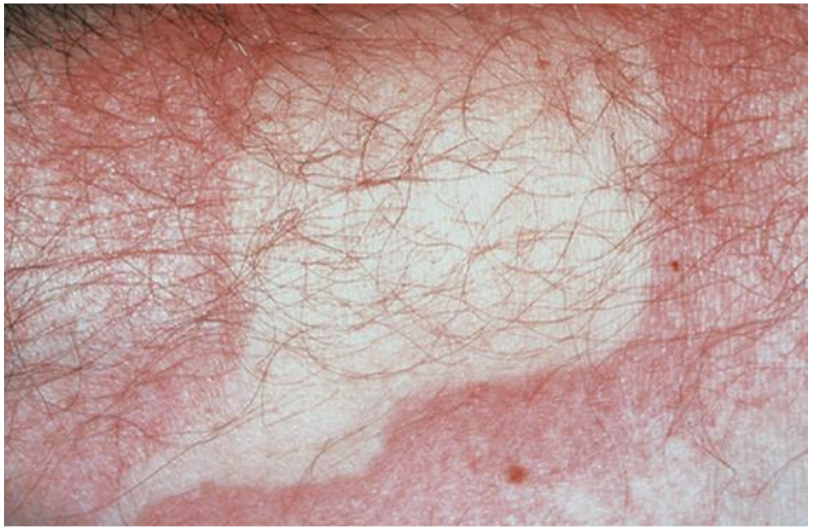
Adrernergic urticaria



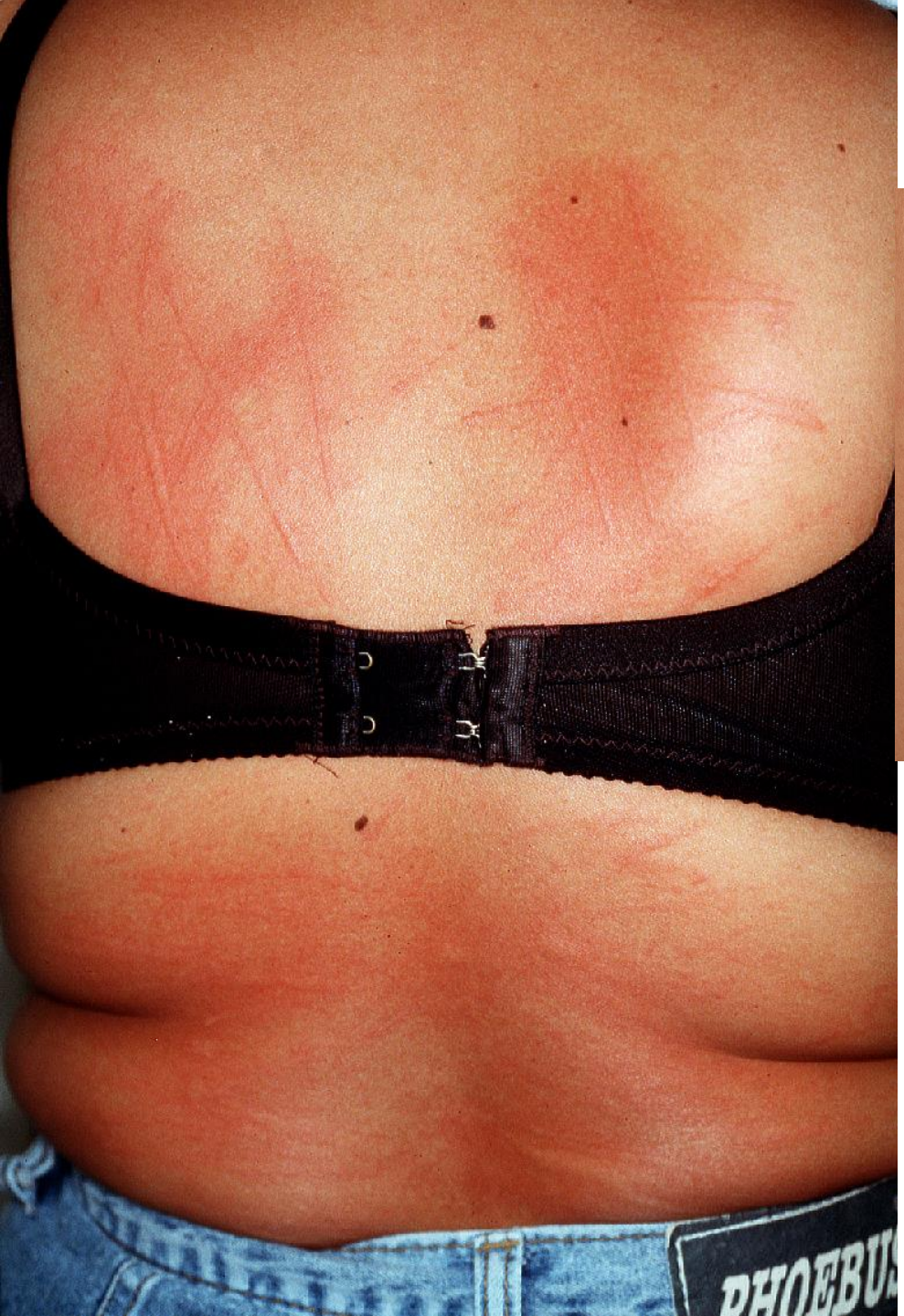
Cholinergic urticaria

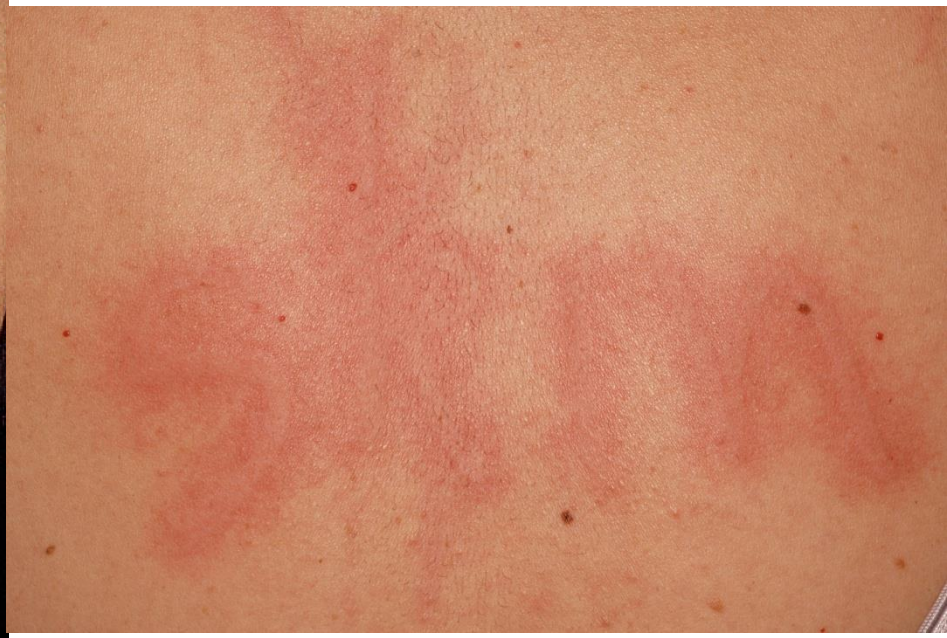


Dermographism

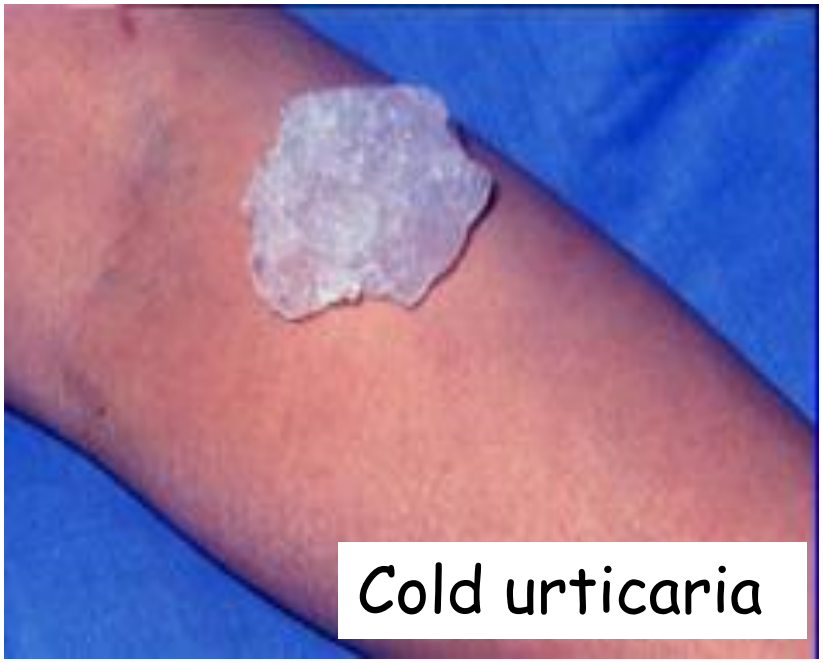


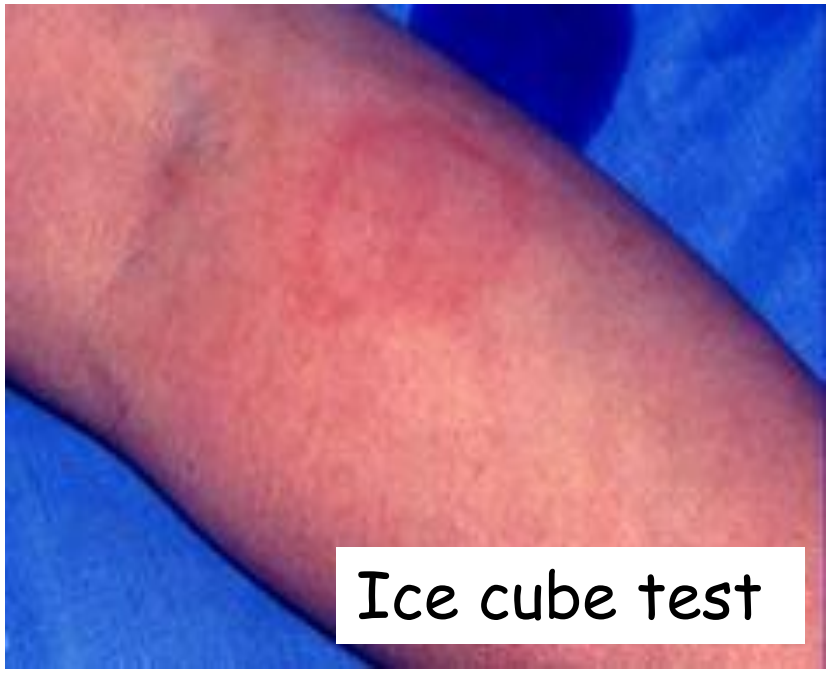
Cold urticaria

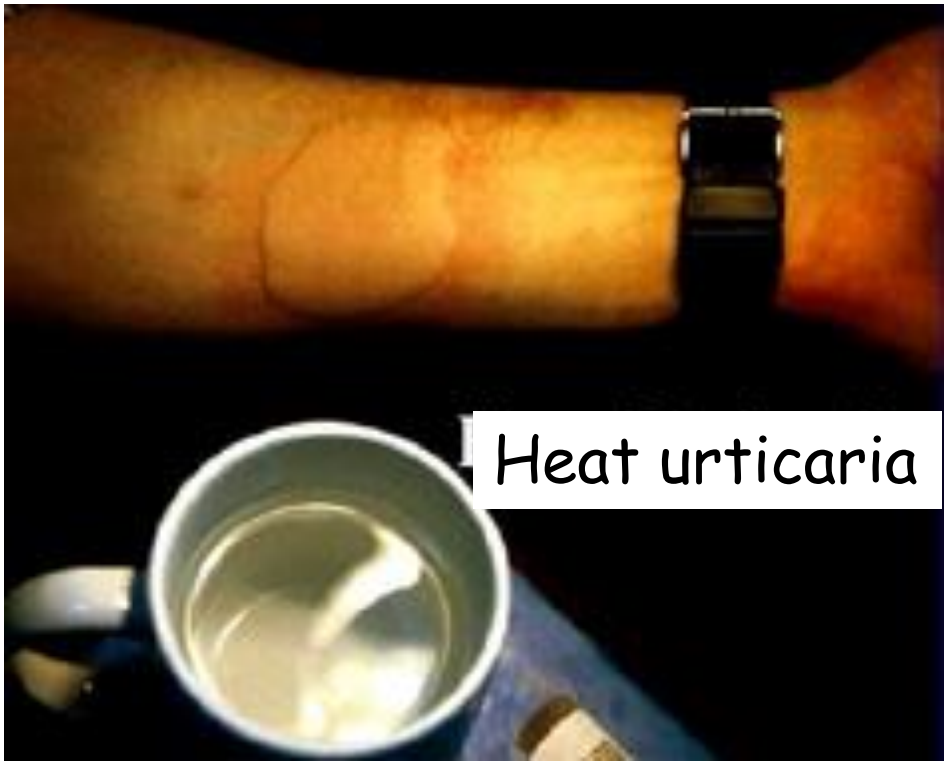


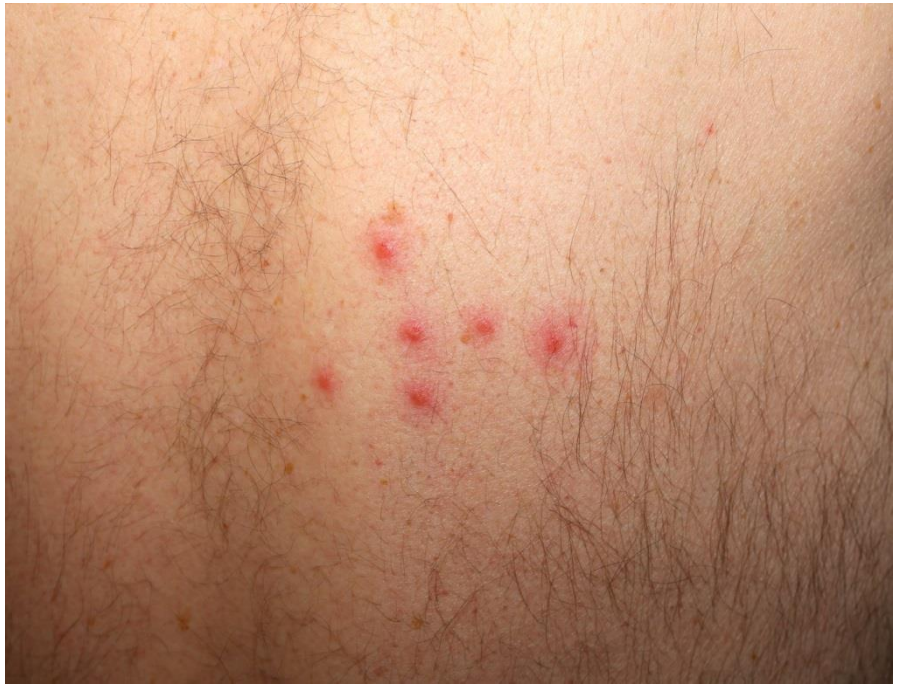


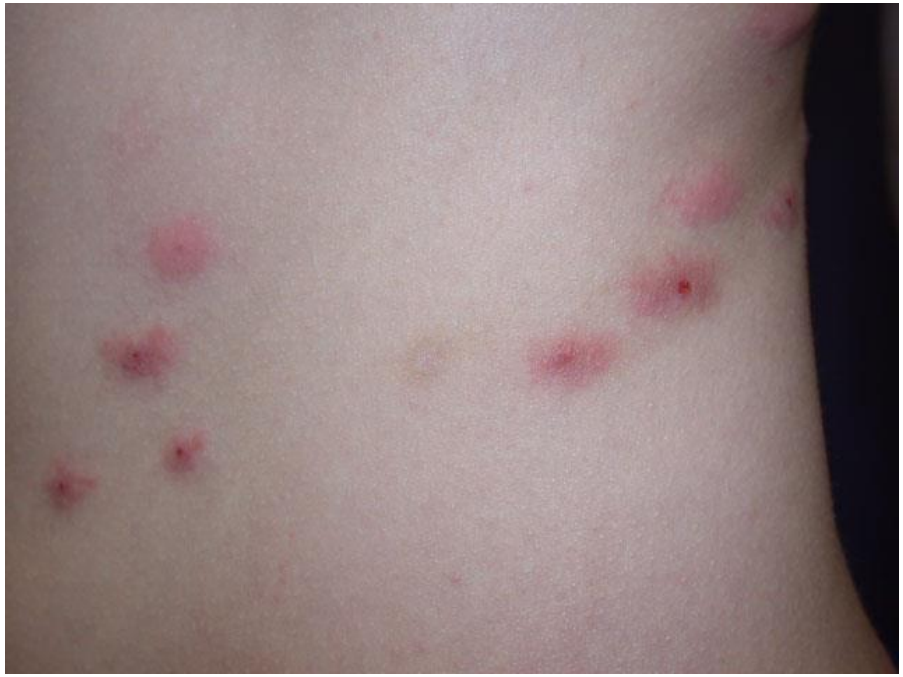
Dermographism


Cold urticaria


Ice cube test


Heat urticaria

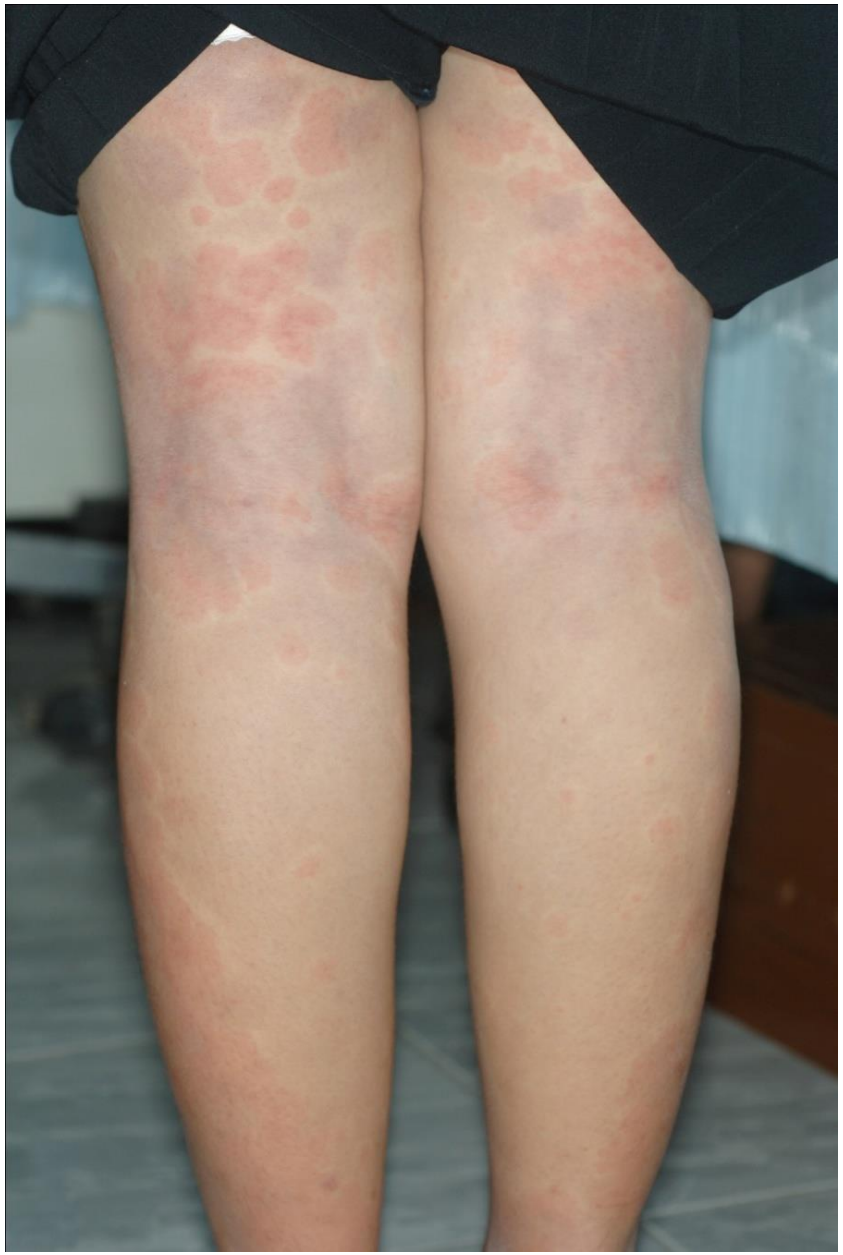




Papular urticaria

hypersensitivity reaction to the bites of mosquitoes, fleas, bedbugs, and other insects

Individual papules may surround a wheal and display a central punctum



Urticarial vasculitis

- urticaria that persist for > 24 hr
- Appear hyperpigmentation after healing

Mechanism

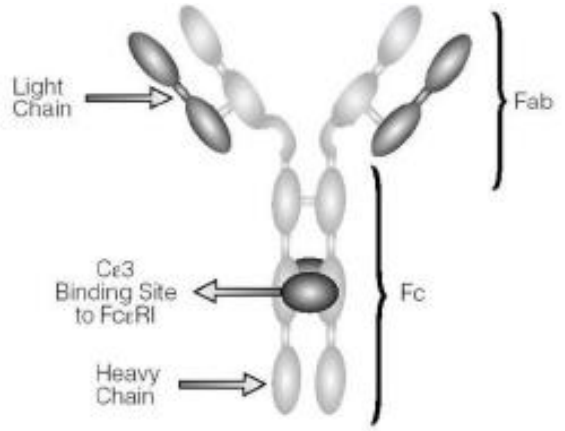
1. Immunologic

- IgE-meadiated (type I)

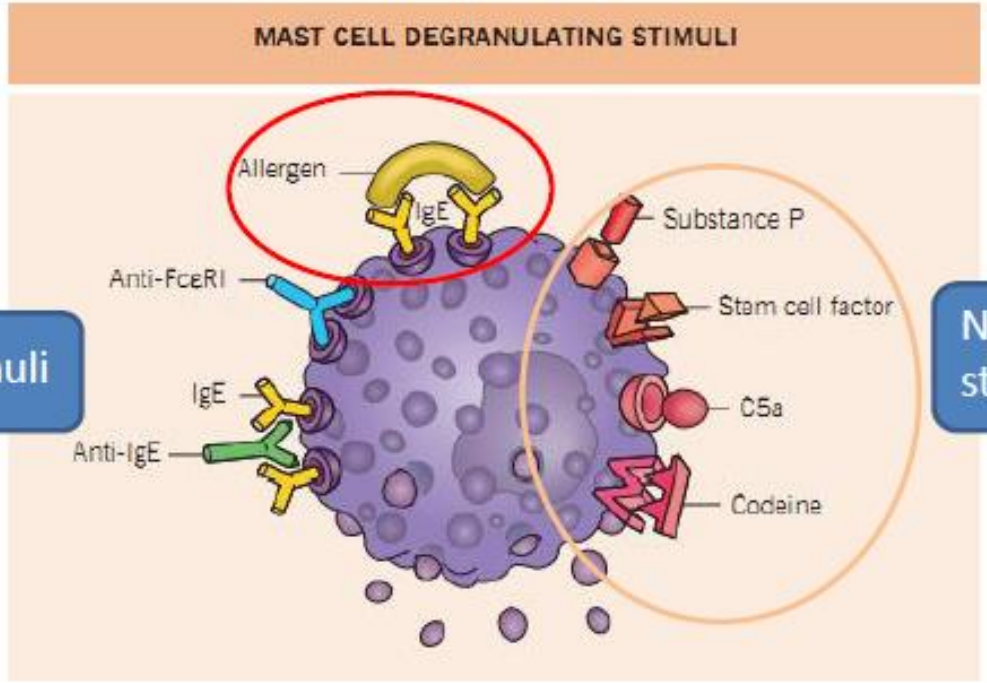
2. Non-immunologic

- Direct mast cell degranulation *eg.* opiate, plymyxin B, radiocontrast media
- Arachidonic acid metabolism *eg.* aspirin, NSAIDs

