Dermatology 101 Review

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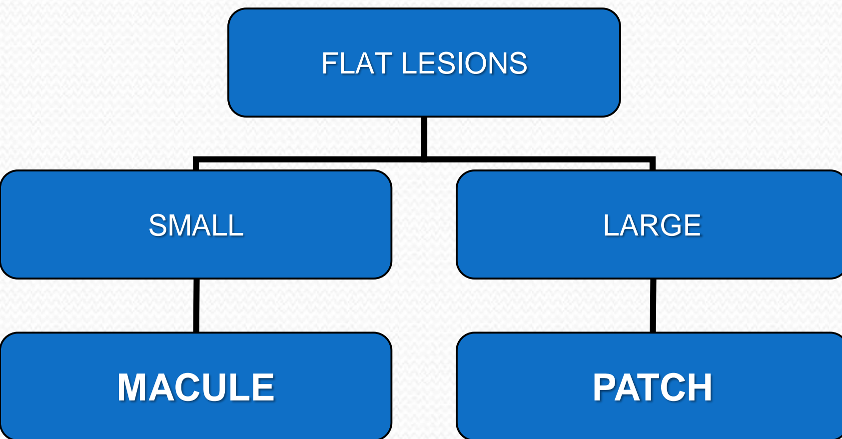
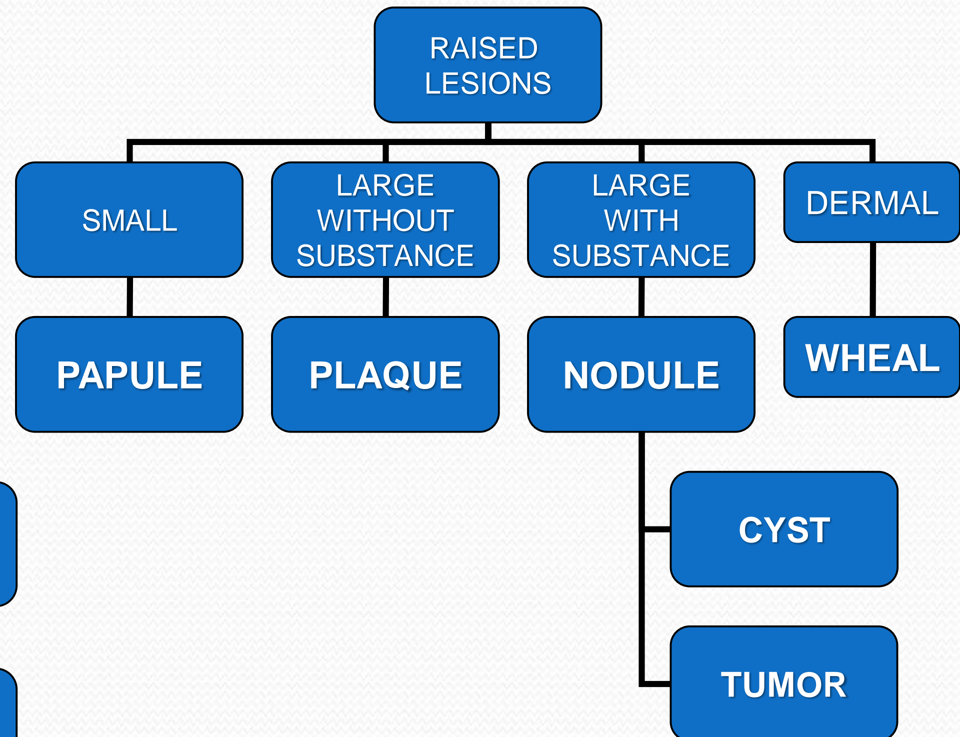
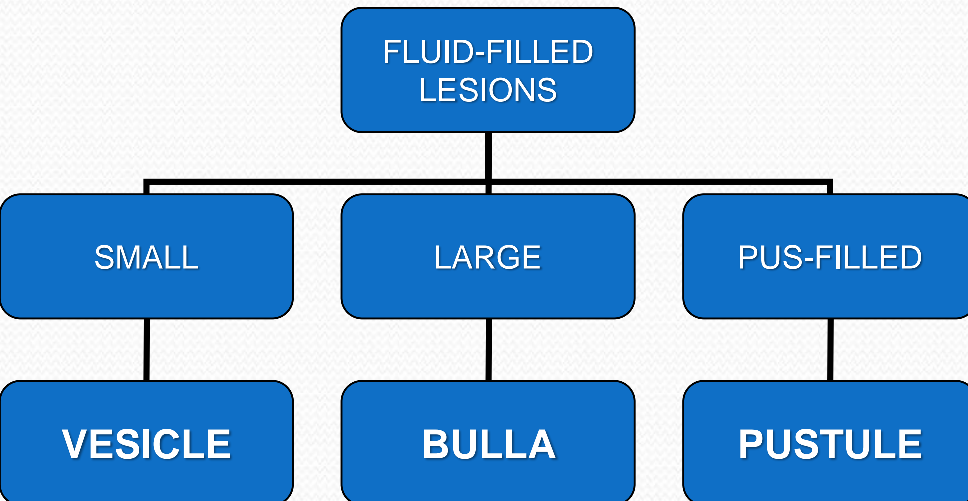
Review of Primary Lesions