Pathogenesis

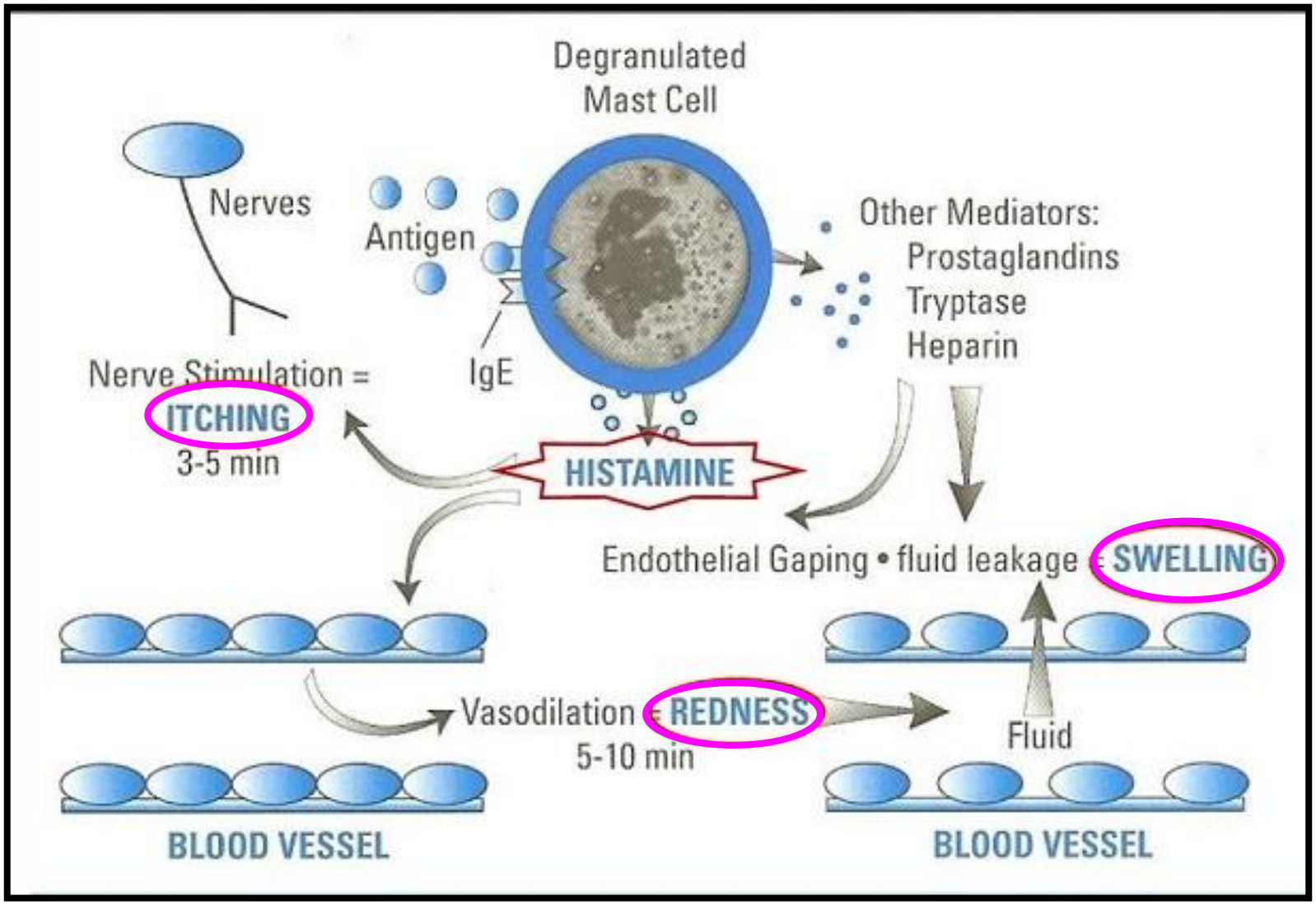


- Mast cell: principal effector cell
  - Express high-affinity IgE receptors (FcεRIs)

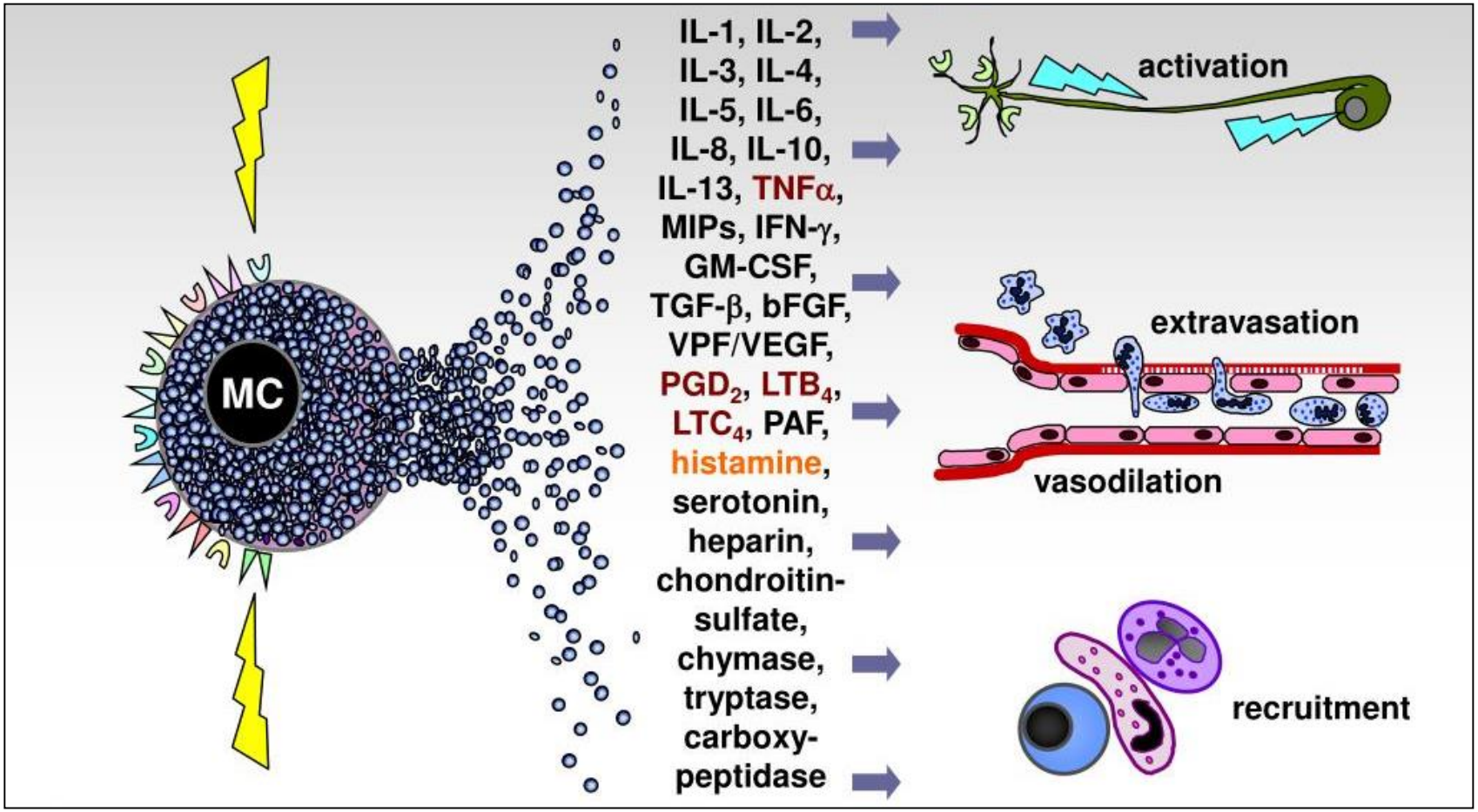


Immunologic stimuli

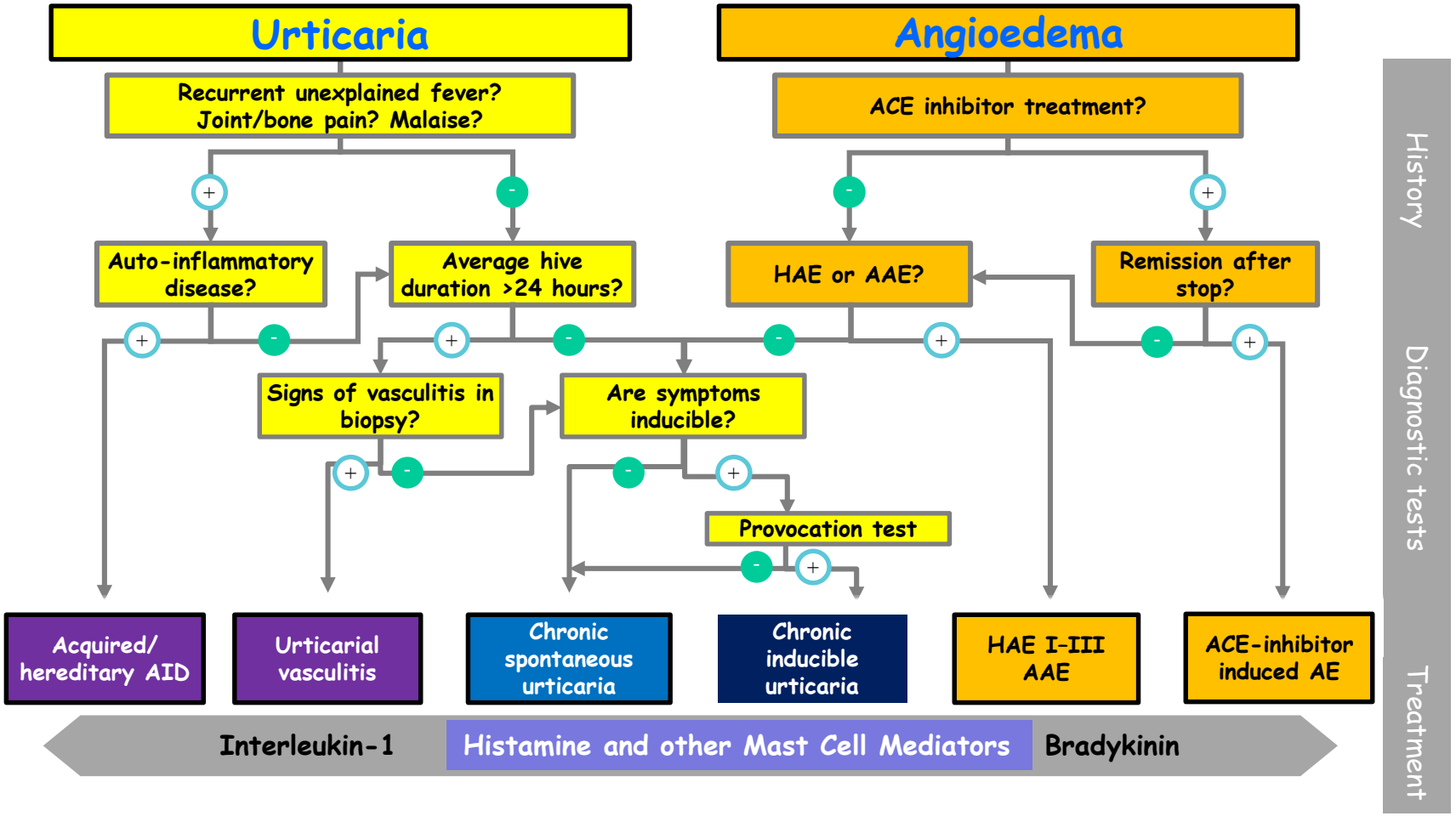
Non-immunologic stimuli


Degranulated
Mast Cell
Nerves
Antigen
IgE
Other Mediators:
Prostaglandins
Tryptase
Heparin
Nerve Stimulation =
ITCHING
3-5 min
HISTAMINE
Endothelial Gaping • fluid leakage = SWELLING
Vasodilation = REDNESS
5-10 min
Fluid
BLOOD VESSEL
BLOOD VESSEL

Urticaria pathogenesis



Diagnosis algorithm for urticaria



AAE = acquired angioedema due to C1-inhibitor deficiency; ACE = angiotensin converting enzyme
AE = angioedema; AH = antihistamine; AID = auto-inflammatory disease; HAE = hereditary angioedema.

Zuberbier T, et al. Allergy 2014;69:868–87.

Recommended diagnostic test

Spontaneous	Routine diagnostic tests	Extended diagnostic tests
Acute urticaria	None	None
Chronic urticaria	CBC,ESR or CRP	**Autologous serum skin test**, Test for infectious diseases (*H. pylori*, HBV, HCV), Thyroid function and antibodies, Pseudoallergen-free diet for 3 weeks, Skin biopsy, ANA

Recommended diagnostic test

Inducible	Routine diagnostic tests	Extended diagnostic tests
Acquired cold	Cold provocation (ice cube for 20 mins)	Differential blood count, ESR, CRP, cryoproteins
Delayed pressure	Pressure test (0.2-1.5 kg/cm^2 for 10-20 mins	None
Heat	Heat provocation	None
Solar	UV and visible light of different wavelengths	Rule out other light-induced dermatosis
Dermographic	Elicit dermographism	Differential blood count, ESR, CRP

Recommended diagnostic test

Other urticaria	Routine diagnostic tests	Extended diagnostic tests
Aquagenic	Wet cloths at body temp for 20 mins	None
Cholinergic	Exercise and hot bath provocation	None
Contact	Prick test read after 20 mins	None
Exercise-induced	According to history exercise test with/without food	None

Management

- Identification and elimination of underlying causes
- Avoidance or elimination of the eliciting stimulus
- Inhibition of mast cell mediators

Inhibition of mast cell mediators

- 1st generation H1antihistamines for acute urticaria

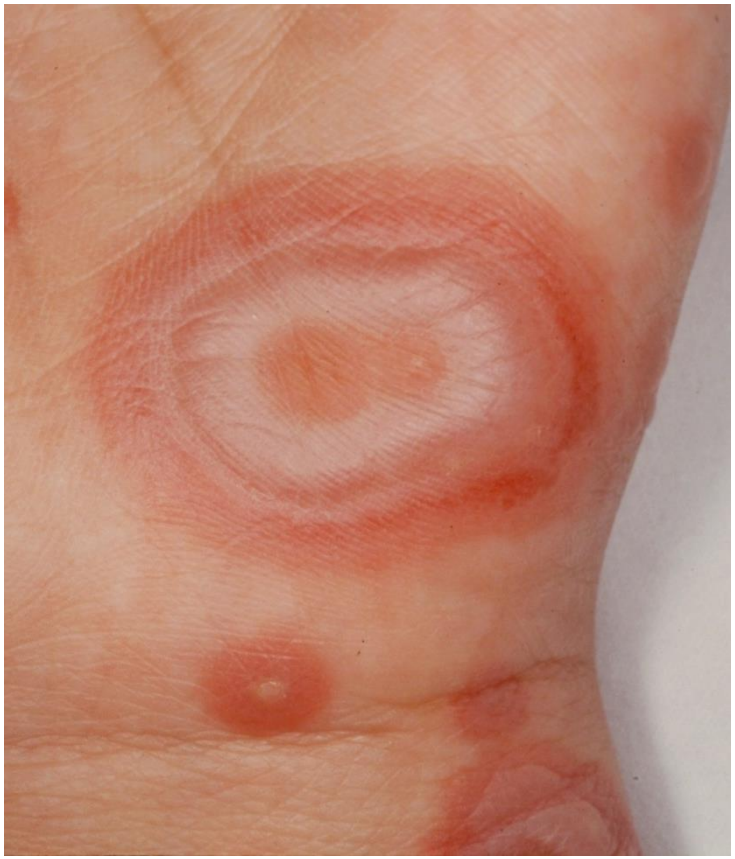
  (chlorpheniramine, hydroxyzine)
- 2nd generation or non/less-sedating H1antihistamines (cetirizine, levocetirizine, loratidine, desloratidine, rupatadine, bilastine, fexofenadine)

  considered as first-line treatment for chronic urticaria

Erythema multiforme (EM)

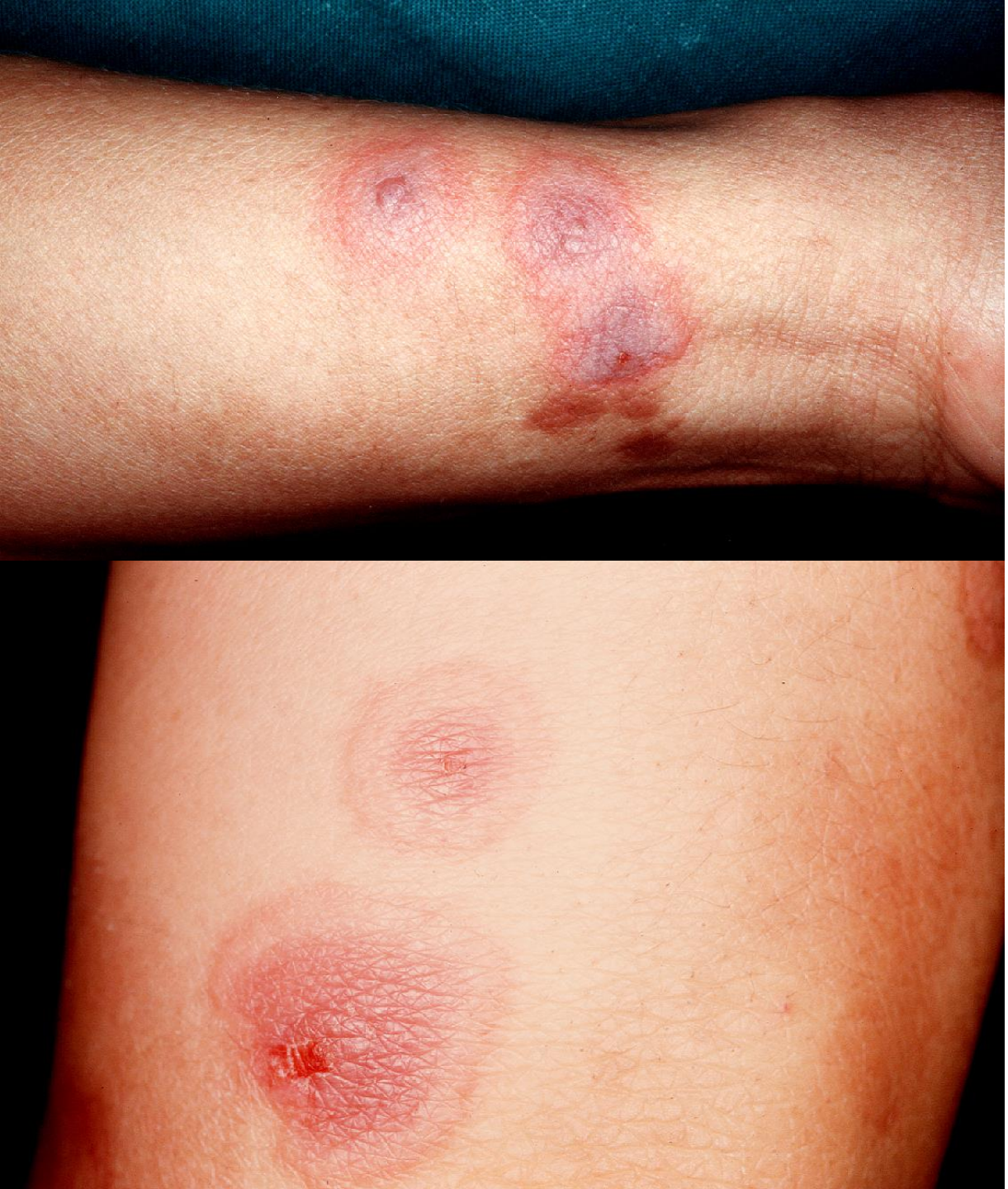
Typical targets:

- <3 cm
- regular round shape
- well-defined border
- at least 3 different zones
- 2 concentric rings
  1 palpable edematous ring



Erythema multiforme

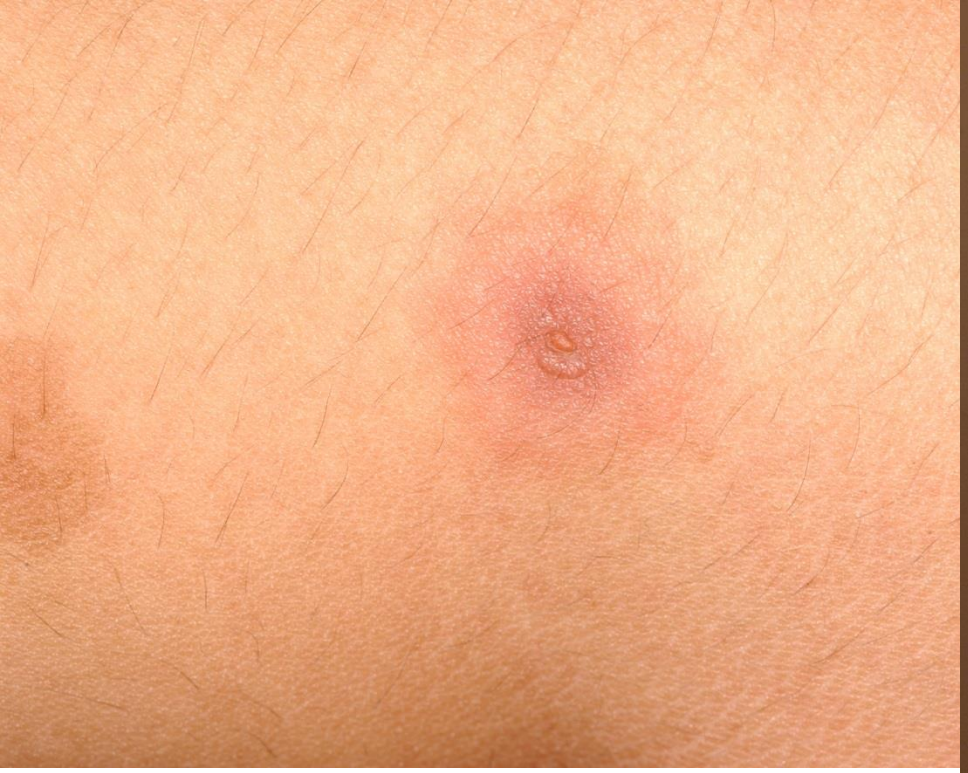
- **EM minor** (mild cutaneous syndrome): associated with HSV, mycoplasma infection, drugs
- **EM major** (more severe form / involve mucous membrane): drug-induced (antibiotics, anti-convulsants, NSAIDs)



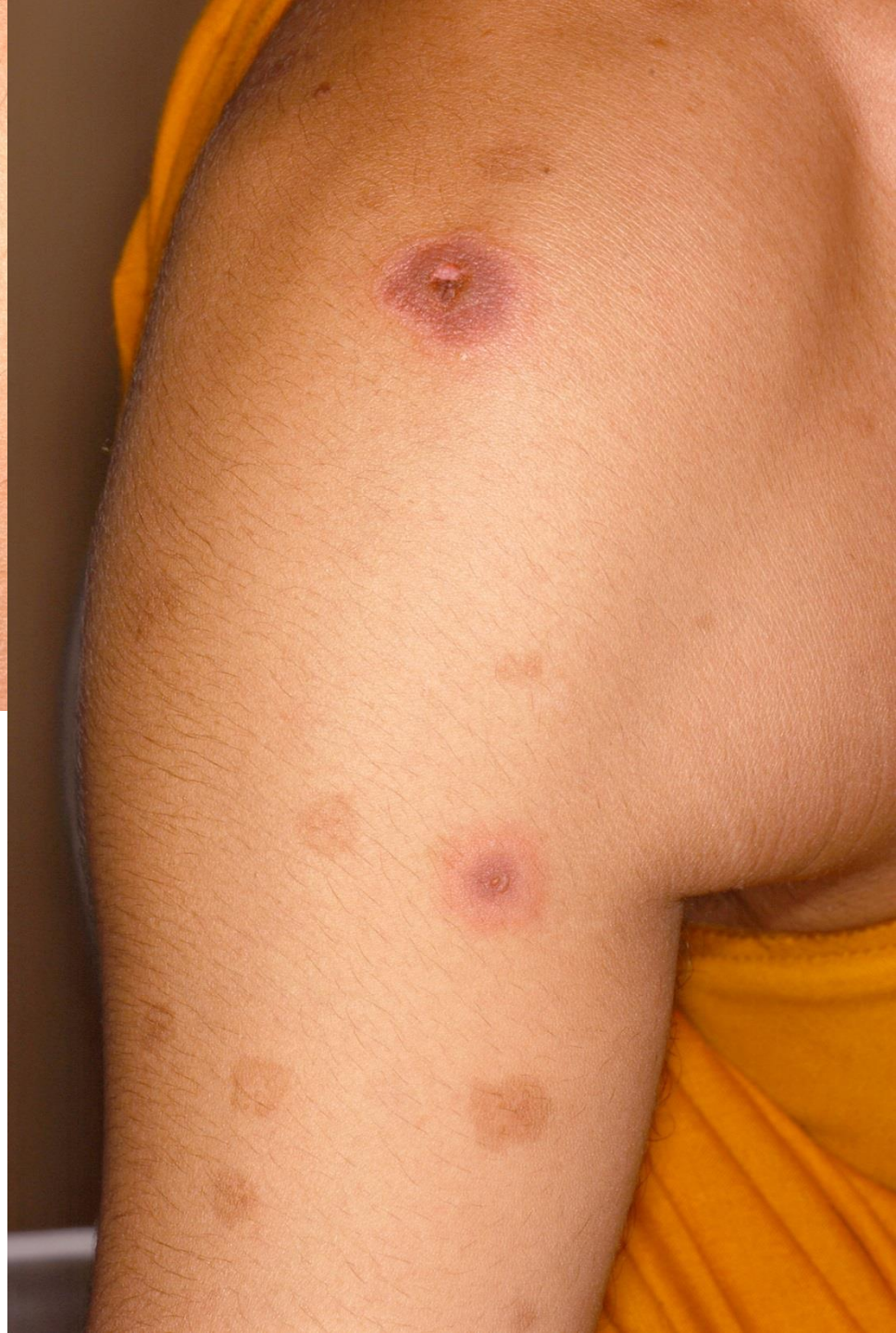
Typical targets

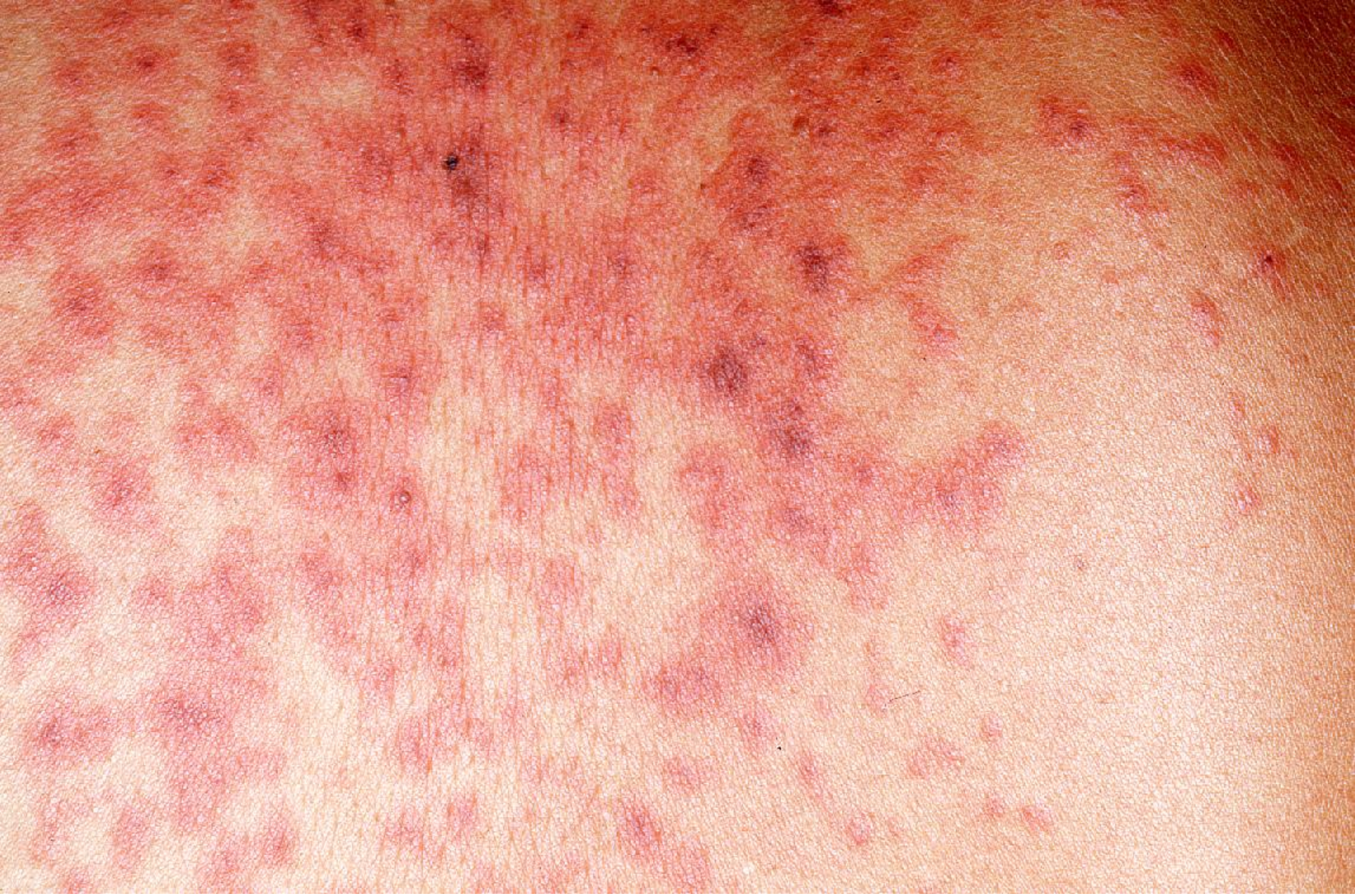
Stevens-Johnson Syndrome (SJS) Toxic Epidermal Necrolysis (TEN)