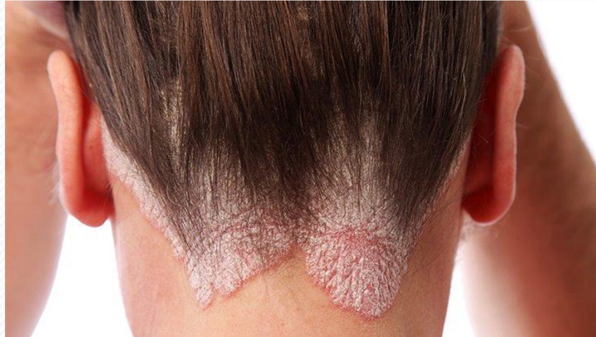


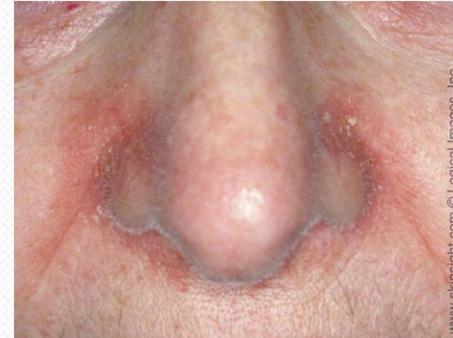




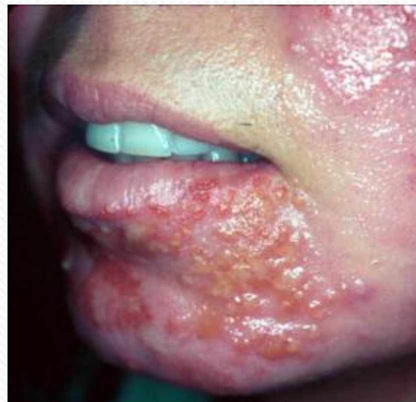
Secondary Characteristics

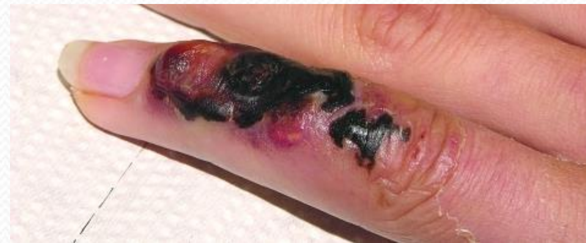
- Scale



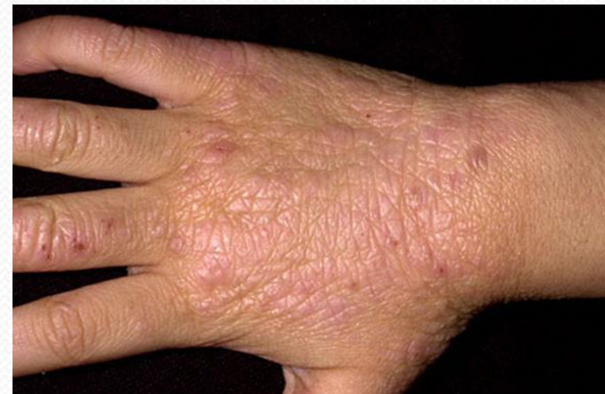


- Crust



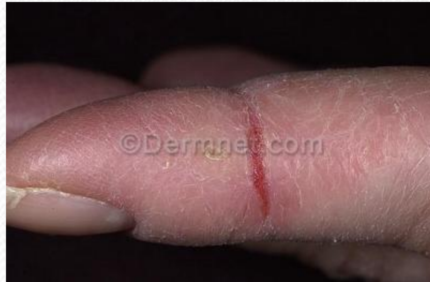


- Lichenified

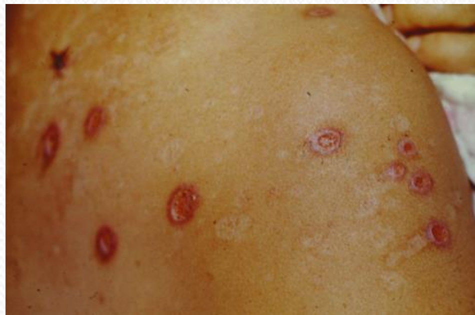


Secondary Characteristics

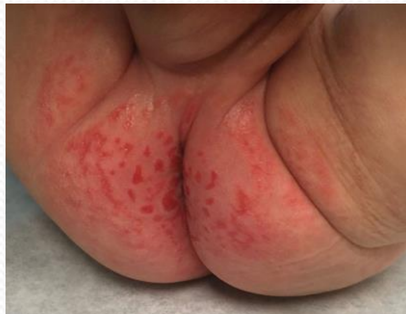
- Fissured

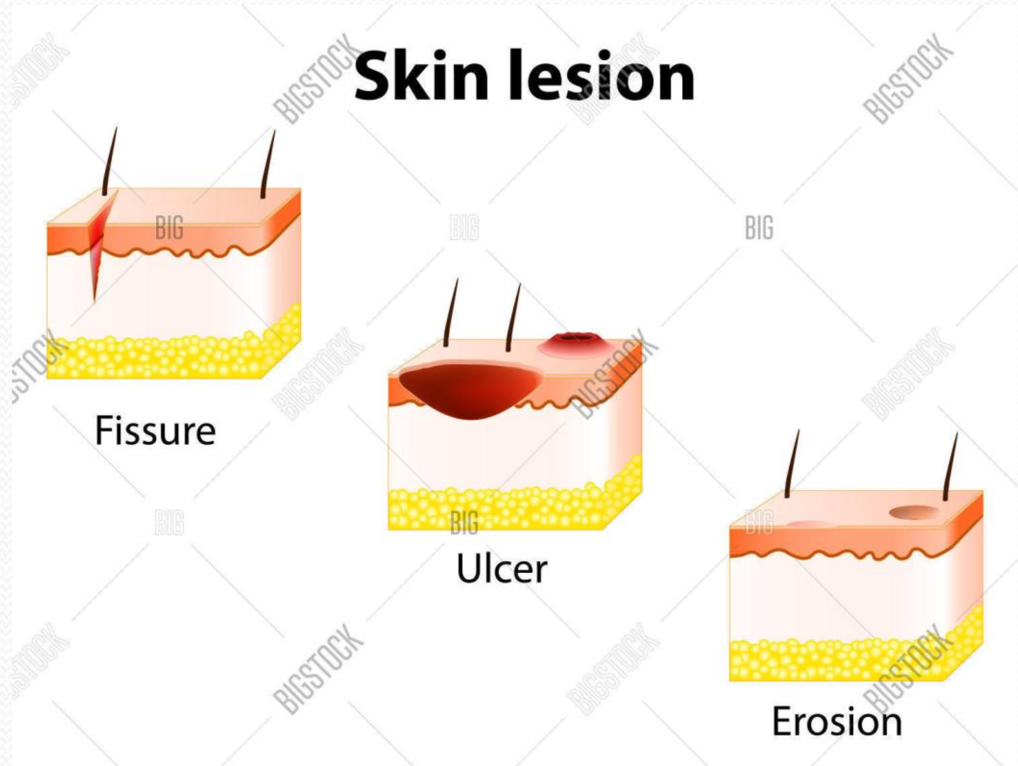


- Ulcerated



- Eroded





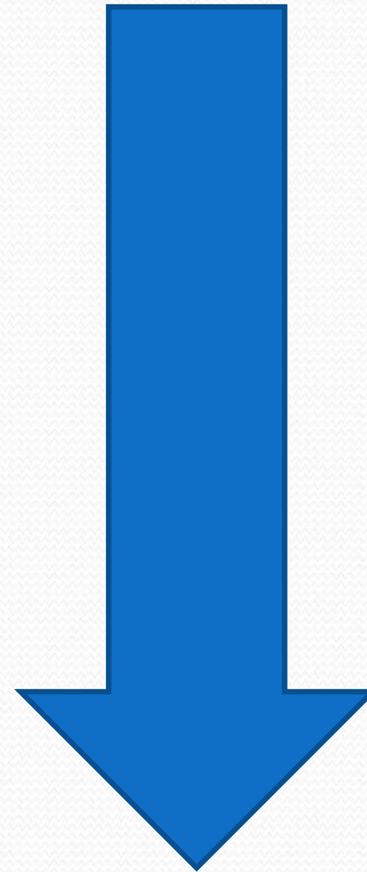
Your description

- Location/Distribution
- Size/Configuration
- Border (Well-marginated/Poorly marginated)
- Color
- Morphological term
- Secondary Characteristics

- Example
  - On her right flank, there is a 1.5 cm well-marginated erythematous plaque with thick adherent silvery scale.

Steroid potencies

- MILD
  - **Hydrocortisone 0.5-2.5%**
- MODERATE
- (2-25 times as potent as hydrocortisone)
  - **Triamcinolone acetonide (Kenalog-inj and generic-top)**
- **POTENT**
- (over 100 times more potent than hydrocortisone)
  - **Fluocinonide (Lidex)**
- **VERY POTENT**
- (up to 600 times as potent as hydrocortisone)
  - **Clobetasol propionate (Temovate)**



Low
To
High

Vehicles

- The vehicle is also an important factor in the strength of your topical steroid

- OINTMENT > CREAM > LOTION

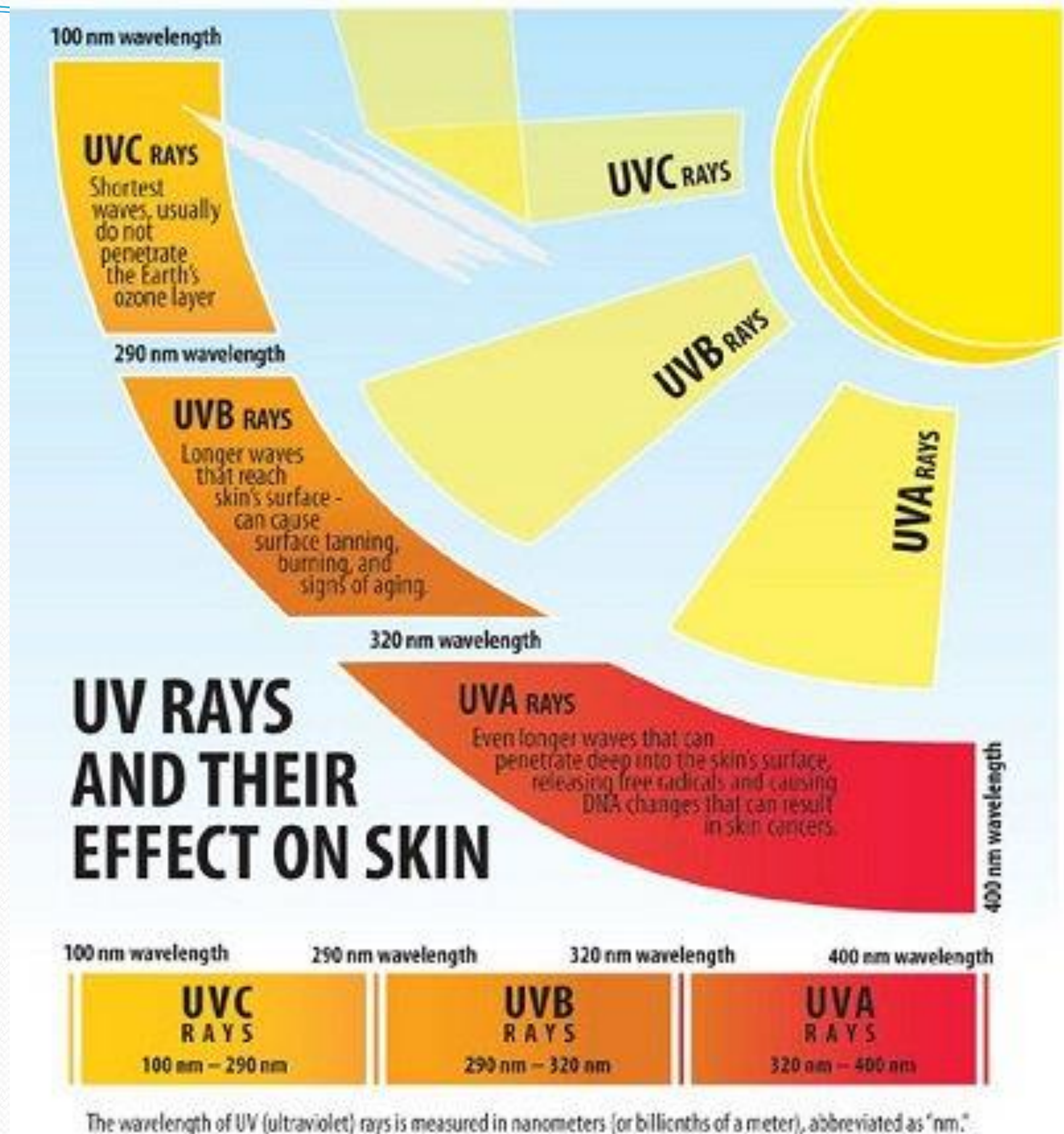
- *Any of the above under occlusion (ex. wet dressing) will make them stronger as well.

SAFE SUN?