- **Raised atypical targets**: round, edematous, palpable lesion, only 2 zones and/or poorly defined border
- **Flat atypical targets**: potential central blister
- **Macules with or without blister**: nonpalpable, erythematous or purpuric, irregular shape and size



Raised atypical targets





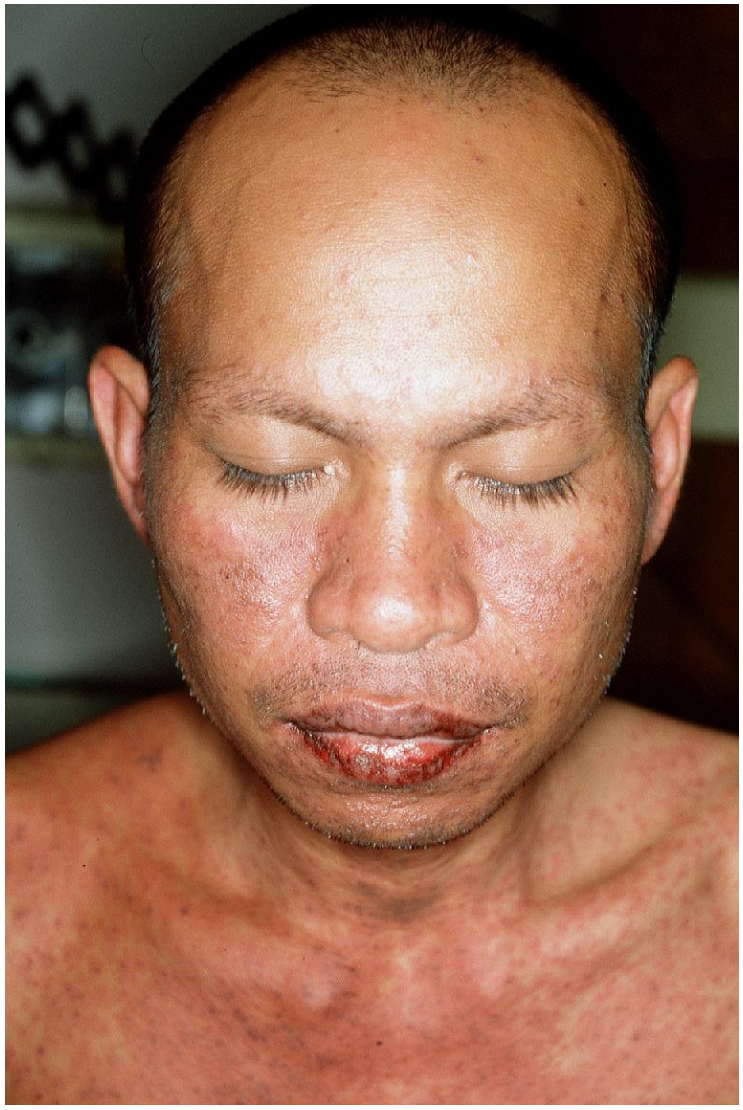
Flat atypical targets

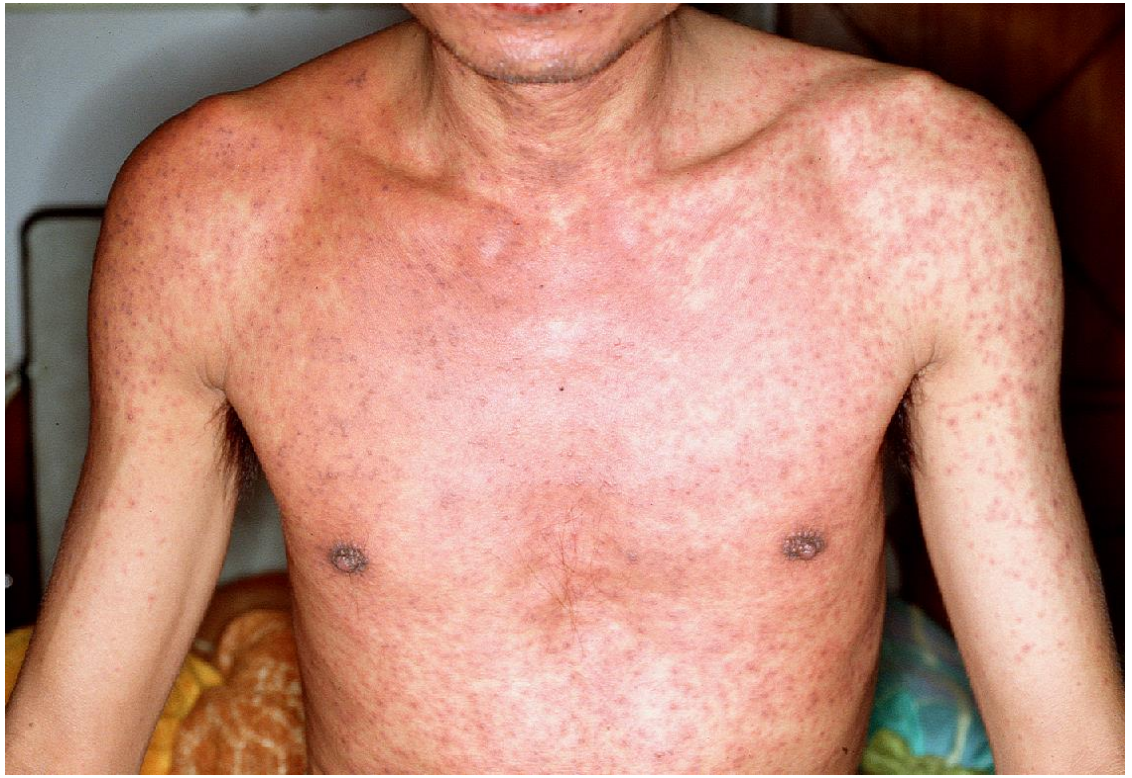
Classification SJS/TEN

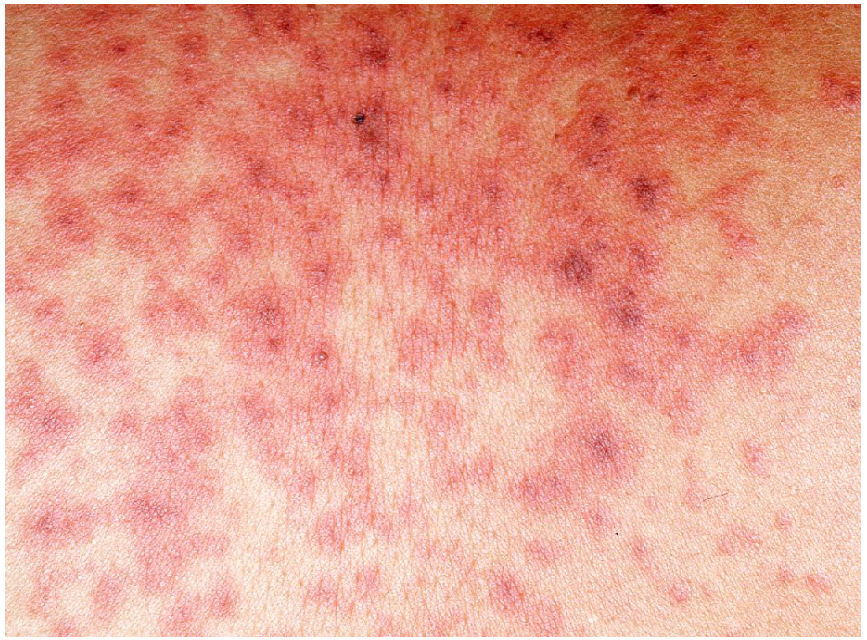
Classification	Bullous EM	SJS	Overlap SJS/TEN	TEN
Detachment	<10%	<10%	10-30%	>30%
Typical target lesions	Yes	No	No	No
Atypical target lesions	Yes, raised	Yes, flat (red or purpuric)	Yes, flat (red or purpuric)	Yes, flat (red or purpuric)

TEN without spots: **detachment** > 10%, large epidermal sheets and no purpuric macules

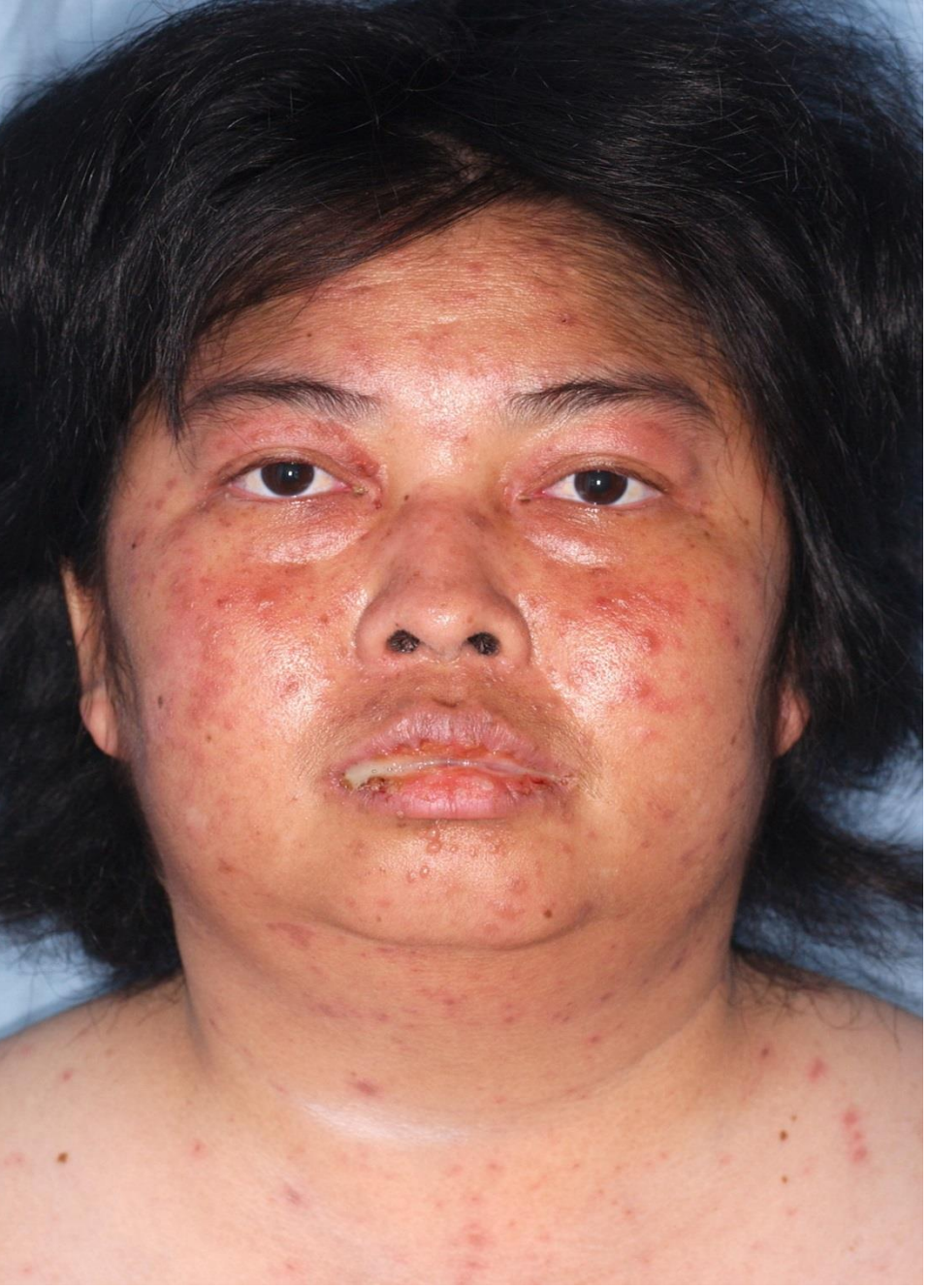
SJS and TEN: **need to have >2 mucosal involvement** (eyes, mouth, genitalia, perianal area, urethra)

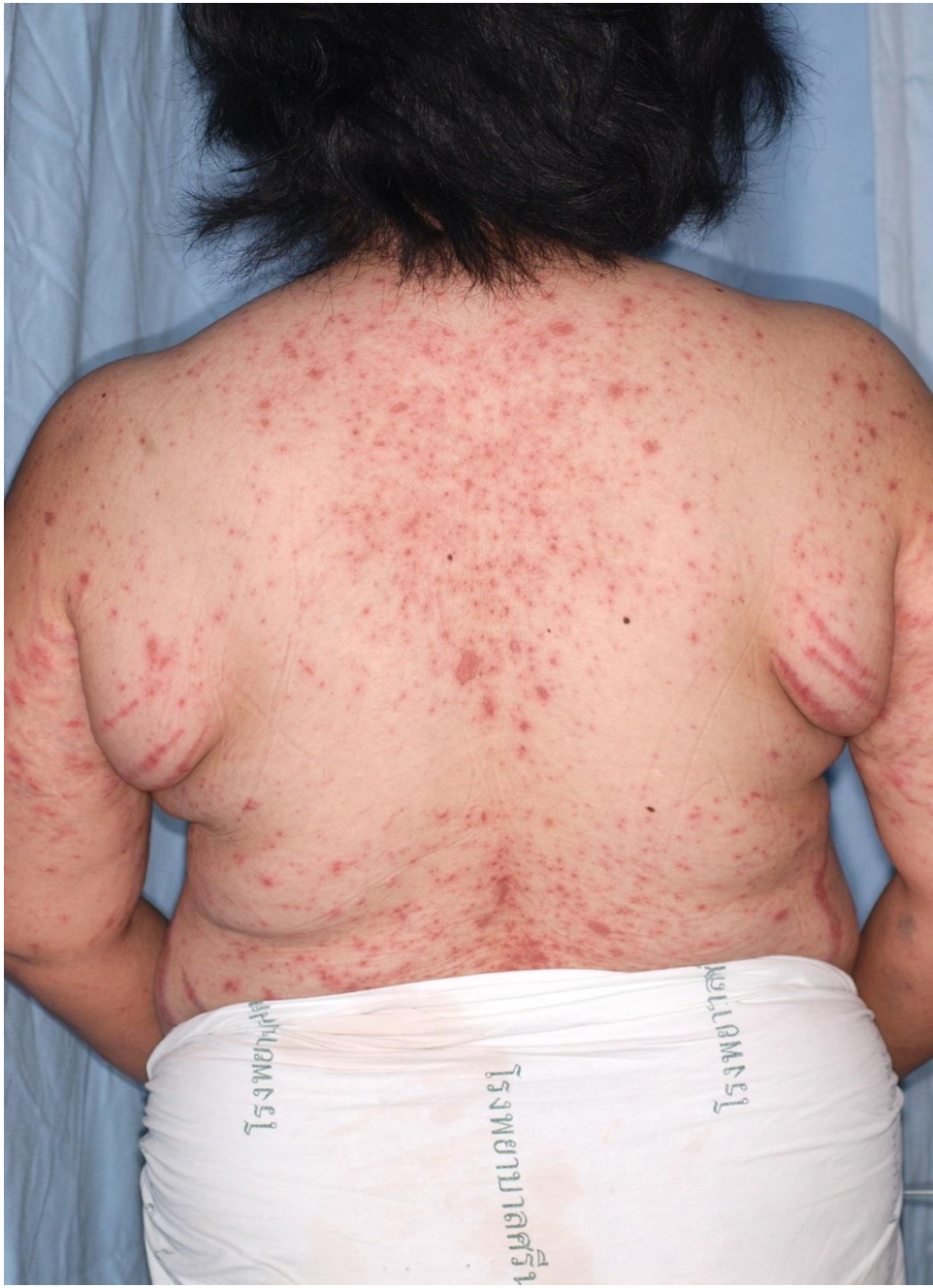




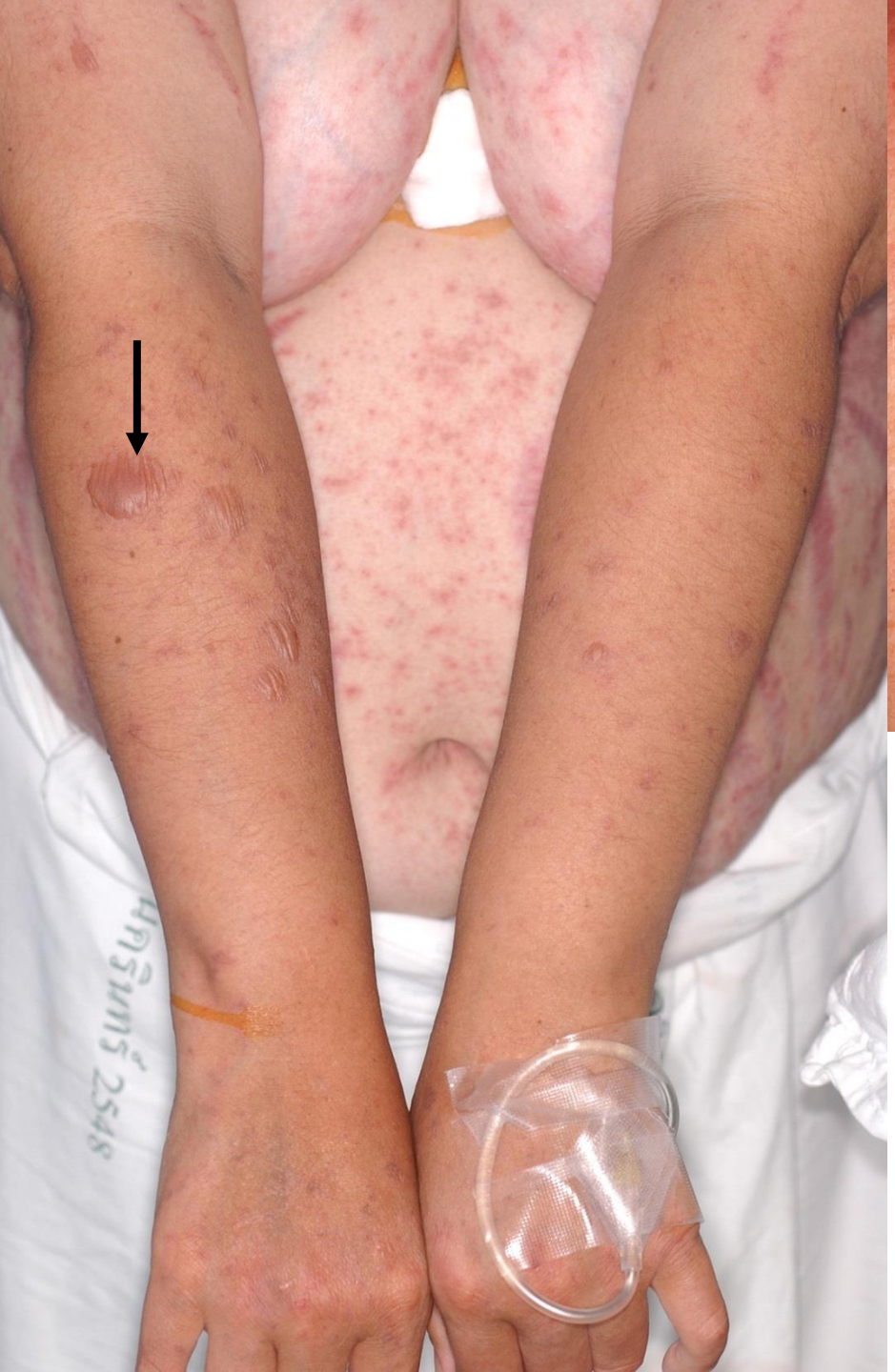


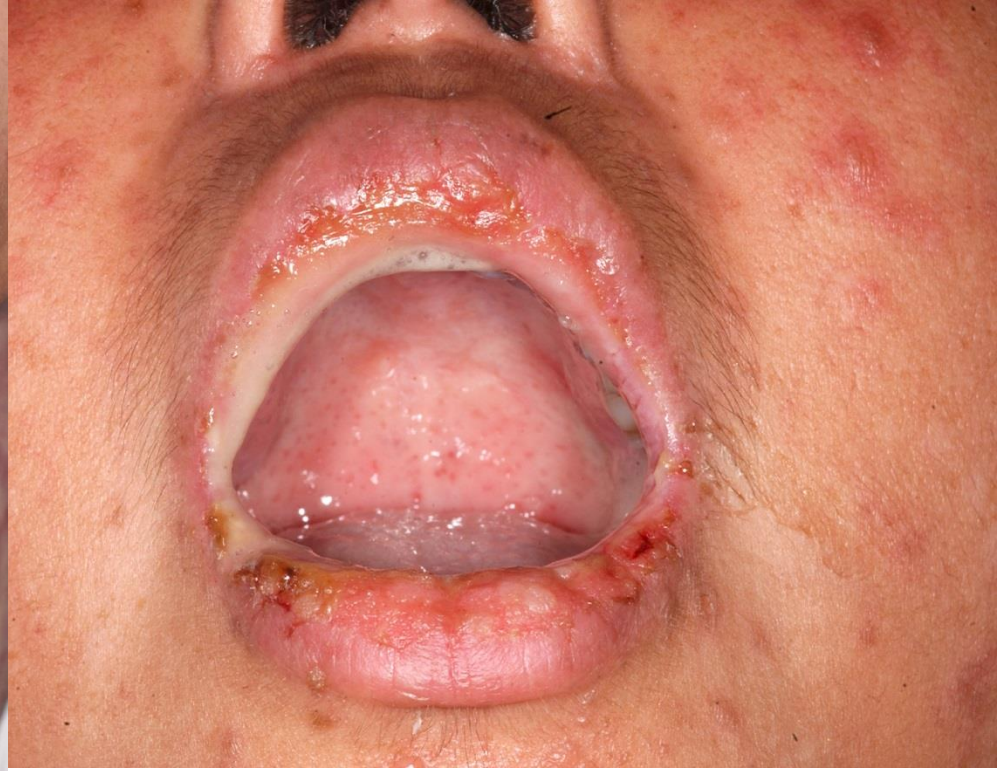
Stevens-Johnson syndrome



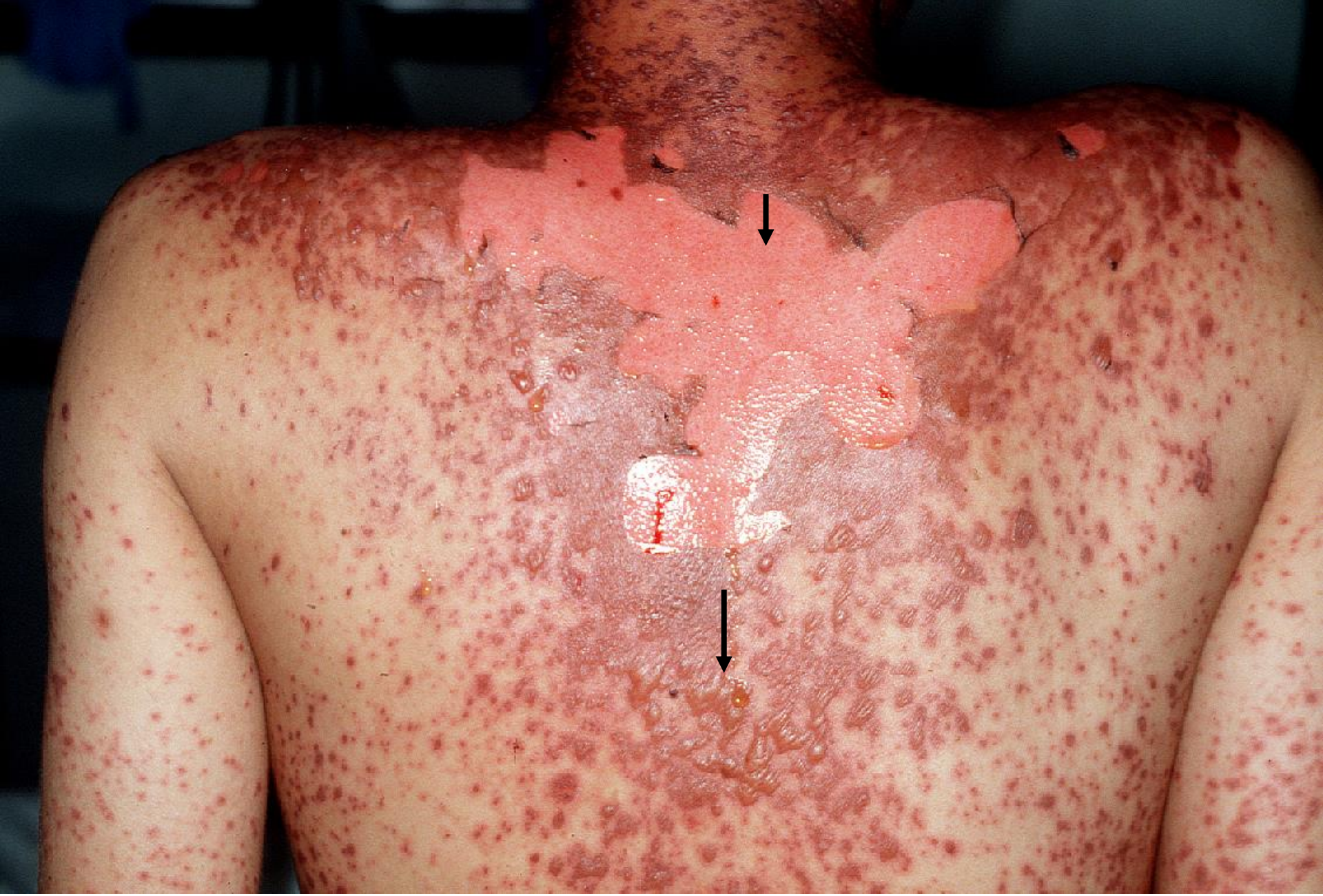


Stevens-Johnson syndrome

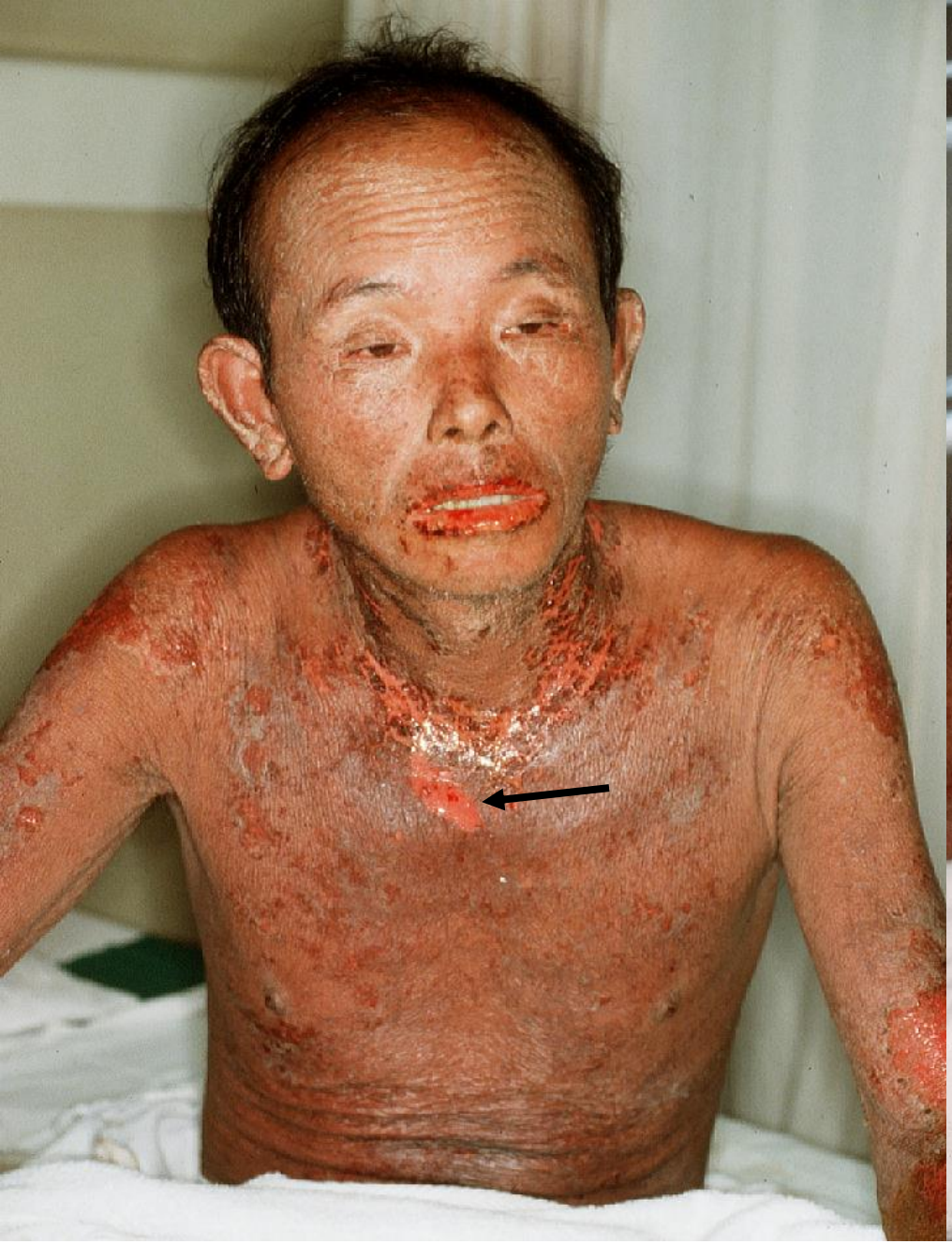


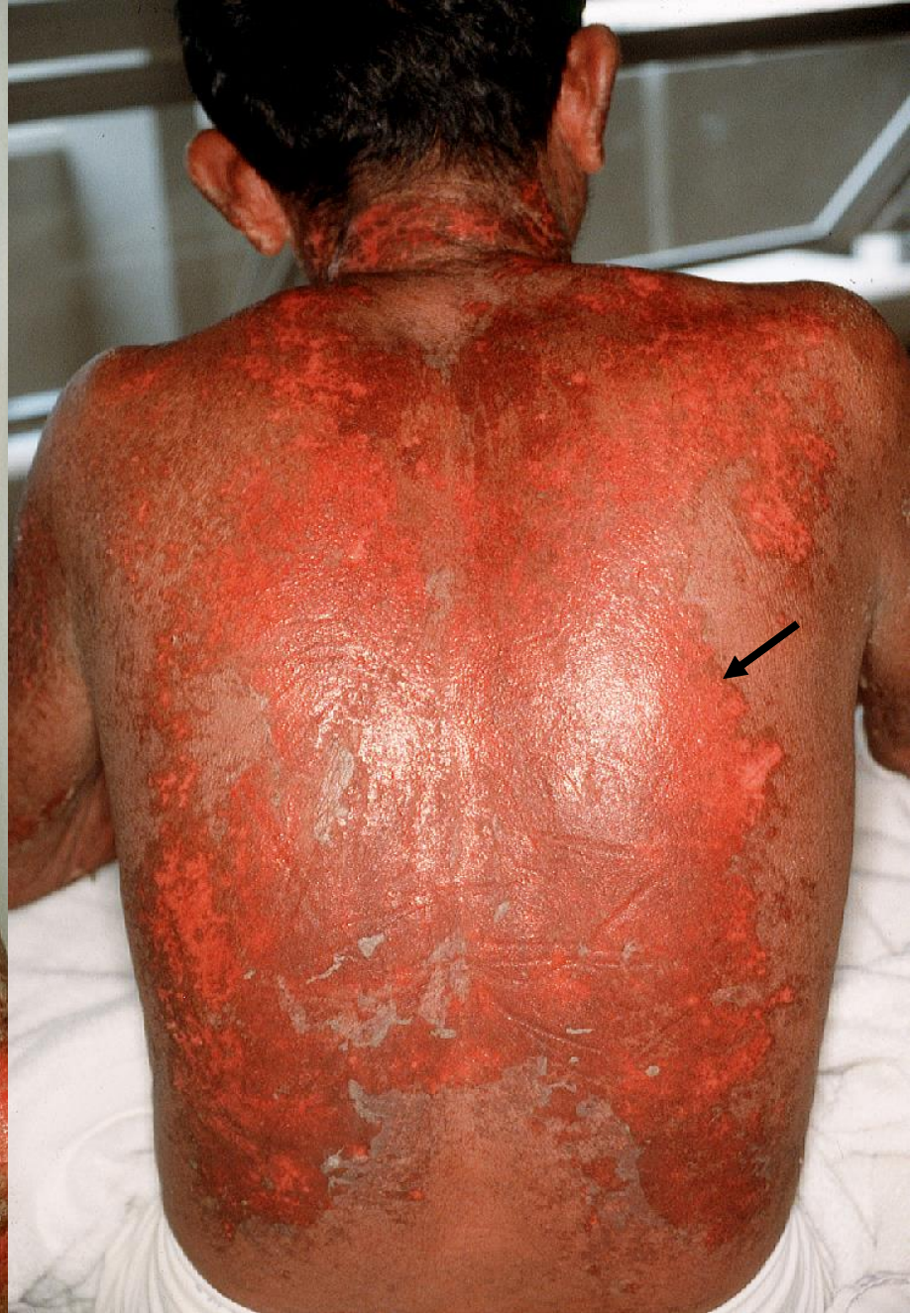


Stevens-Johnson syndrome

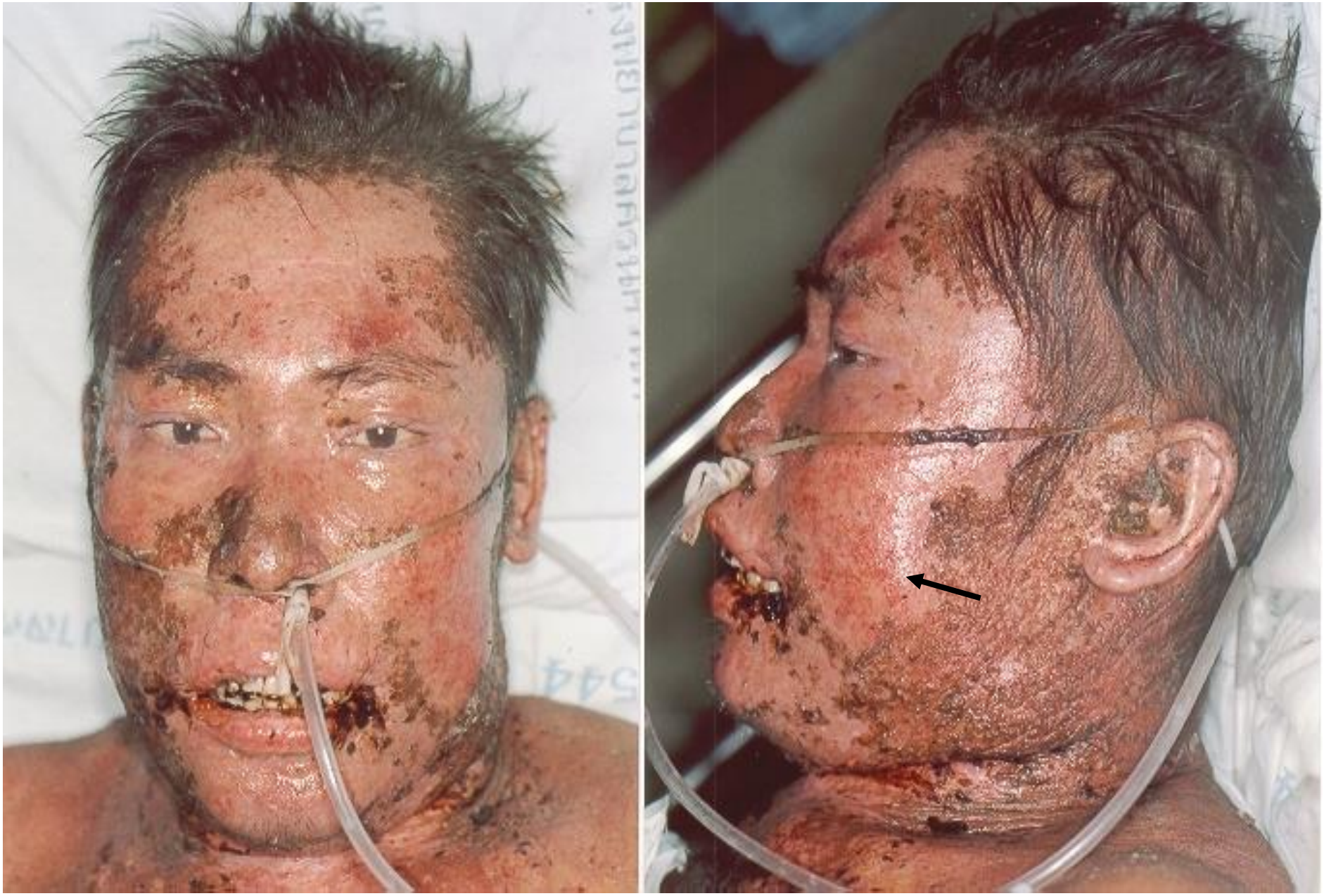


Overlap SJS/TEN

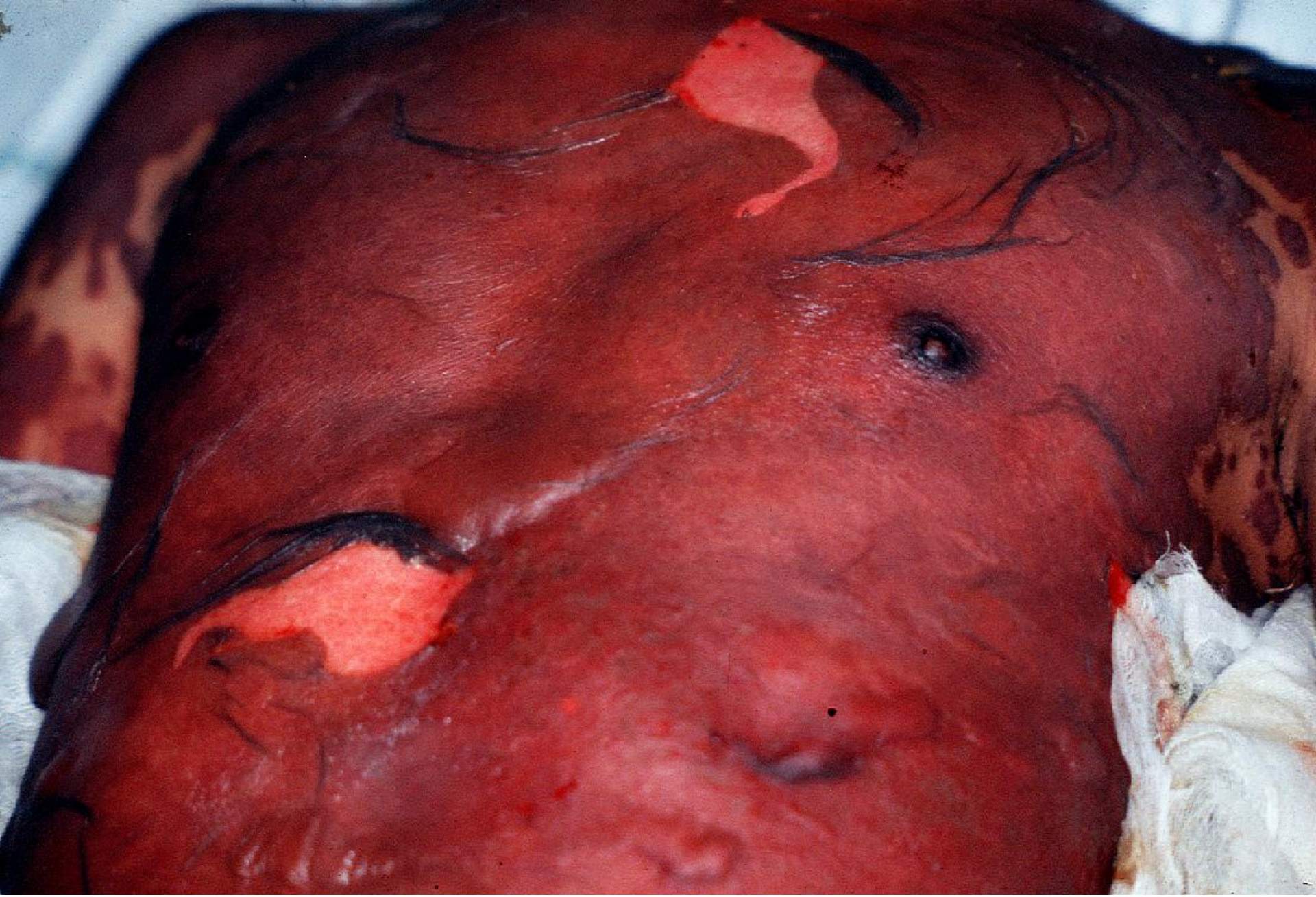




TEN with spots



TEN with spots



TEN without spots

SJS/TEN

- **Drug-induced**: antibiotics eg.sulfonamide, anticonvulsants (carbamazipine,HLA-B*1502), allopurinol (HLA-B*5801), NSAIDs
- Infection: herpes infection, mycoplasma
- HIV infection dramatically increases the risk
- Predisposing disorder: autoimmune disease eg. SLE
- Malignancy: lymphoma

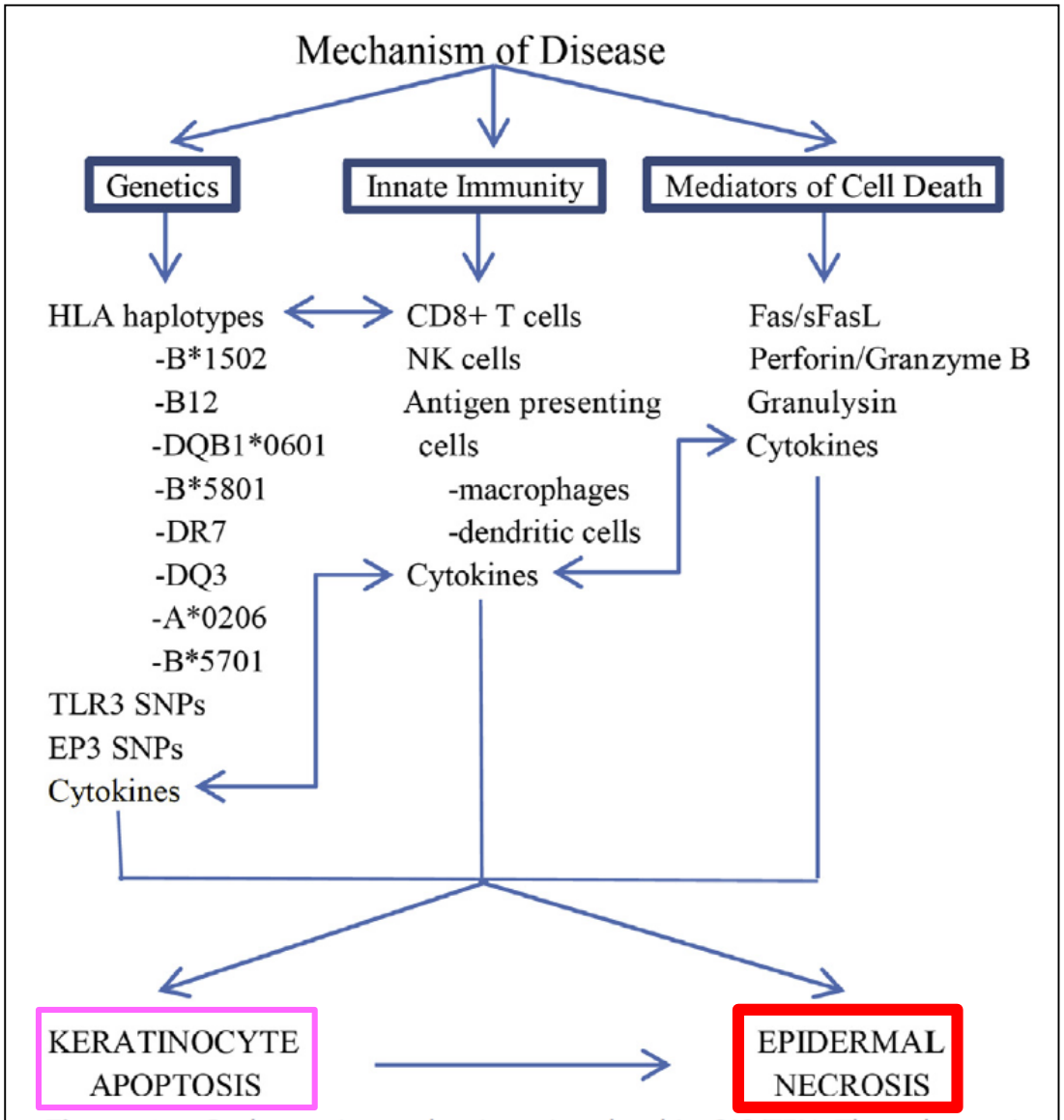
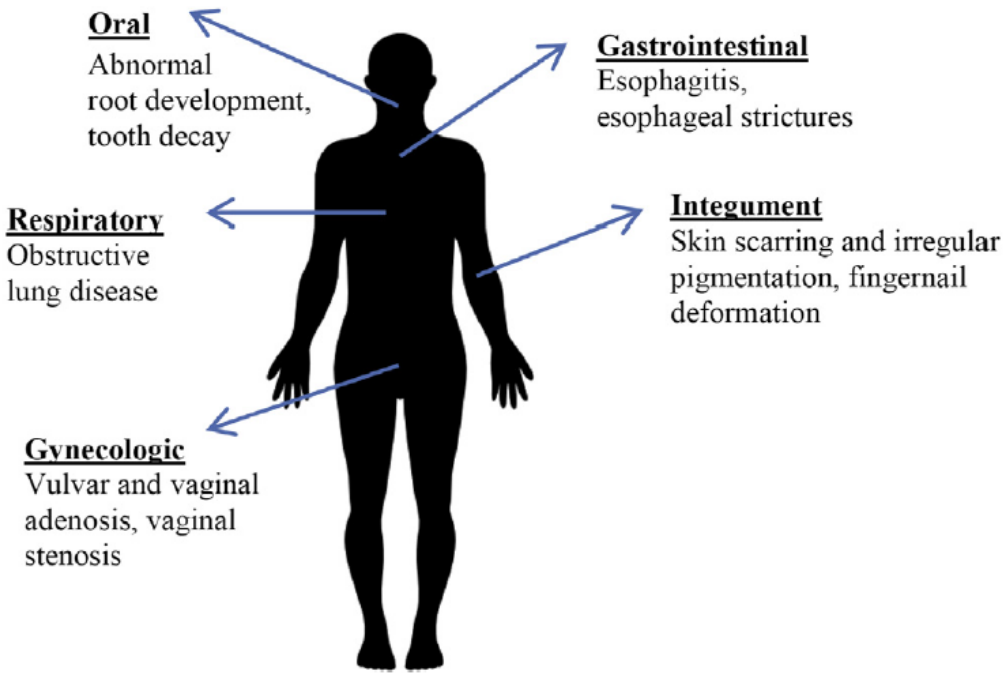


Figure 3. Pathogenic mechanisms involved in SJS/TEN. The schematic presents a simplified depiction of the interplay between genetics, specific components of innate and acquired immunity, and effectors of keratinocyte cell death. See text for detailed discussion. TLR3=Toll-like receptor 3. SNPs=single nucleotide polymorphisms. EP3= prostaglandin E receptor 3. (Adapted from Harp JL, Kinnebrew MA, Shinkai K.[94])

SJS/TEN

- Mortality rate - SJS: 5-15%, TEN: 30-35%
- Fever
- Mucous membrane: 1-3 days before skin eruption
- Nikolsky's sign: positive
- GI and RS: profuse diarrhea, respiratory distress