- Only ***10%*** of the total UV rays that reach the earth surface are UVB- (vitamin D producing)

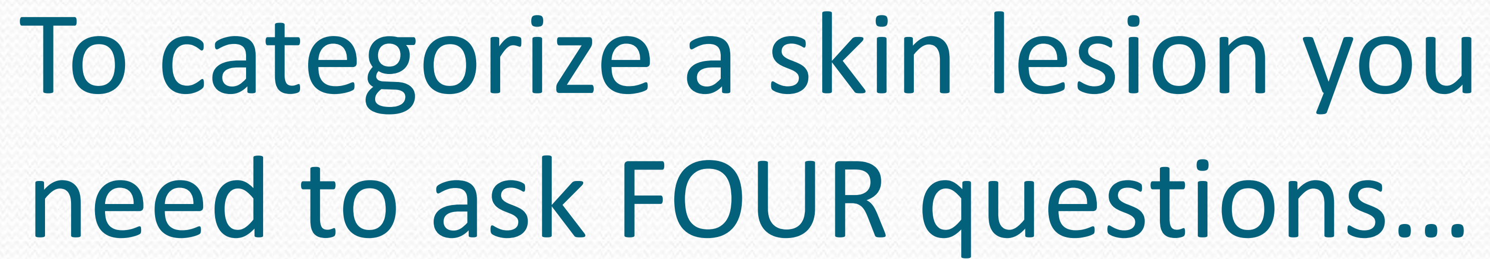
DO NOT PRESCRIBE SUNLIGHT FOR VITAMIN D!!