Treatment of SJS/TEN

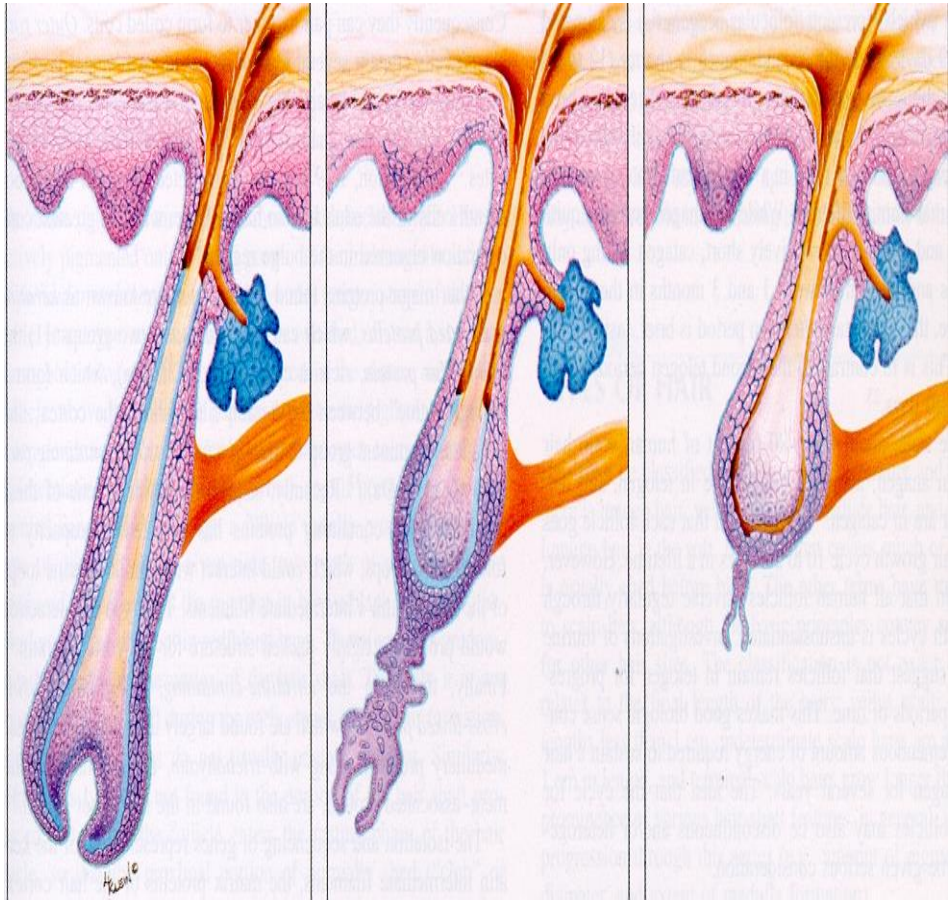
- No generally accepted regimens or treatment guideline

- **Identification/elimination of the offending drug**
- **Supportive measures: the mainstay of therapy**

- **Active therapy "disease-modifying agent"**
- No controlled therapeutic trials because of infrequent and life-threatening disease
- Require complex treatment and individually adapted care

Alopecia

Cyclic phases of hair growth



3 phases

1. Anagen (growing phase): 2-6 yrs, 85-90% of hair on the scalp

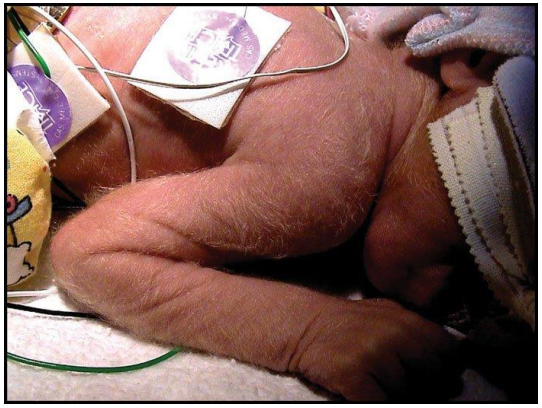
2. Catagen (atrophy phase): 2-3 weeks, 1%

3. Telogen (resting phase): 1-3 months, 10-15%

4. Exogen (shedding phase): hair shedding

Hair

-Each follicle: 10-20 times of hair growth cycle in a lifetime



-Hair color: melanocytes, eumelanin and pheomelanin

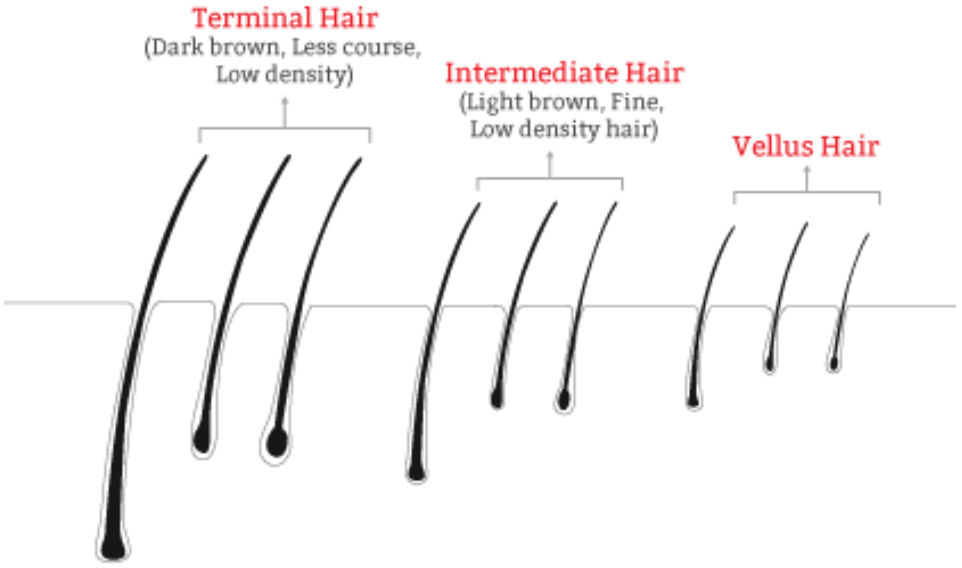
-Type of hair:

1.Lanugo

2.Vellus eg. face

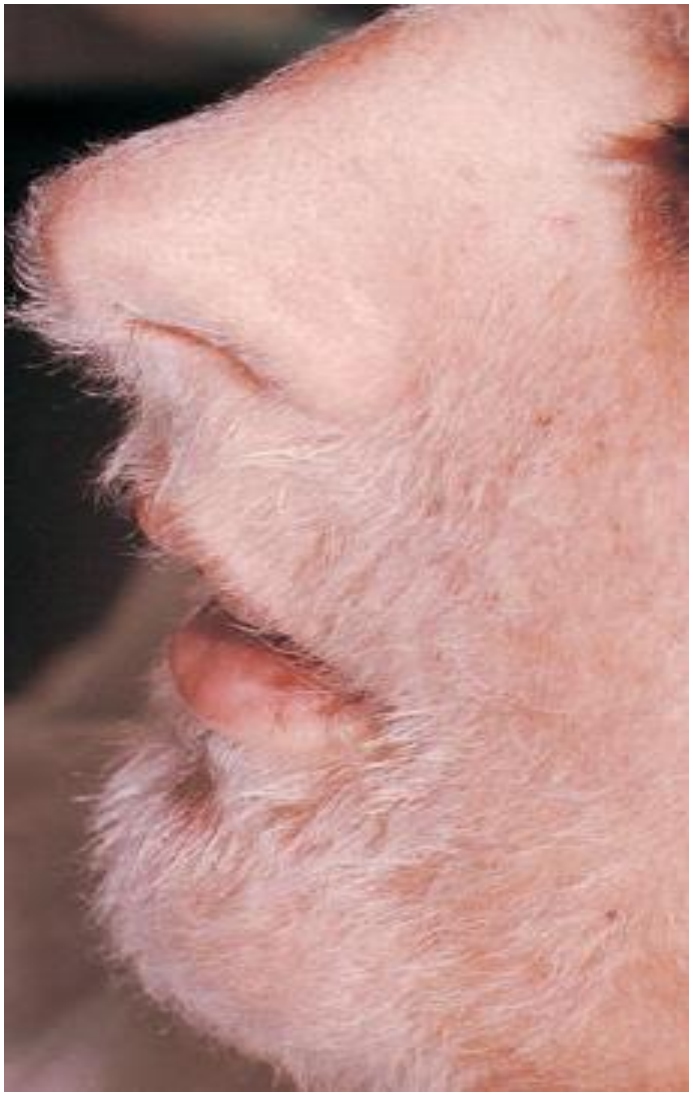
3.Intermediate

4.Terminal hair



Hypertrichosis Lanuginosa Acquisita

- Sudden appearance of long, fine, non-pigmented lanugo hairs
- Face and ears
- Most common: CA lung and colon
- AIDS, thyrotoxicosis, porphyria cutanea tarda
- Medications; cyclosporin, phenytoin



Hair

-Highest density on scalp ~ 100,000

-Distribute throughout the integument, except: palms, soles and portion of genitalia

-Highest density of follicles: scalp-1135/cm^2 at birth and 615 third decade

-Normal hair follicle

100,000/head in brown/black hair

10% greater in blondes

10% less in redheads

-Hair growth 0.37 mm/day

-Hair loss 100/day

Alopecia

- Hair breakage
- How many ?
- Acquired or congenital ?
- Duration
- Site
- Associated symptom
- Previous illness or postpartum
- Blood loss or operation
- Underlying disease
- Drugs
- Family history

Physical examination

- Characteristic alopecia
- Scalp : scale, crust, scar, inflammation, mass, exclamation mark hair, black dot appearance
- Hair pull
- Hair count
- Hair pluck
- Microscopic examination

Evaluation

- **Pull test**
  - Grasps ~50–60 hairs and tugs them from proximal to distal end, 4 areas
  - Positive:

    ≥ 2 hairs in > 1 area or

    10% in 1 area
  - Examined with light microscope
    - Blunt ends: hair breakage
    - Club hairs: telogen hair

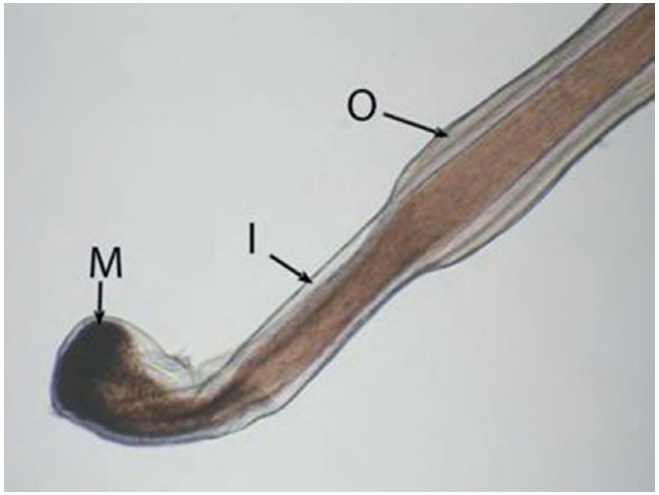
Evaluation

- **Trichogram**
  - Proportion of anagen to catagen and telogen hairs
  - Grasp 25–50 hairs with a needle holder close to the scalp and plucked sharply in the direction of the hair
  - The proximal ends are place on a glass slide in a drop of water and covered with a cover slip

Forcible hair pluck

Telogen hair

Anagen hair



Trichogram evaluation

- Telogen count 10-25% =normal
  > 25-35% =suspicious-highly suspicious for telogen effluvium

Alopecia

Localized

Nonscarring
- Alopecia areata
- Trichotillomania
- 2° syphilis
- Tinea capitis
- Androgenetic

Scarring
- DLE
- Kerion
- Folliculitis
- LPP
- Trauma
- Tumor

Diffuse

Nonscarring
- AT, AU
- 2° syphilis
- Anagen effluvium
- Telogen effluvium
- Androgenetic

Scarring
- DLE
- Trauma
- Surgical scar

DLE, discoid lupus erythematosus
LPP, lichen planopilaris (frontal fibrosing alopecia)
AT, alopecia totalis
AU, alopecia universalis

Anagen /telogen effluvium

1. Telogen effluvium

- diffuse alopecia with gradually progress

2. Anagen effluvium

- diffuse alopecia with rapid course

Telogen effluvium

- Sudden conversion of anagen → telogen hairs
- Often related to external causes, reverse when remove exogenous stimuli
- HPT: positive
- Trichogram: increase telogen hair > 25%
- May copresent with AGA → complicate diagnosis and treatment
- Scalp biopsy: differentiating from diffuse AA, AGA
- ChronicTE triggers may be difficult to identify.(esp in women between the ages of 30-60 years)

Telogen effluvium

Triggering events

Sudden onset of massive shedding (bag sign)

Ongoing massive shedding

2-3 mo

Acute TE

Chronic TE

TFT, CBC, ferritin, iron study, VDRL, ANA, BUN, Cr, LFT

> 6 mo

Improve within 6 mo after triggering event or after withdrawal from suspected causal

Stimulus persist > 6 mo
Primary/idiopathic

Acute TE

Causes of telogen effluvium

Physiologic conditions

Post partum effluvium (telogen gravidarum), physiologic effluvium of new born, early stage of androgenetic alopecia

Physical or emotional stress

Severe febrile illness (*eg.*, malaria), severe infection, crash diet, starvation, malnutrition, kwashiorkor, marasmus, malabsorption, iron deficiency, hypo or hyper- thyroidism, acrodermatitis enteropathica and acquired zinc deficiency, major surgery, traumatic accident, chronic illness (SLE, syphilis, hepatic and renal failure, etc.), advanced malignancy, chronic telogen effluvium (idiopathic), severe psychological stress (death in the family, divorce, loss of job)

Drugs

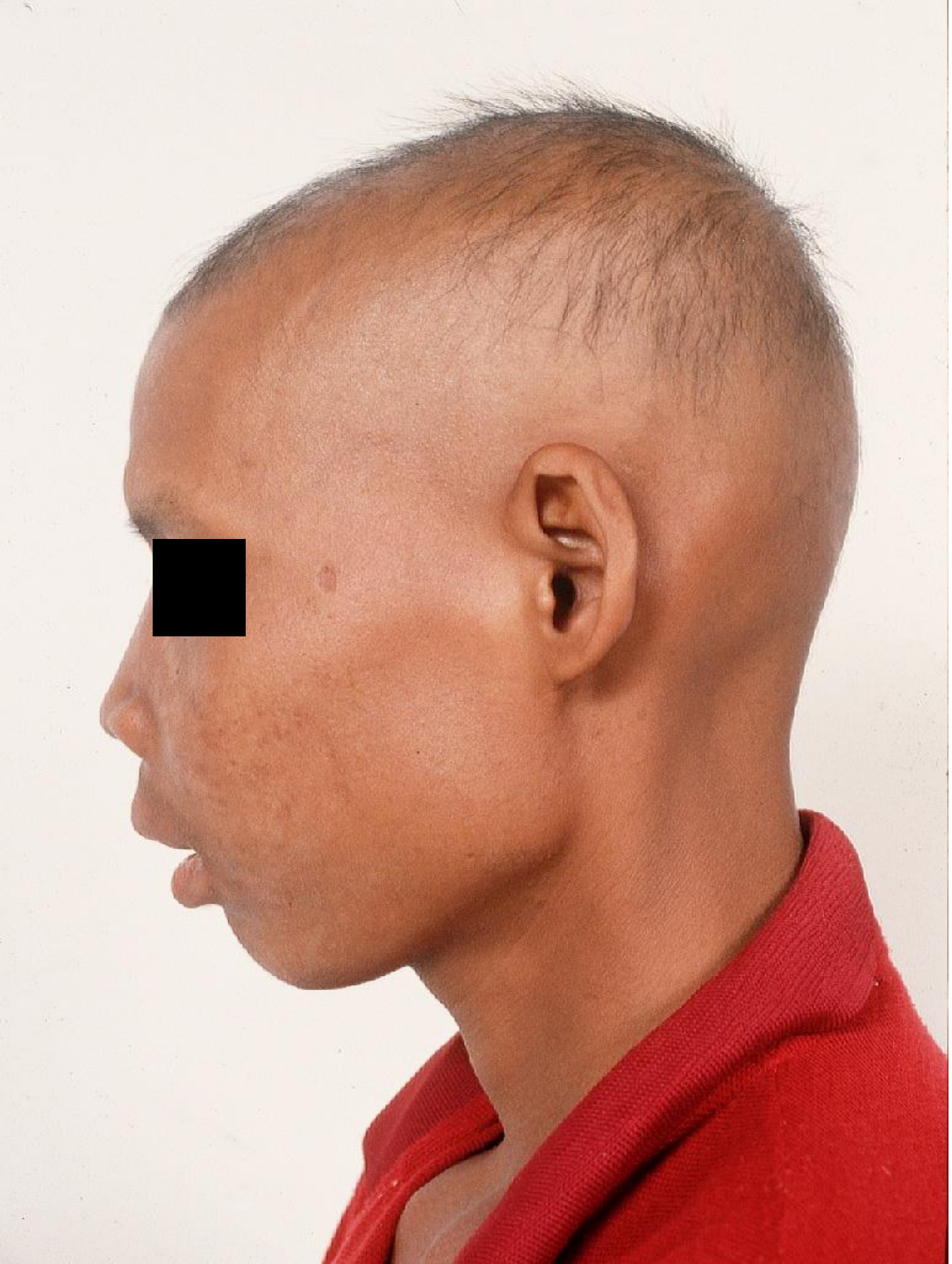
Oral retinoids, specially etretinate and acitretin, high dose contraceptive pills (OCP) or hormone replacement therapy (HRT), antithyroids, anticoagulants (especially heparin), and anticonvalescents, hypolipidemic drugs, heavy metals, beta blockers, etc.

Treatment

- Remove cause
- Ferritin level < 40 ng/dl → iron supplement
- Thyroid condition
- 2% or 5% minoxidil solution

Anagen effluvium

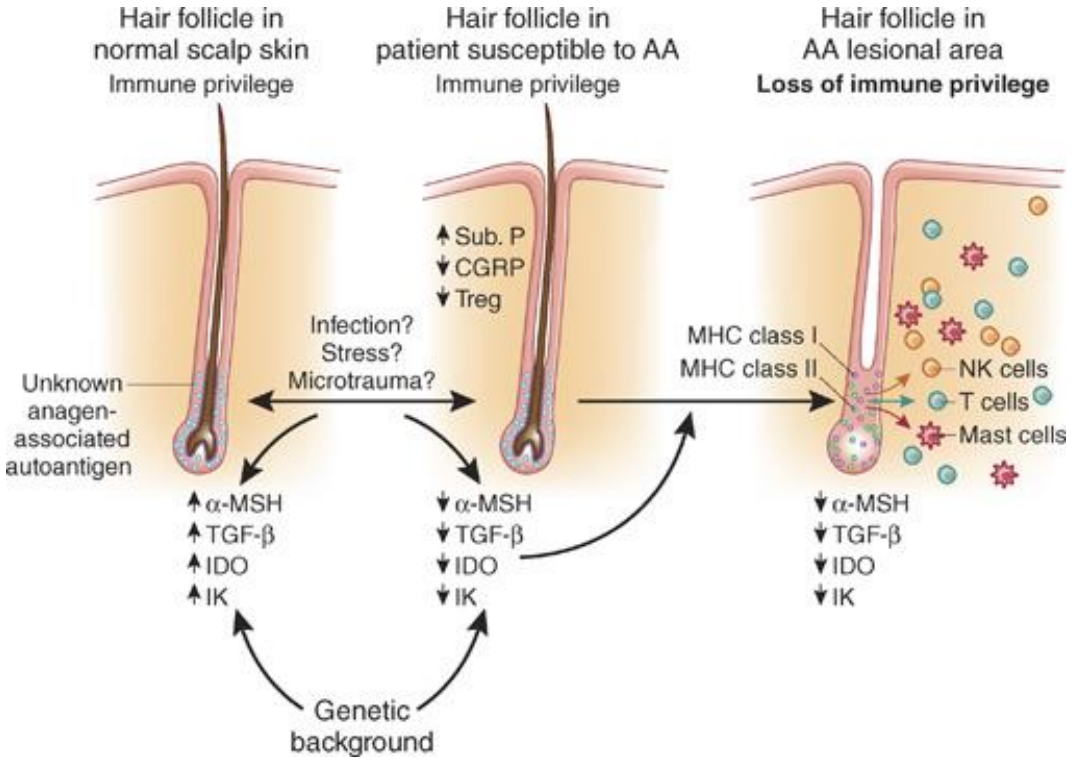
- Disturbance of hair follicle matrix cells
- Interrupt anagen phase
- Hair falls out 7–14 days after the initiating event without entering catagen or telogen
- **Causes: chemotherapy, radiation, toxins, heavy metal, severe malnutrition**
- Once the initiating trigger is removed, the hair usually regrows after around 120 days



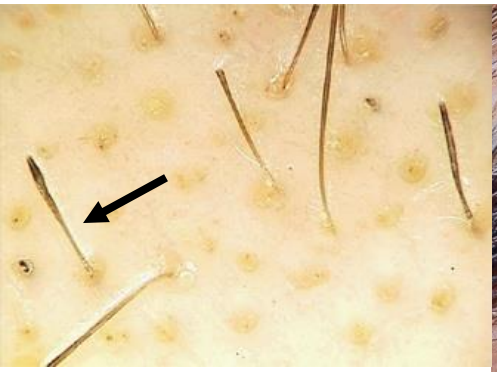
Anagen effluvium

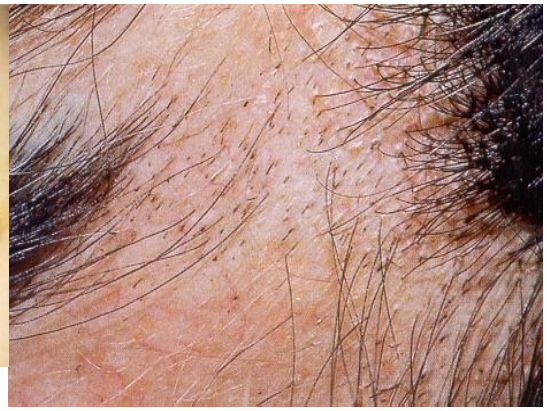
Alopecia areata

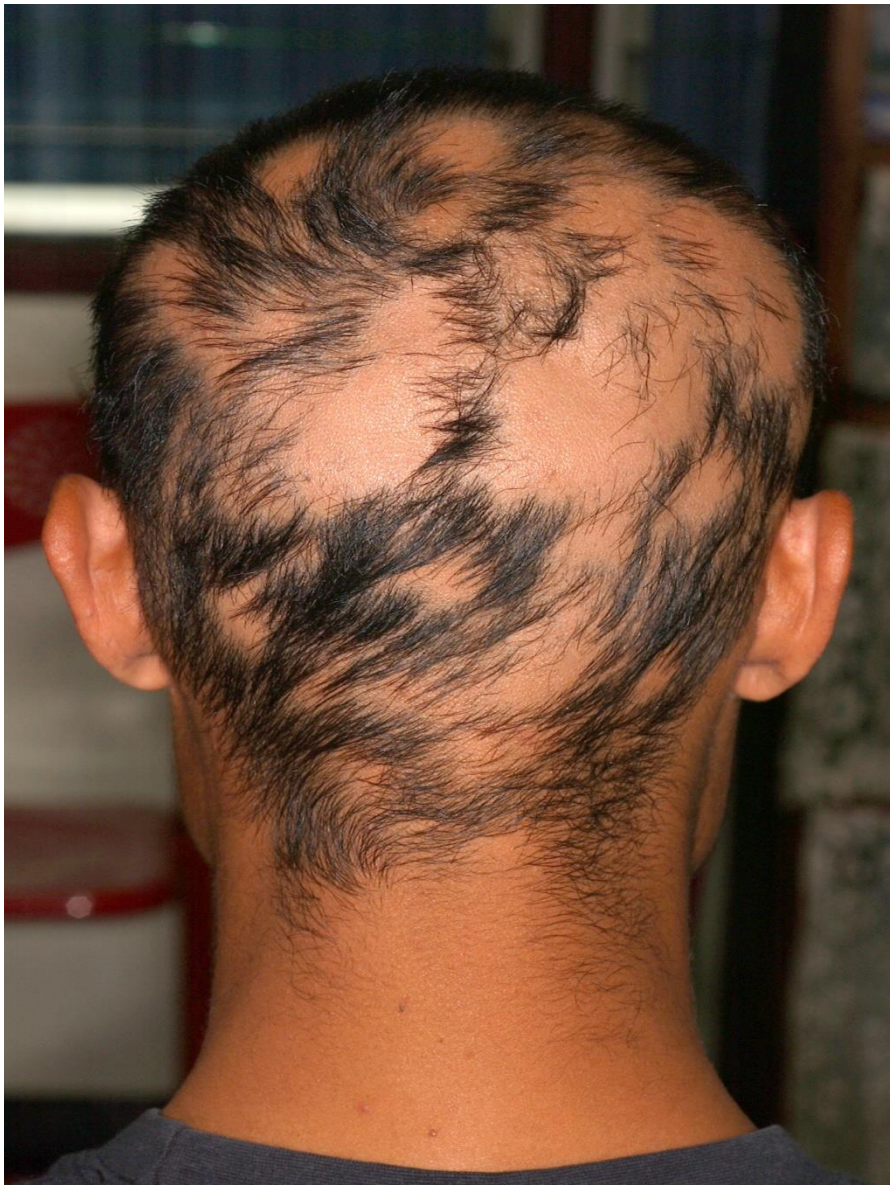
- **Non-cicatricial alopecia**
- Hair-specific autoimmune disease, with genetic factors involved in disease susceptibility and severity together with environmental factors
- T-lymphocyte interaction with follicular antigens (autoantigens)
- **Chronic relapsing nature**



Alopecia areata



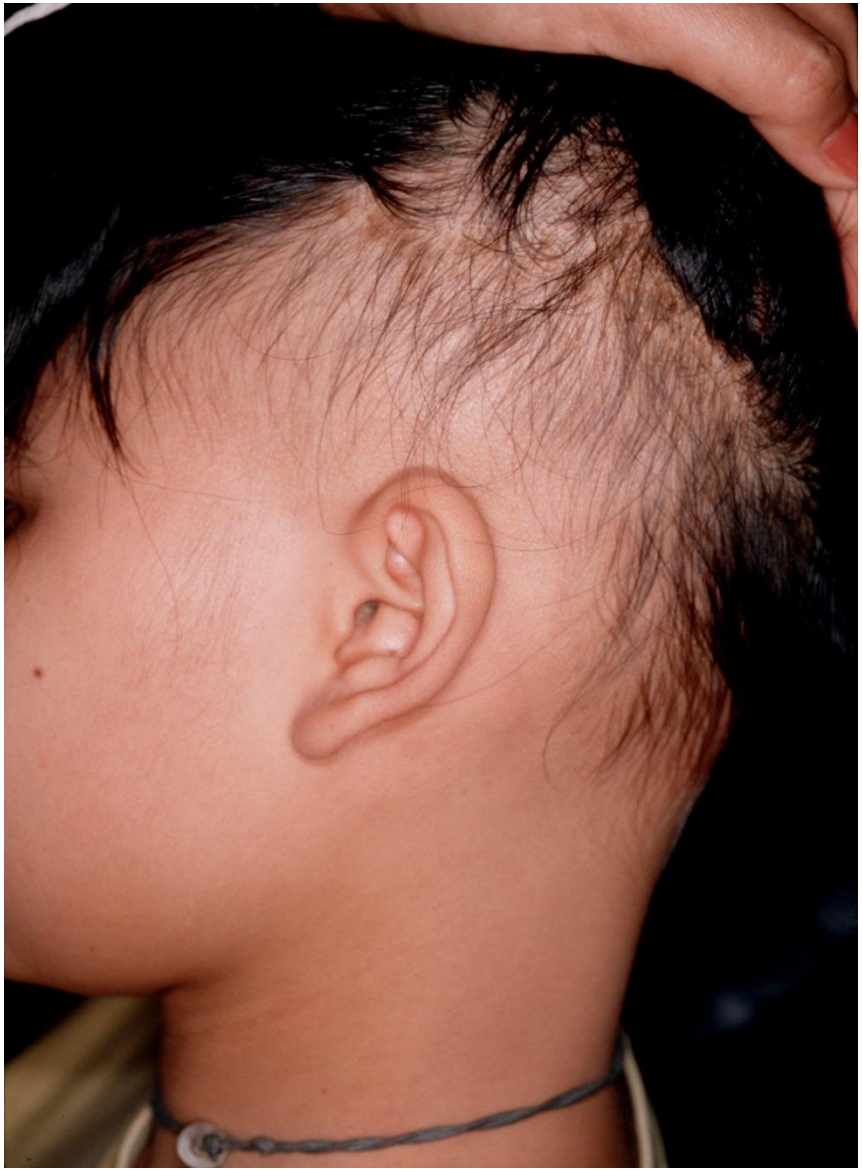


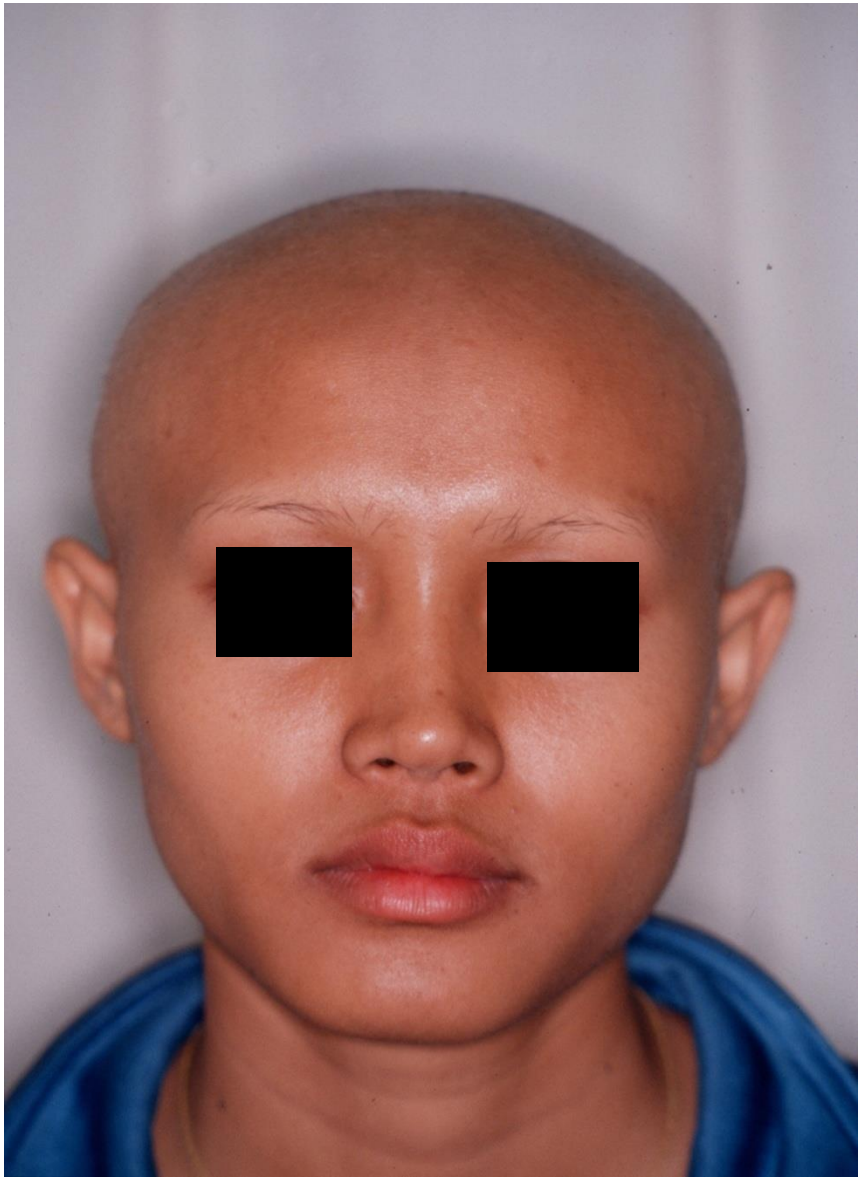


Clinical: patches of alopecia without scarring or inflammation of scalp, HPT+

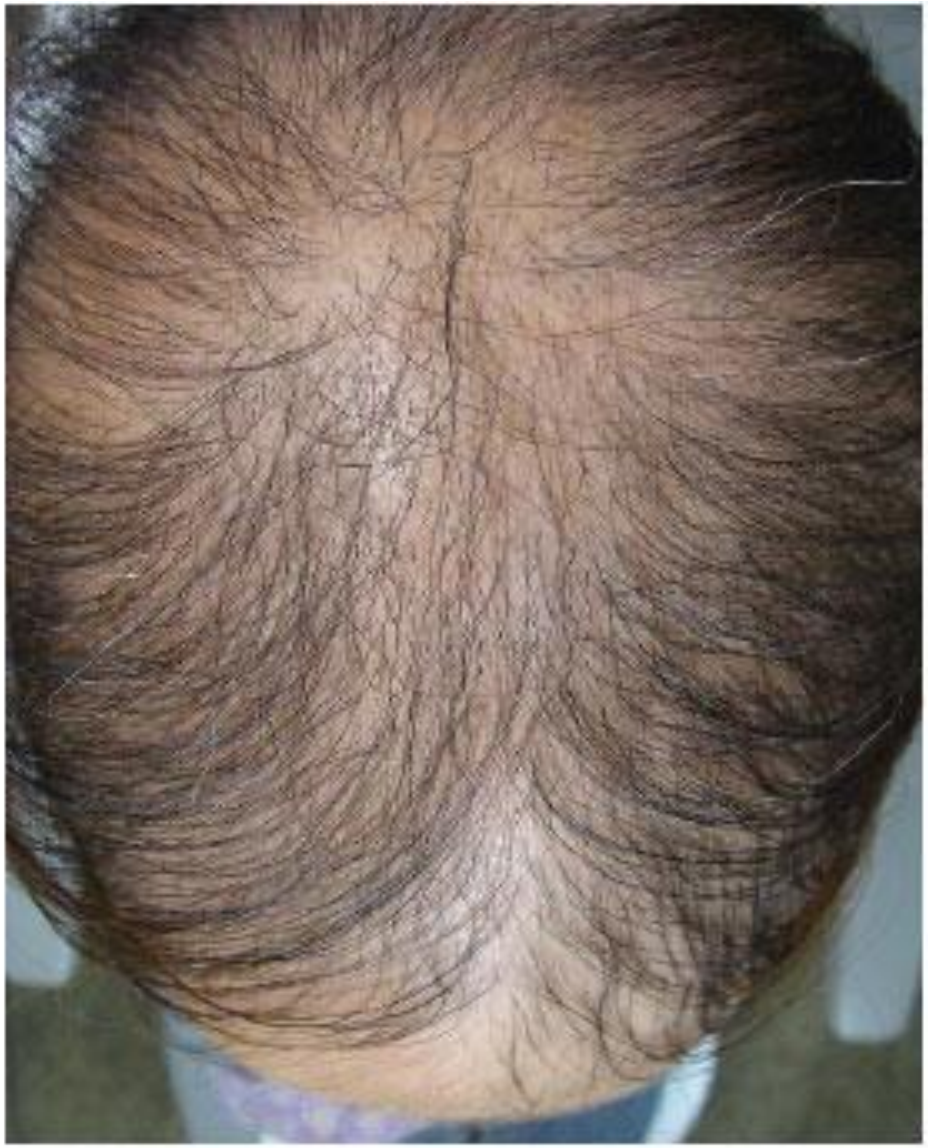
" exclamation mark hair or black dots"

- Alopecia totalis
- Alopecia universalis





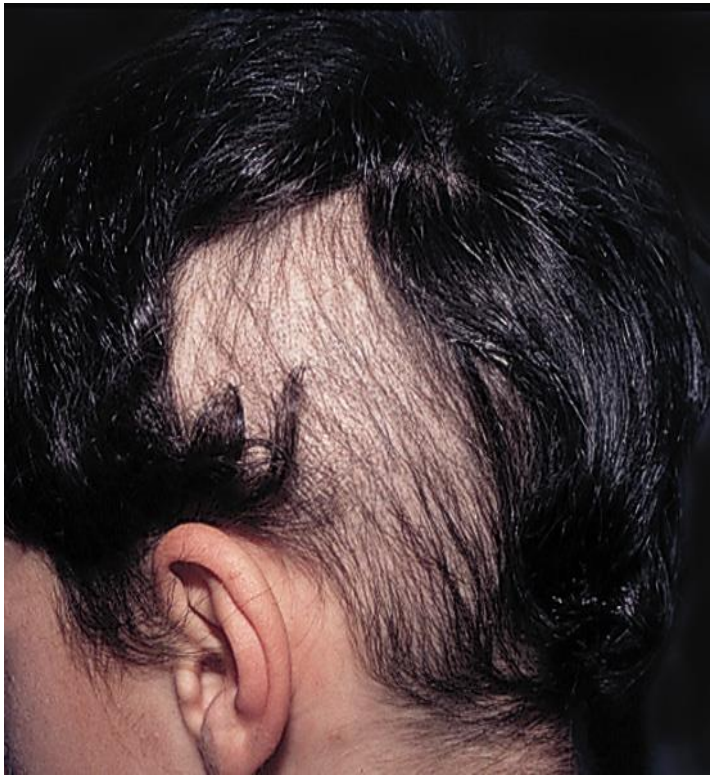
- **Diffuse variant:** widespread thinning or may primarily affect the top of the head

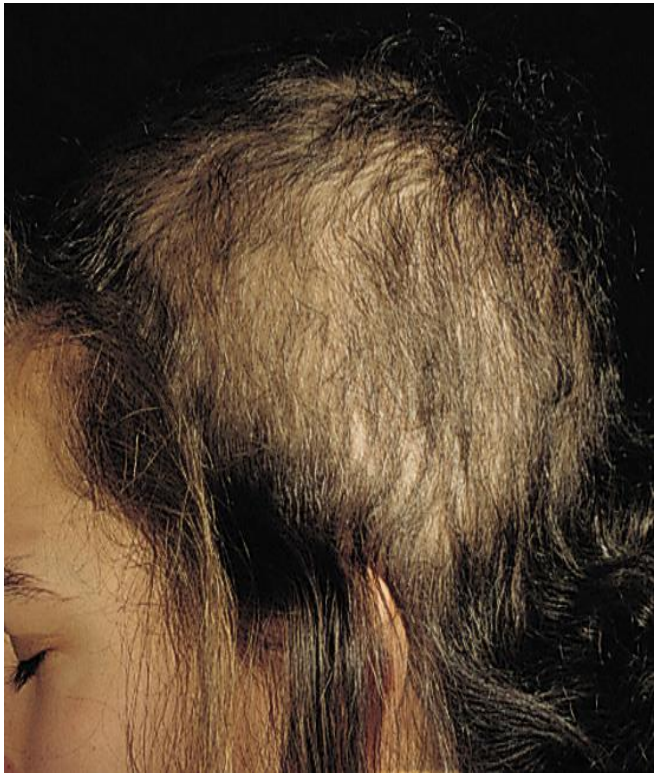


Trichotillomania

"Hair pulling madness"

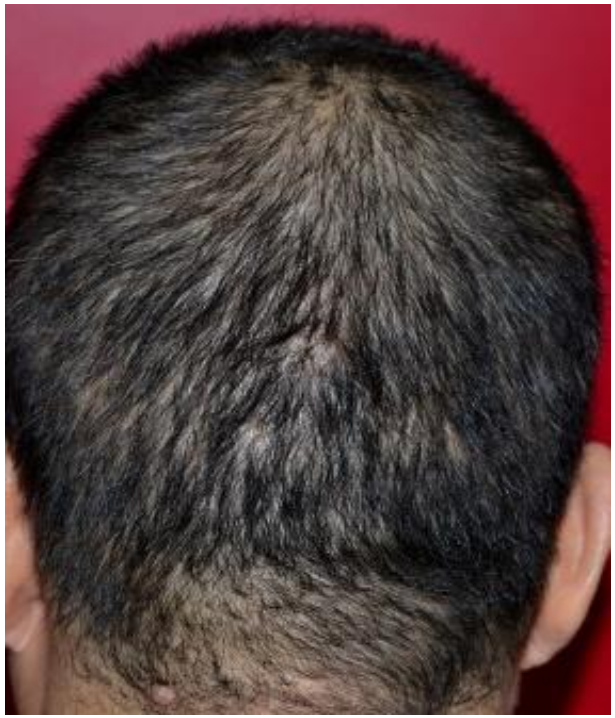
Rx : Psychiatist, Chloripramine





Secondary syphilis

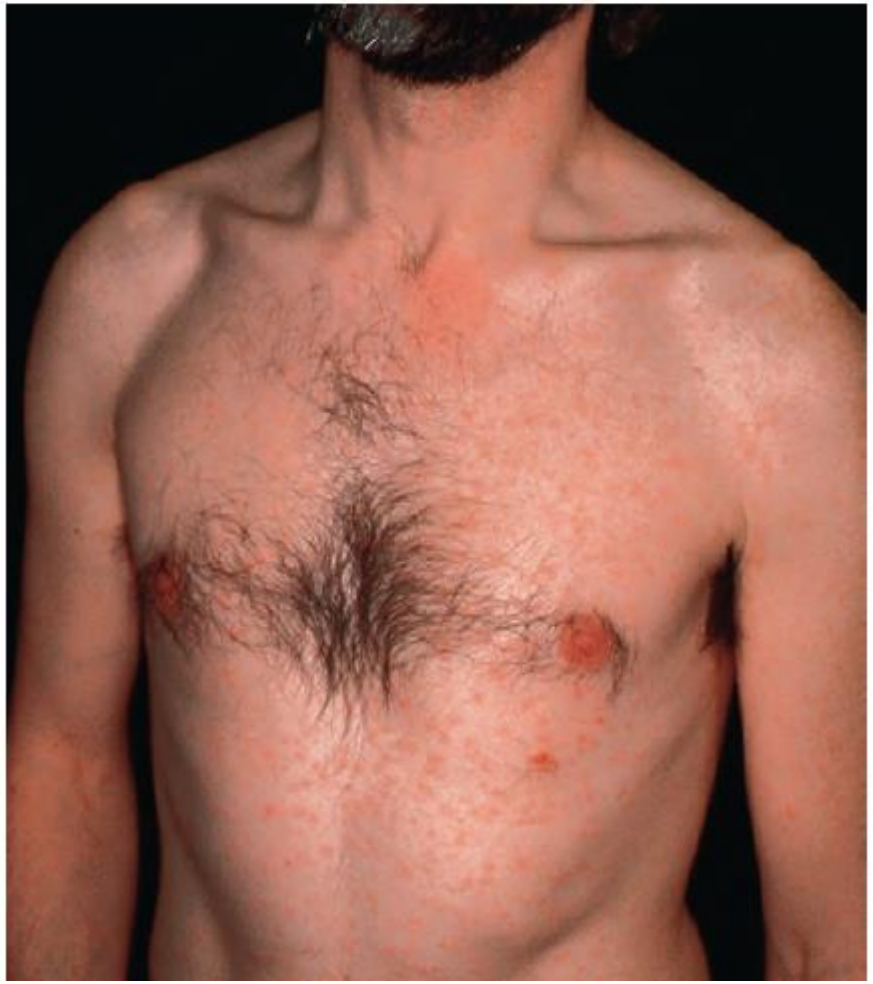
1. Moth-eaten
2. Diffuse syphilitic
3. Mixed type

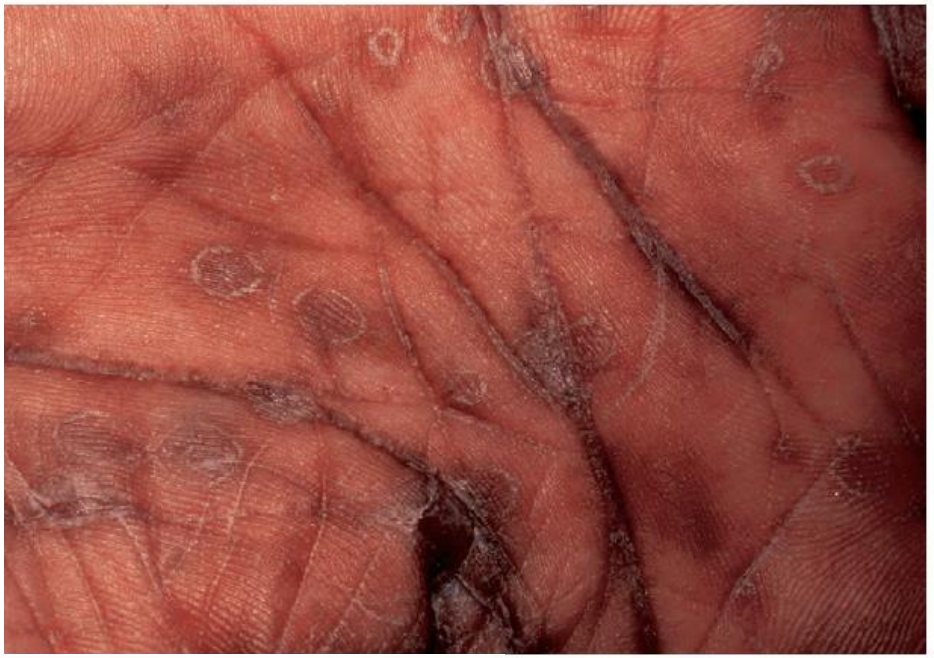


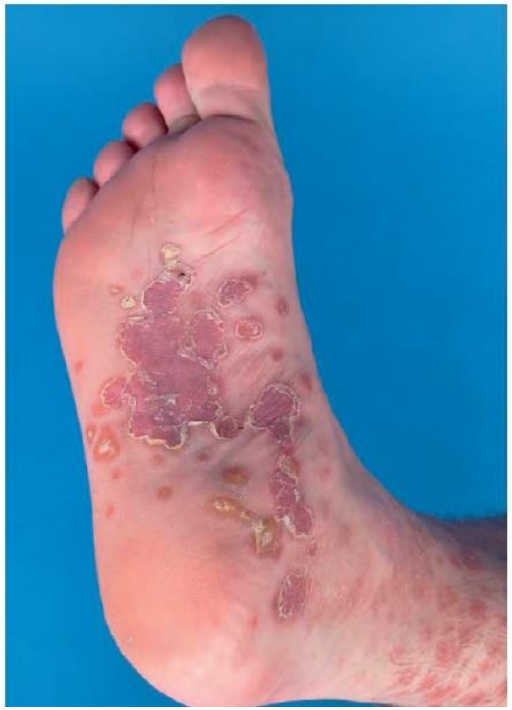
Dx: looking for other signs eg. mucous patch, condyloma lata, rash