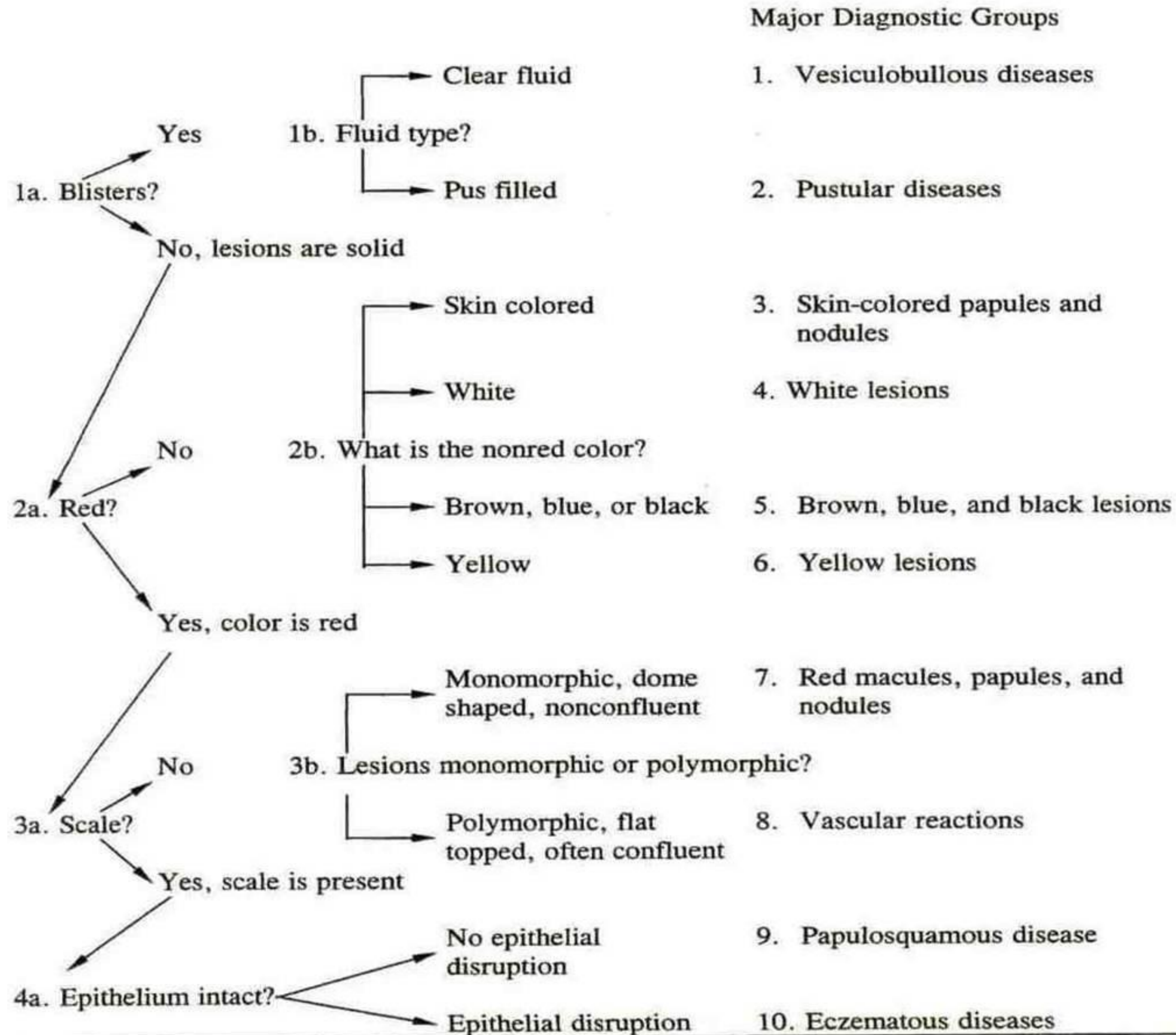
- Avobenzone + Octocrylene
- Zinc Oxide 6%
- Titanium Dioxide 6%
- Sun Protection Clothing!