Ix : VDRL

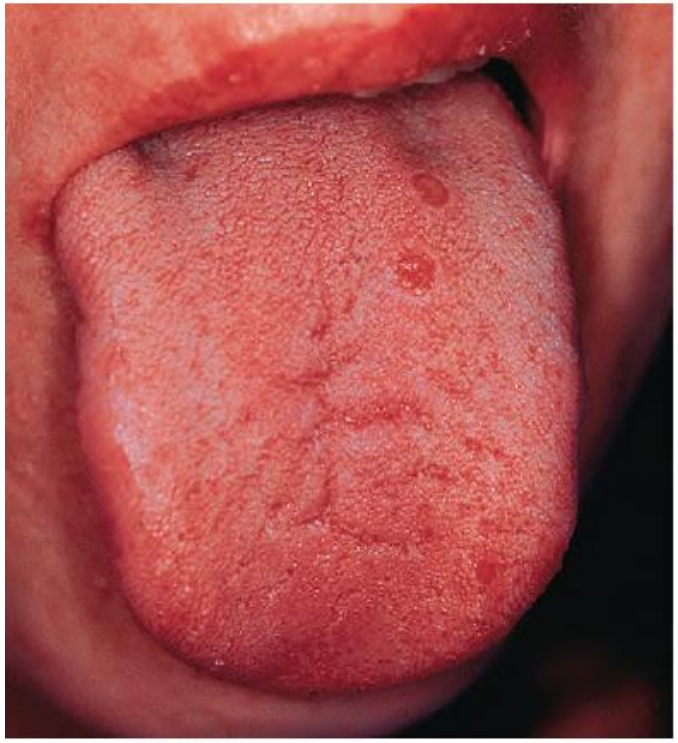
Rx: Benzathine penicillin 2.4 mu IM

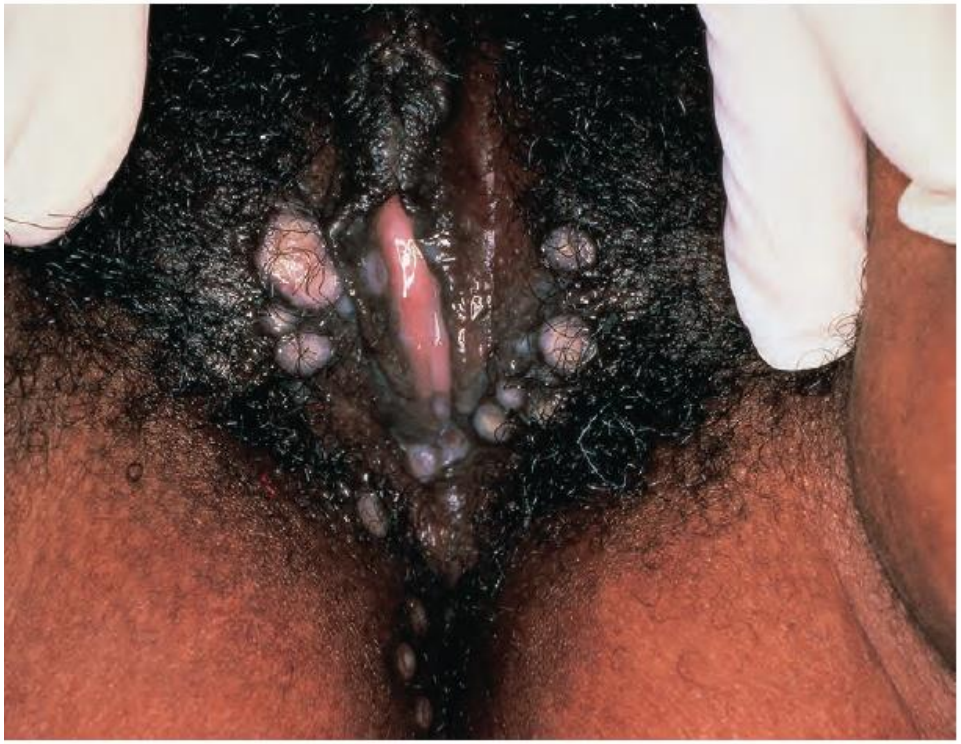




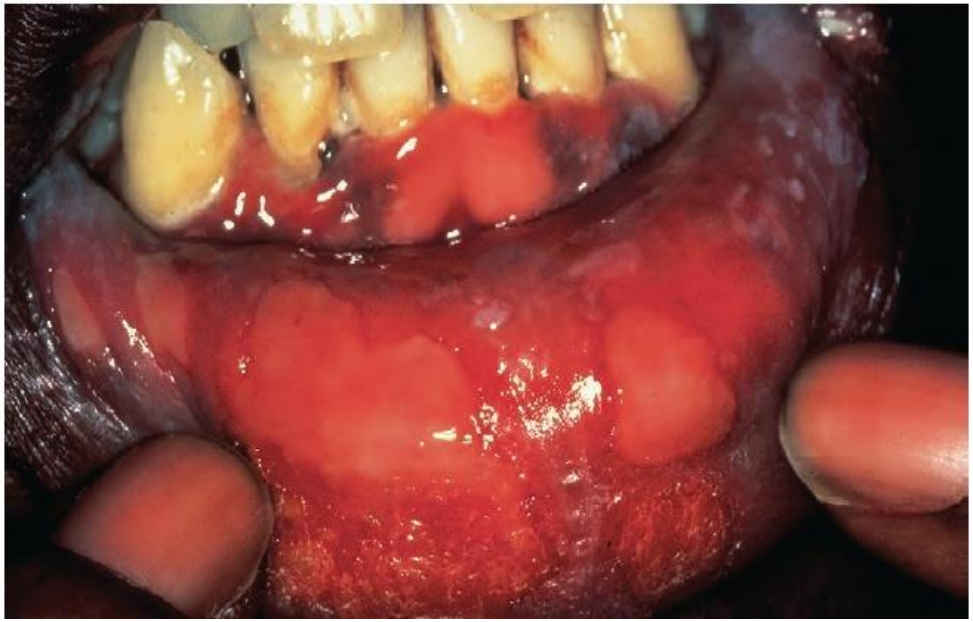


Roseola syphilitica





Condyloma lata

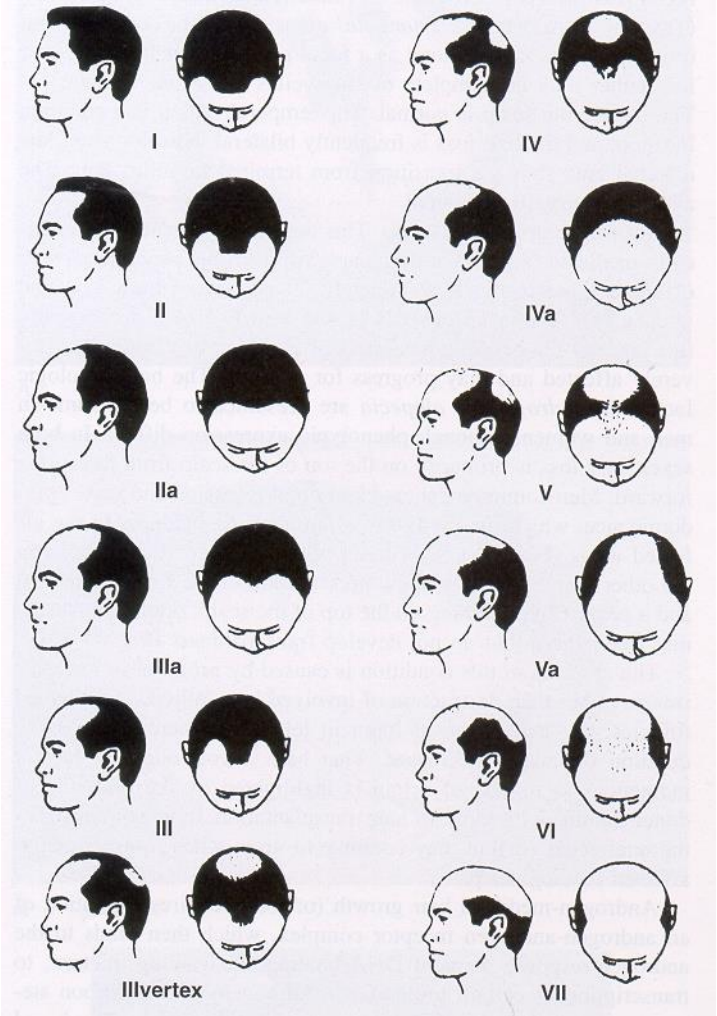


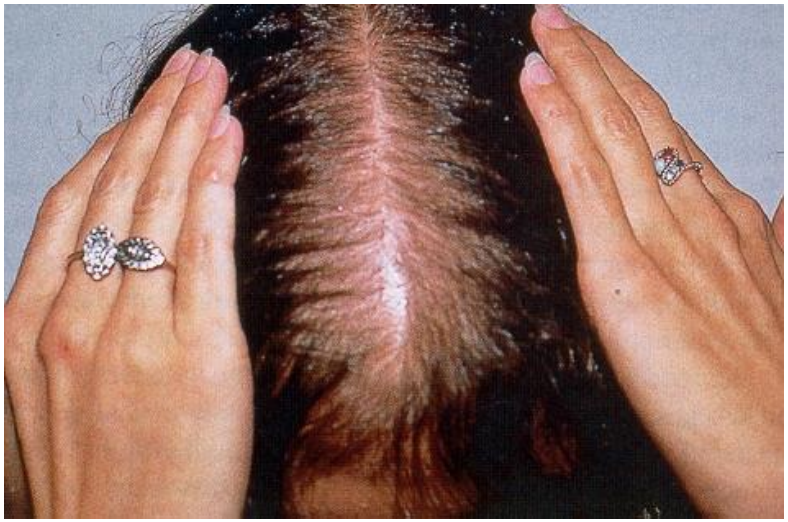
Mucous patches

Androgenetic alopecia

- Male pattern and female pattern hair loss
- **Androgen-dependent: dihydrotestosterone**
  - Conversion of scalp terminal hairs into miniaturized vellus hairs
  - Progressive decline in anagen duration, an increase in telogen duration
- Genetic predisposition: polygenic
- The frequency and severity increase with age

Androgenetic alopecia

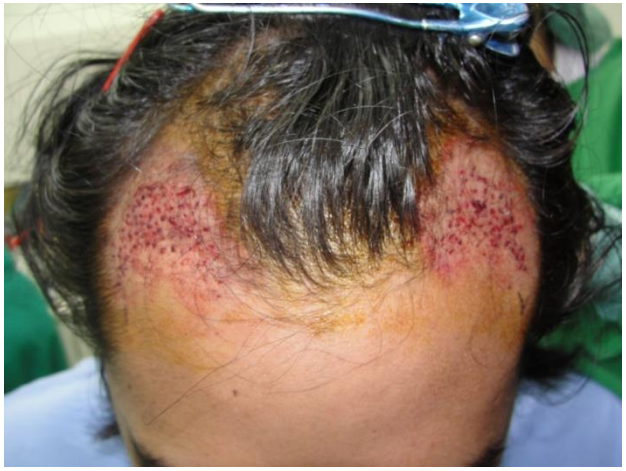




Pathogenesis-AGA

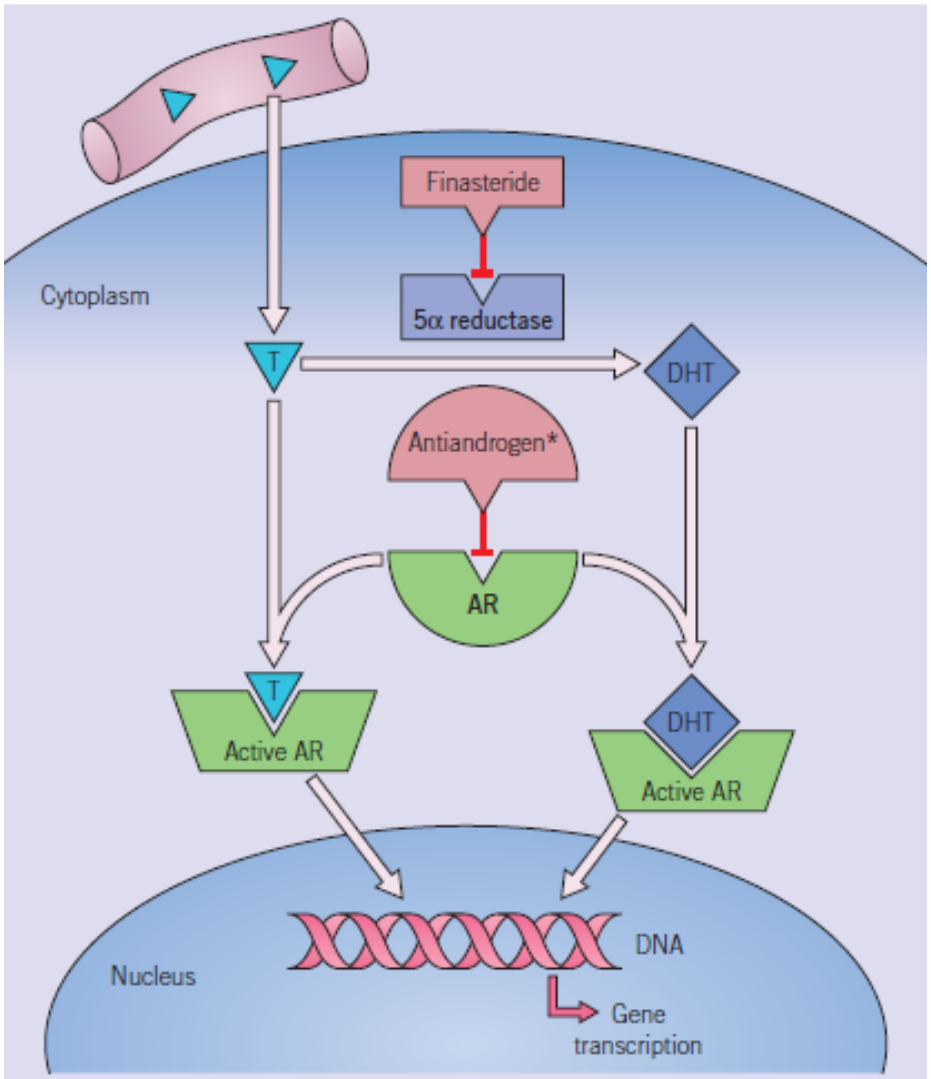
- **MPHL**
  - Increase 5a-reductase activity and DHT levels
  - DHT : miniaturized hair
  - Genetic predisposition
- **FPHL**
  - More complex etiology
  - Androgen-related combined with genetic sensitivity
  - Recommend W/U ferritin and TSH to rule out TE
  - Irregular periods and/or other signs of androgen excess → free and total testosterone, DHEA-S

Treatment



- **MPHL**
  - Minoxidil (2% and 5%) and finasteride (1 mg)
  - Hair transplantation
- **FPHL**
  - 2% and 5% topical minoxidil
  - Oral contraceptives (to suppress ovarian androgen production), spironolactone (antiandrogen) or finasteride therapy
  - Finasteride higher daily doses of 2.5 and 5 mg (can improve FPHL)

MECHANISM OF ACTION FOR ANTIANDROGENS AND FINASTERIDE



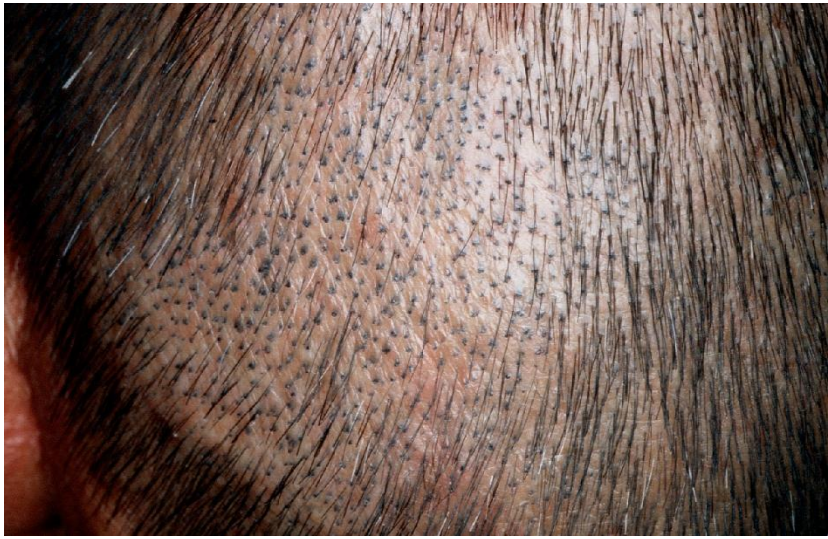
* e.g. spironolactone, cyproterone acetate, drospirenone and flutamide

T=testosterone
DHT=dihydrotestosterone
AR=androgen receptor

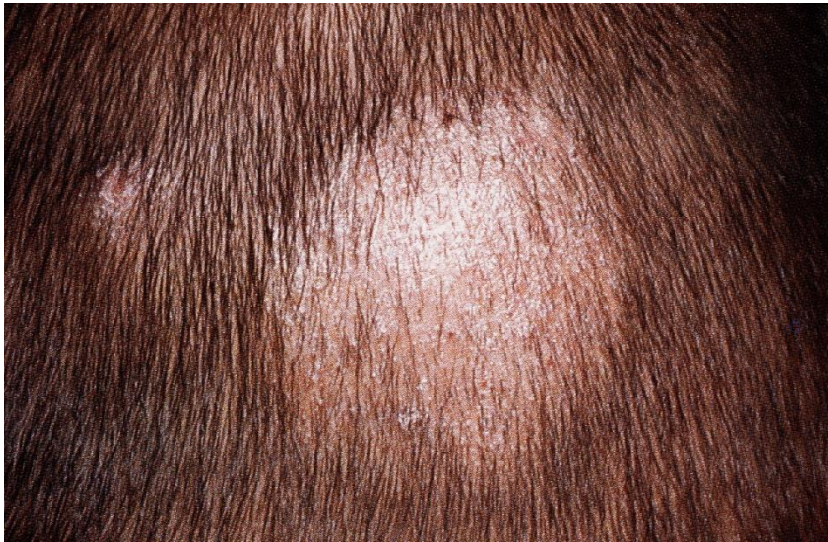
Tinea capitis

- Endothrix

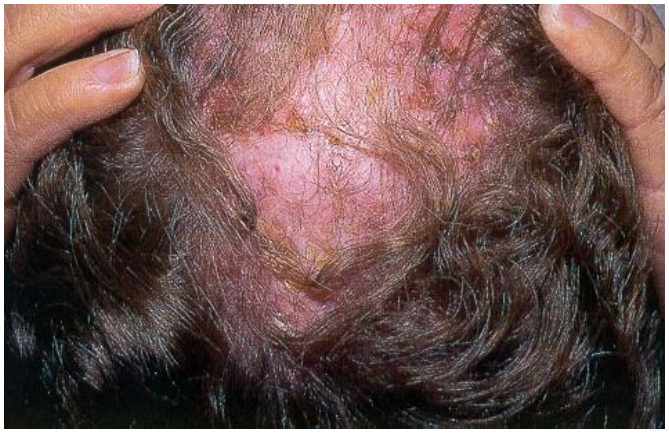
  "Black dot"

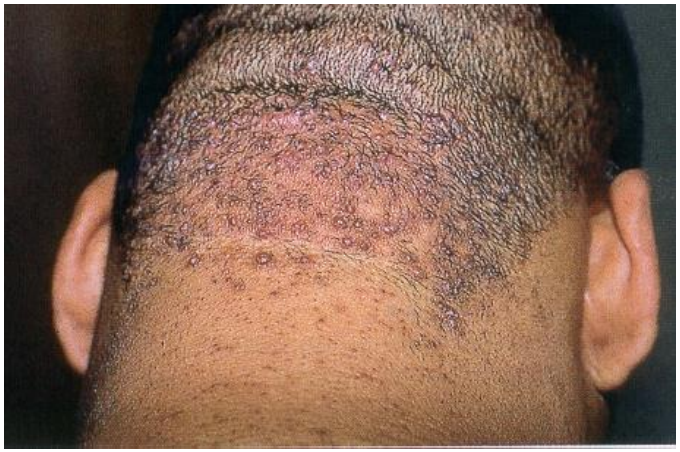


- Ectothrix



Localized scarring alopecia





Cause:

-discoid lupus erythematosus

-folliculitis (suppurative or fungus)

-tumor

-operative scar

-cyst

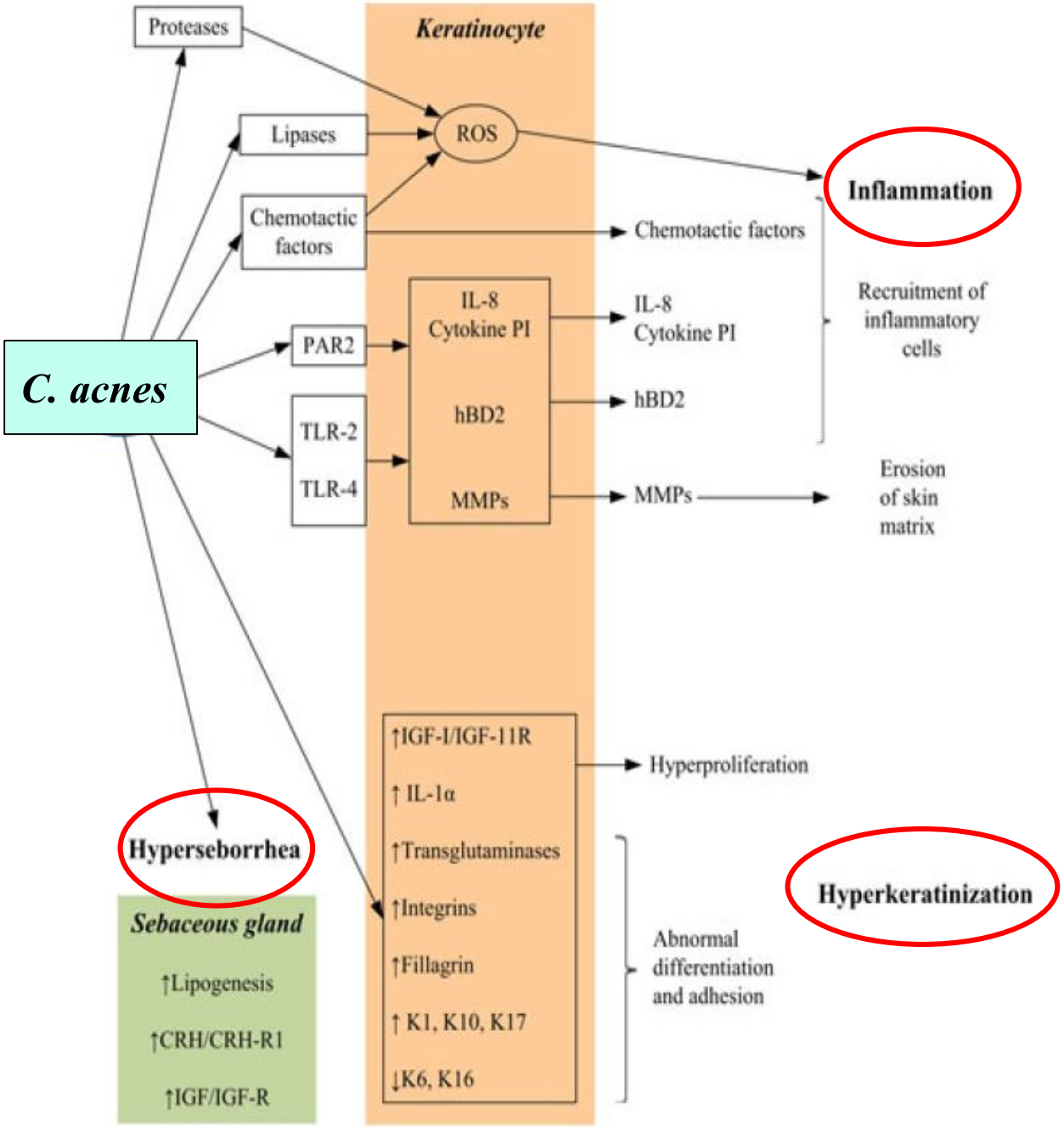
Acne Vulgaris

Acne

- One of the most common dermatologic disorder
- 33% at some time between ages of 15-44 years, primarily adolescents
- Profound effect on the physical, psychological, and social wellbeing of patients
- Impaired self-image, self-esteem
- Increased depression, anxiety, suicidal thoughts and attempts
- Effective treatment can prevent psychological distress and physical scarring

Pathogenesis of acne

1. Sebum production
   - Androgen (end-organ hyperresponse)
   - Severity
2. Hypercornification of follicular epithelium
   - Microcomedones
3. *Cutibacterium acnes*
   - Release chemotactic factor, complement activation
4. Release of inflammatory mediators into the skin
   - -IL-1α up-regulation with linoleic deficiency
   - -Synthesis of TNF-α and IL-1β through TLR-2
   - -Autocrine and paracrine mechanism by activating AP-1


Proteases
Keratinocyte
Lipases
ROS
Inflammation
Chemotactic factors
Chemotactic factors
Recruitment of inflammatory cells
IL-8 Cytokine PI
IL-8 Cytokine PI
PAR2
C. acnes
hBD2
hBD2
TLR-2
TLR-4
MMPs
MMPs
Erosion of skin matrix
↑IGF-I/IGF-11R
Hyperproliferation
↑ IL-1α
↑Transglutaminases
Hyperseborrhea
Hyperkeratinization
↑Integrins
Sebaceous gland
↑Fillagrin
Abnormal differentiation and adhesion
↑Lipogenesis
↑ K1, K10, K17
↑CRH/CRH-R1
↓K6, K16
↑IGF/IGF-R

Type of acne

Non-inflammatory

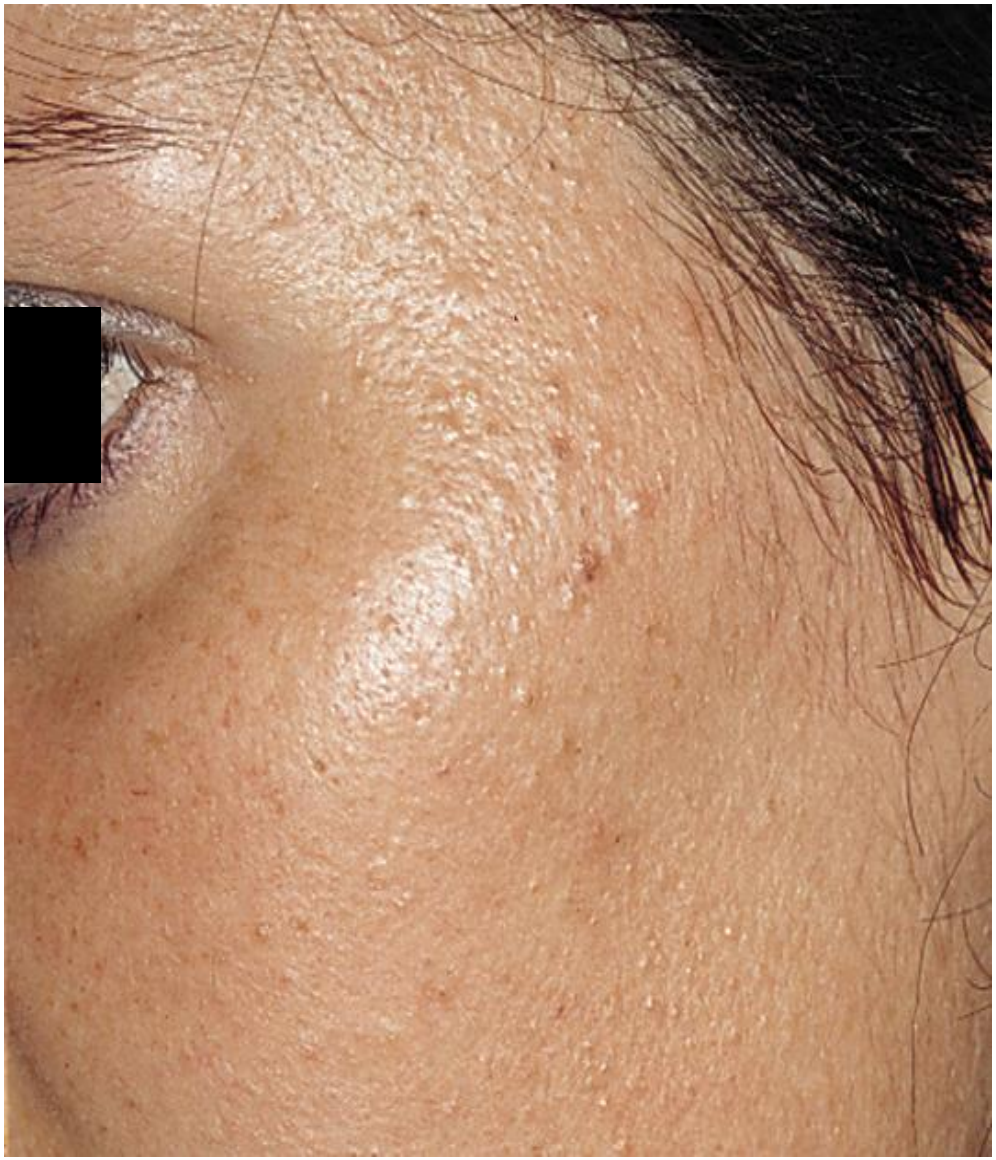
- Microcomedone (acne precursor)
- Open comedone ("blackhead")
- Closed comedone ("whitehead")

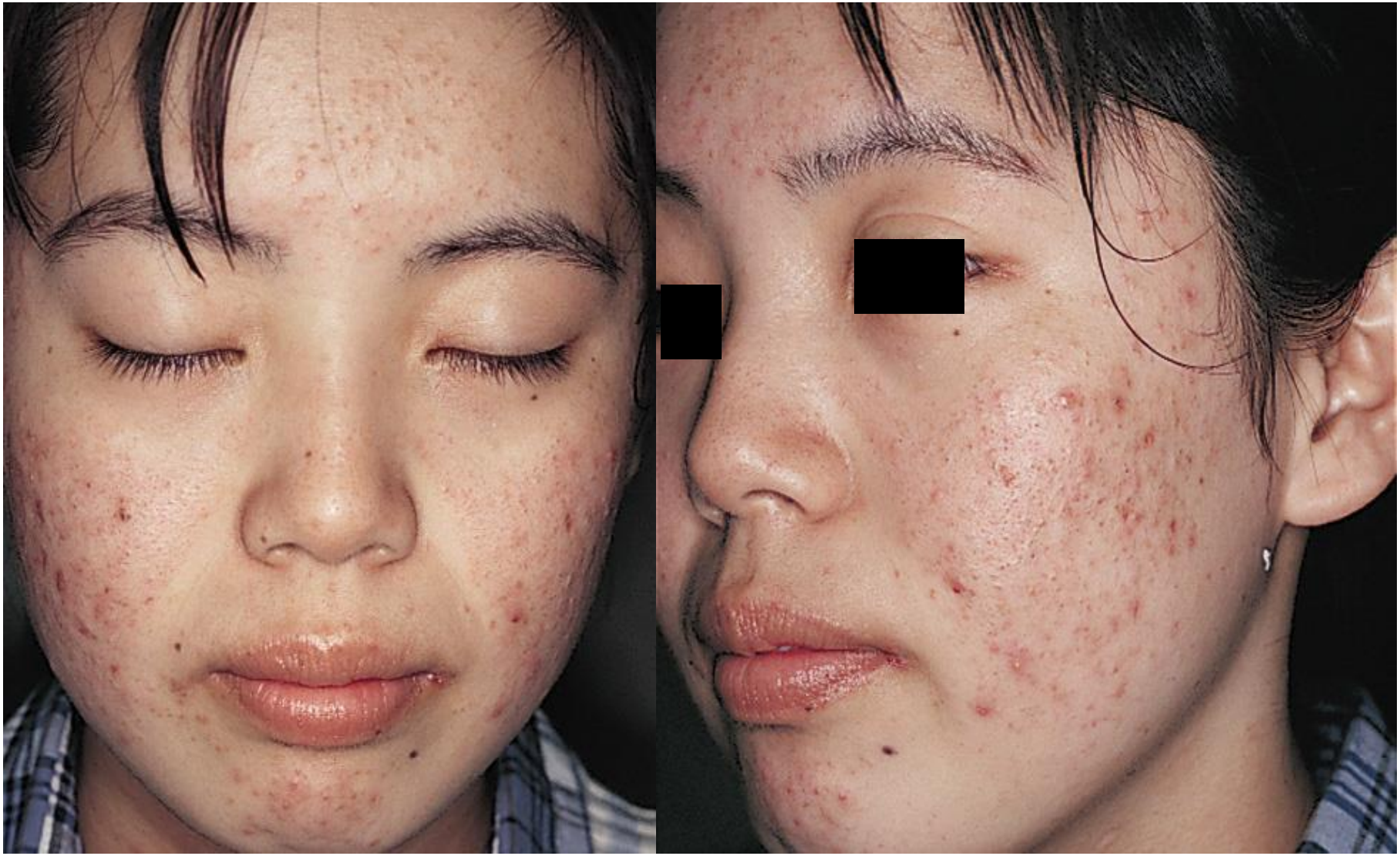
Inflammatory

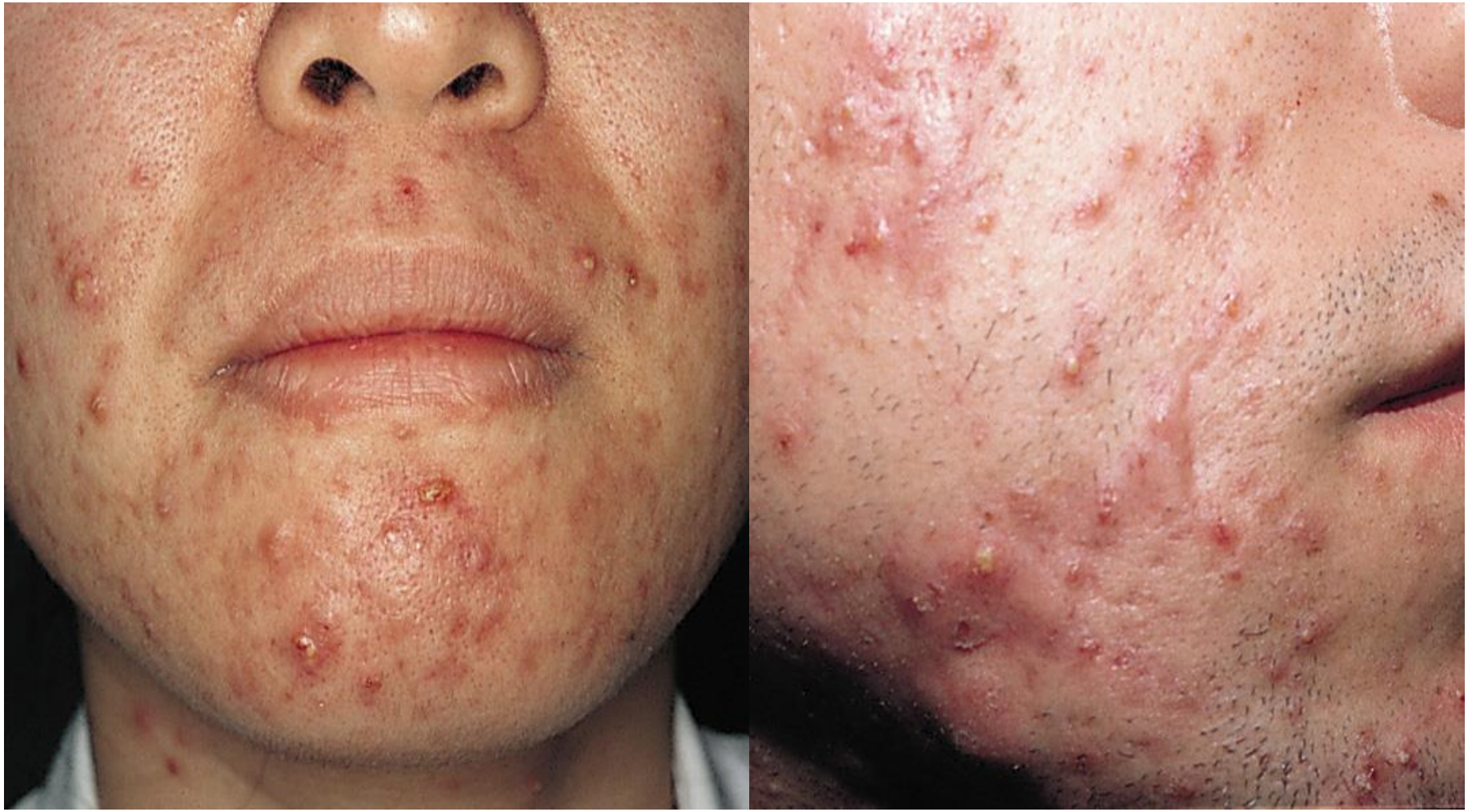
- Papules, Pustules
- Cysts, Nodules

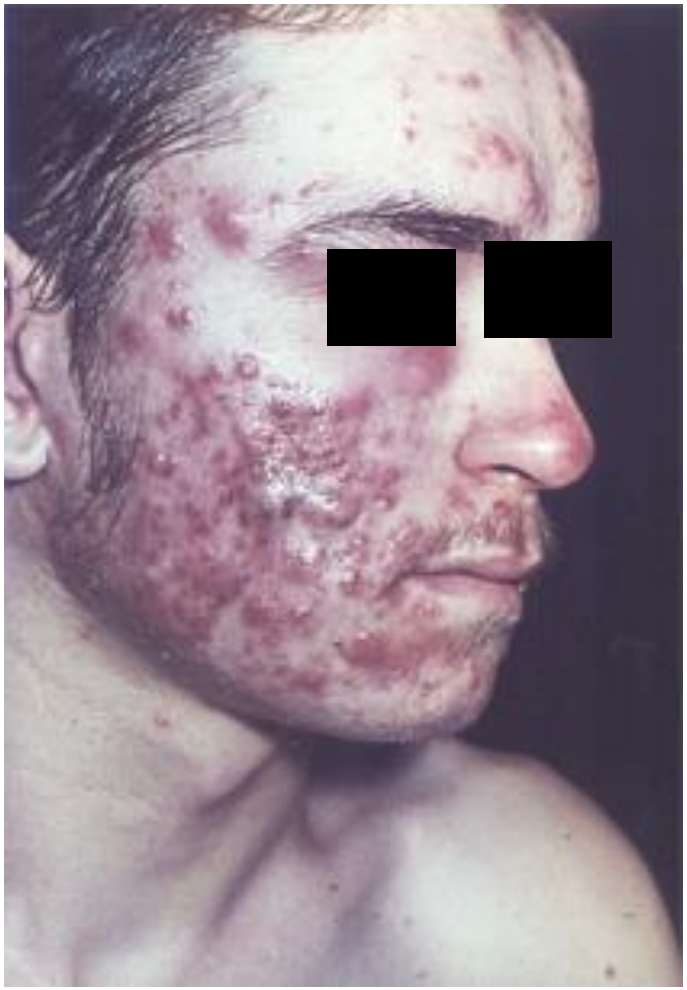
Sequelae

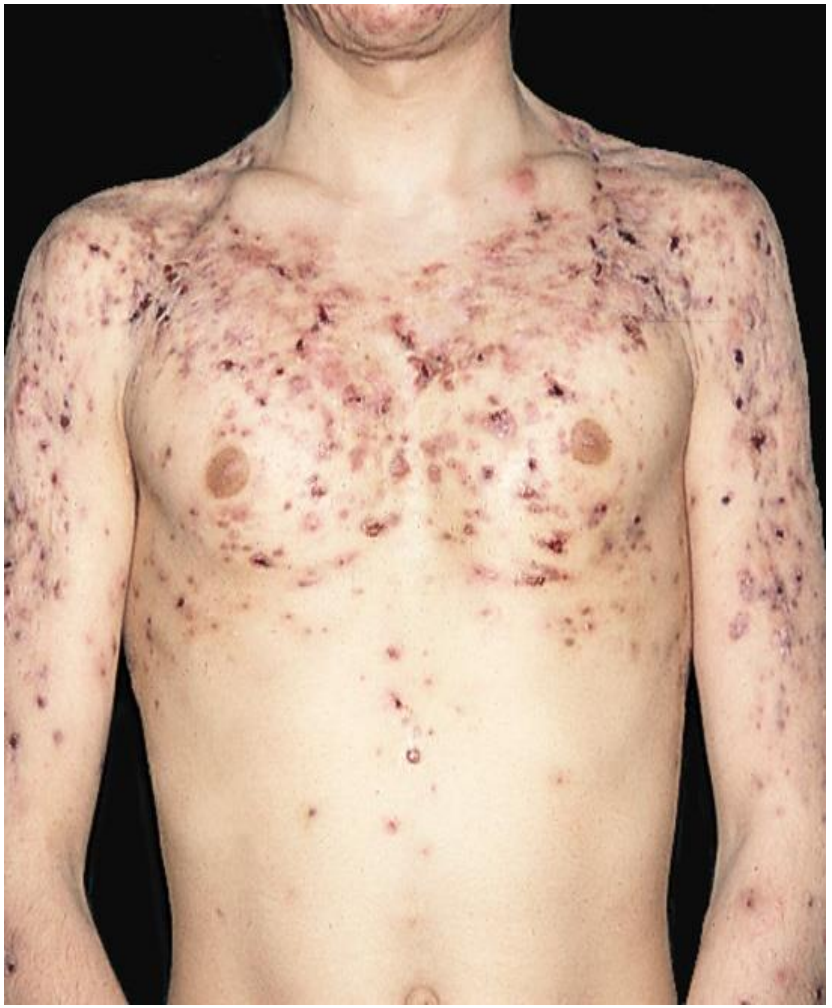
- Dyspigmentation
- Scarring

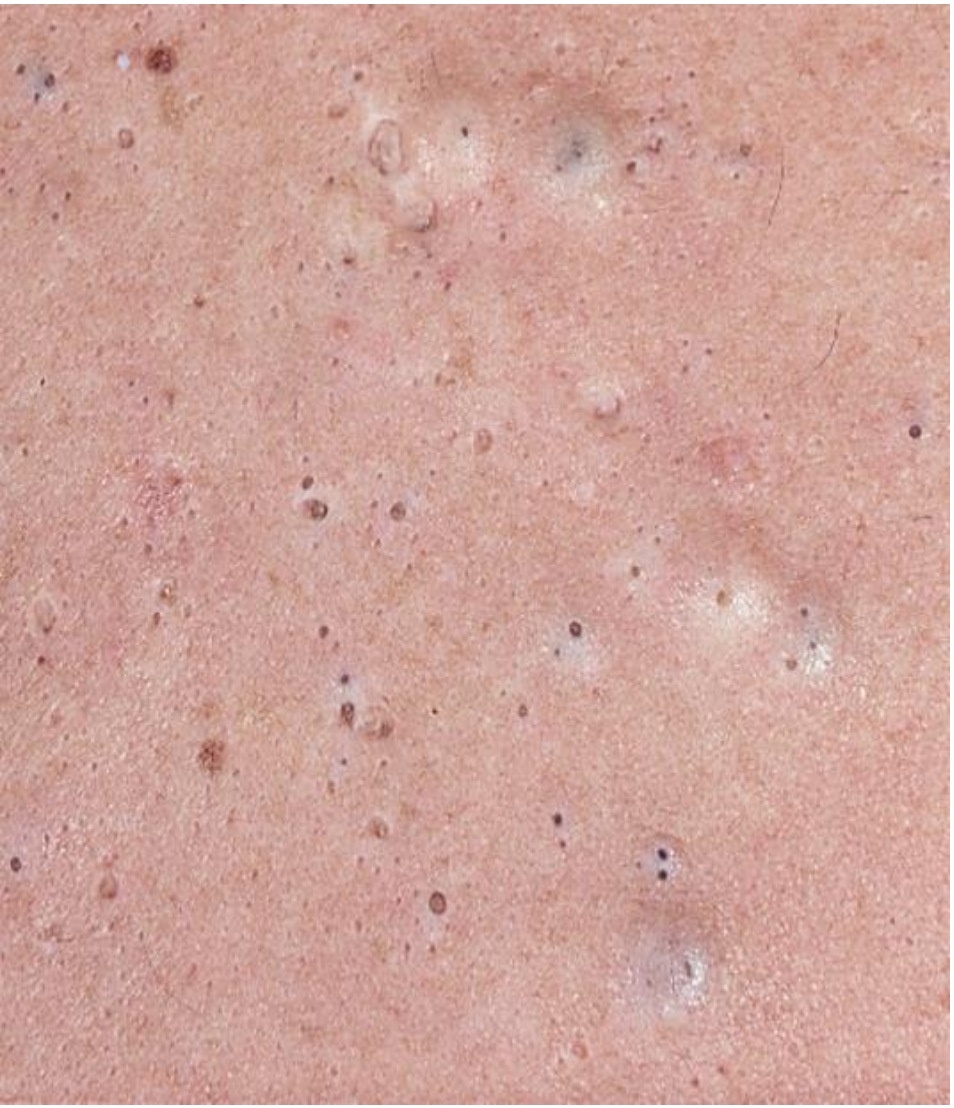


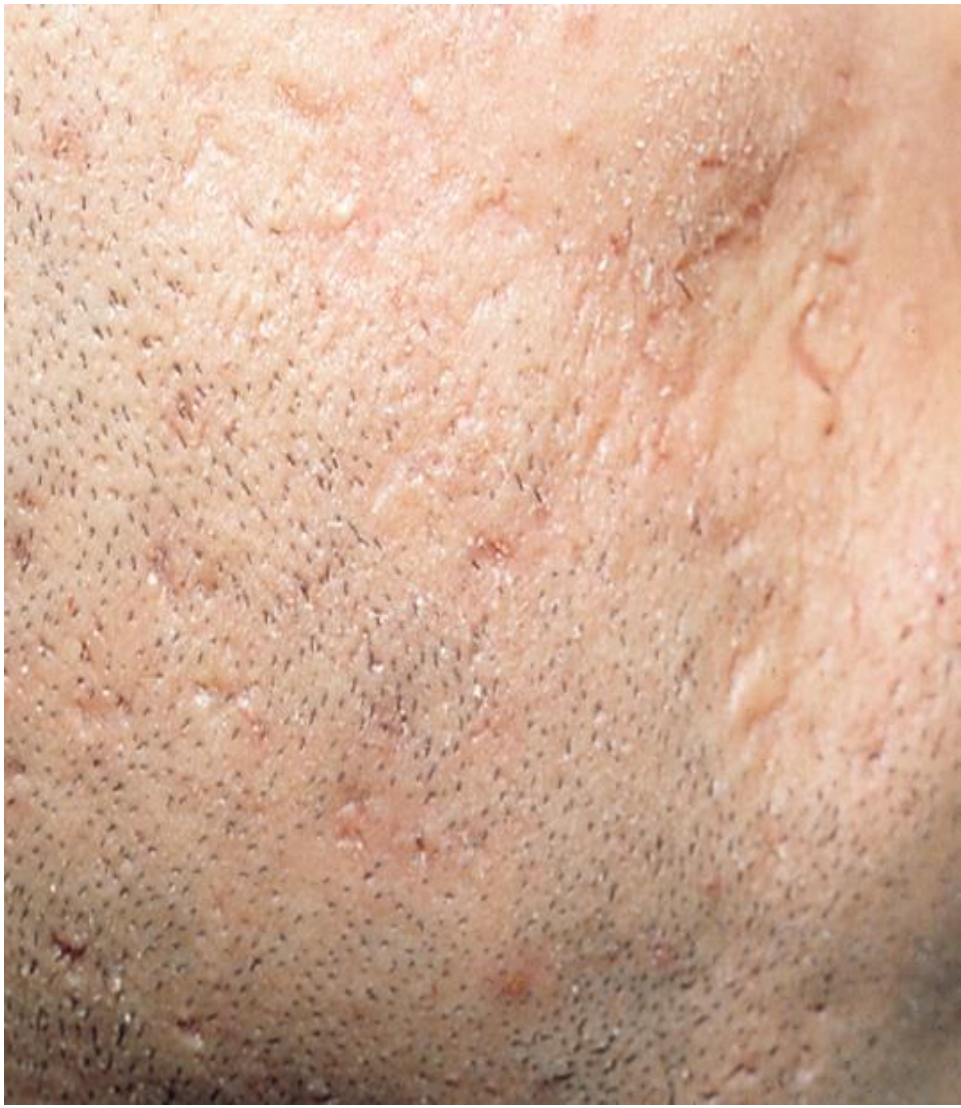


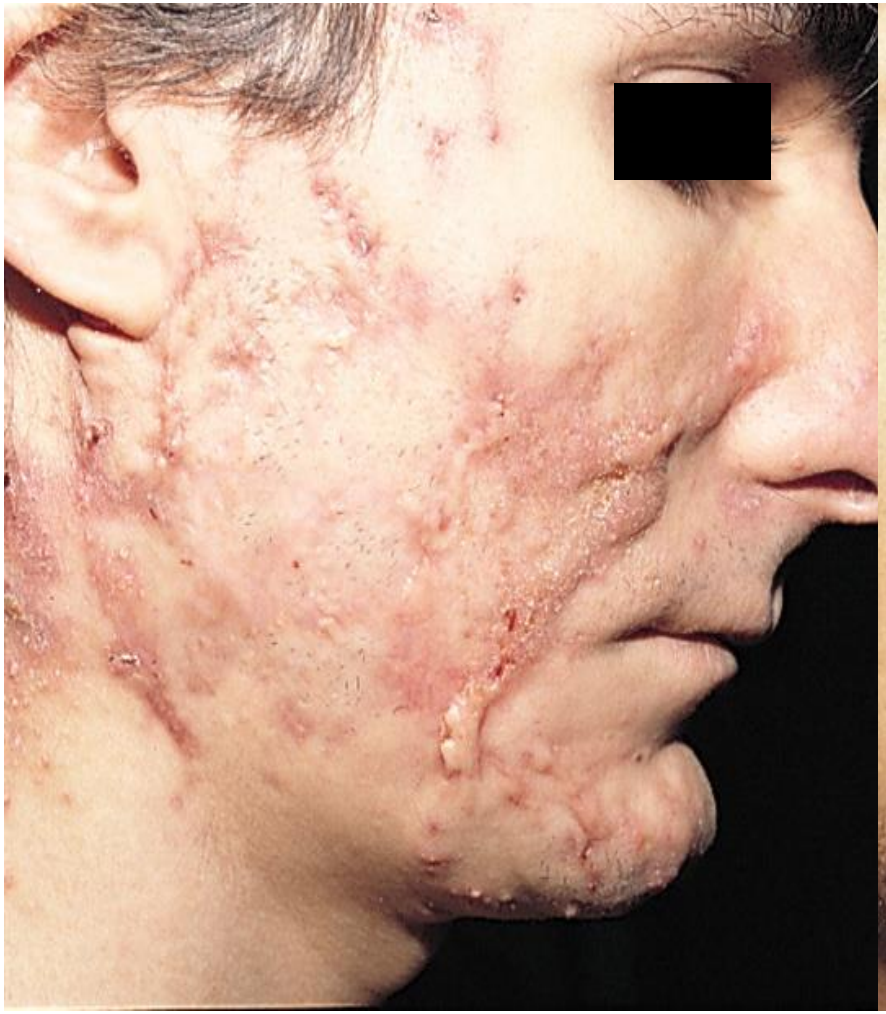


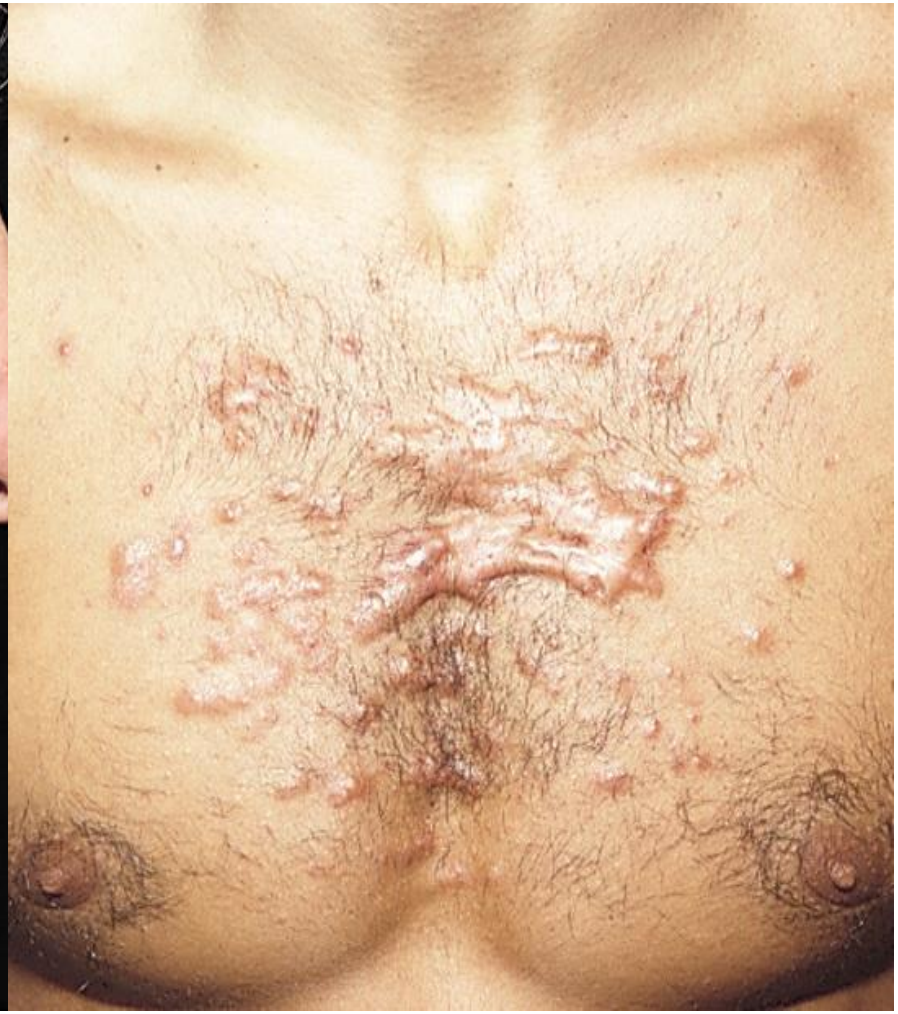












How should acne be managed?

- **Aim:** reduce the presence and impact of symptoms including psychosocial sequelae
- **Importance:** acne duration and inflammation correlate to the degree of scarring
- **Evaluation:** treatment needs to be continued for at least 6-8 weeks before changing or adding other treatments

Acne treatment

Drugs	Mechanism
Benzoyl peroxide	Antimicrobial Weakly comedolytic
Topical retinoids	Comedolytic Anti-inflammatory
Systemic/ topical antibiotics	Antimicrobial Anti-inflammatory
Oral contraceptives	Sebosuppressive
Systemic retinoids	Comedolytic Anti-inflammatory Sebosuppressive Indirectly antimicrobial

Table 1
Algorithm for improving outcomes in acne

	Mild		Moderate		Severe
	Comedonal	Papular/Pustular	Papular/Pustular	Nodular[b]	Nodular/Conglobate
First choice	Topical retinoid	Topical retinoid + topical antimicrobial	Oral antibiotic + topical retinoid ± BPO	Oral antibiotic + topical retinoid ± BPO	Oral isotretinoin[c]
Alternatives[a]	Alt. topical retinoid or Azelaic acid[d] or Salicylic acid	Alt. topical antimicrobial + alt. topical retinoid or Azelaic acid[d]	Alt. oral antibiotic + alt. topical retinoid ± BPO	Oral isotretinoin or Alt. oral antibiotic + alt. topical retinoid ± BPO/ azelaic[d] acid	High-dose oral antibiotic + topical retinoid + BPO
Alternatives for females	See first choice	See first choice	Oral antiandrogen + topical retinoid/azelaic acid[d] ± topical antimicrobial	Oral antiandrogen + topical retinoid ± oral antibiotic ± alt. antimicrobial	High-dose oral antiandrogen + topical retinoid ± alt. topical antimicrobial
Maintenance therapy	Topical retinoid	Topical retinoid ± BPO	—	—	—

Abbreviations: Alt., alternative; BPO, benzoyl peroxide.

[a] Consider physical removal of comedones.

[b] With small nodules (>0.5–1 cm).

[c] Second course in case of relapse.

[d] There was not consensus on this alternative recommendation; however, in some countries azelaic acid prescribing is appropriate practice.

Adapted from Nast A, Dreno B, Bettoli V, et al. European evidence-based (S3) guidelines for the treatment of acne. J Eur Acad Dermatol Venereol 2010;26(Suppl 1):8; with permission.