Dermatology 102

Using the Algorithm

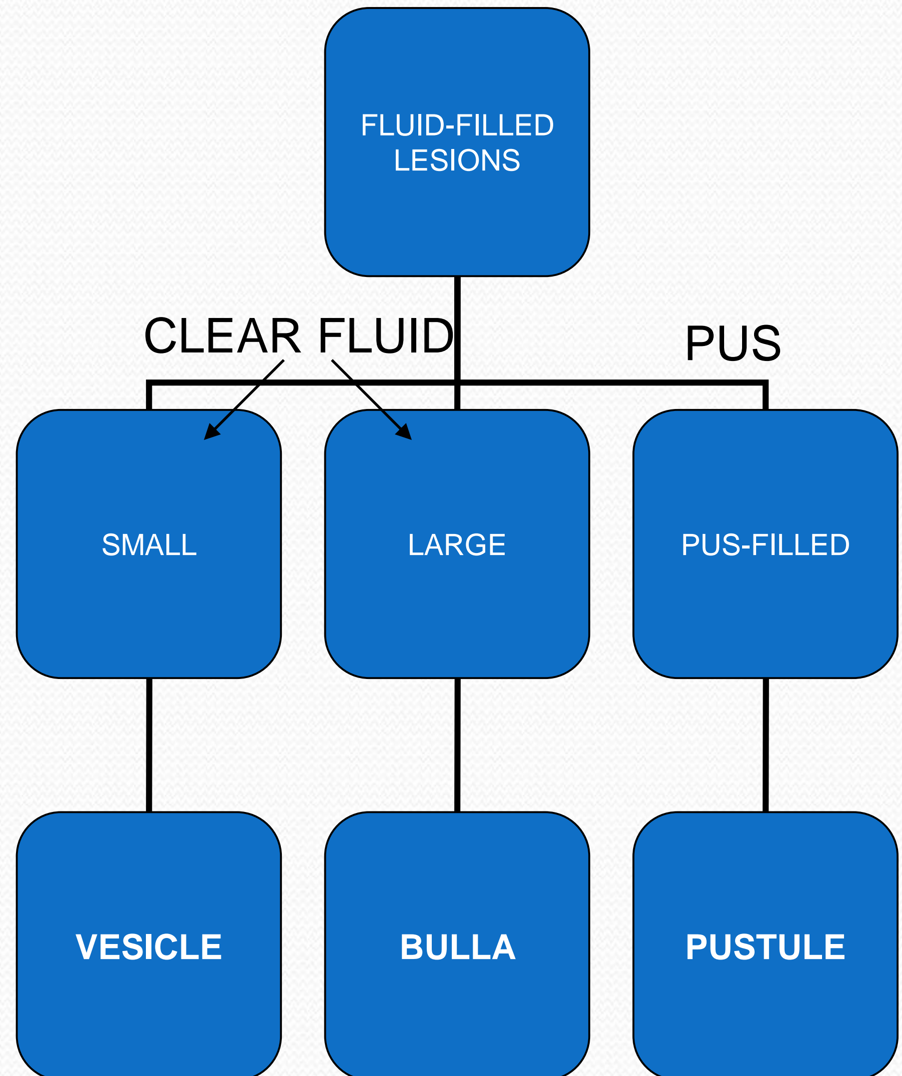

To categorize a skin lesion you
need to ask FOUR questions…


LYNCH ALGORITHM
Major Diagnostic Groups
Clear fluid
1. Vesiculobullous diseases
Yes
1b. Fluid type?
1a. Blisters?
Pus filled
2. Pustular diseases
No, lesions are solid
Skin colored
3. Skin-colored papules and nodules
White
4. White lesions
No
2b. What is the nonred color?
2a. Red?
Brown, blue, or black
5. Brown, blue, and black lesions
Yellow
6. Yellow lesions
Yes, color is red
Monomorphic, dome shaped, nonconfluent
7. Red macules, papules, and nodules
No
3b. Lesions monomorphic or polymorphic?
3a. Scale?
Polymorphic, flat topped, often confluent
8. Vascular reactions
Yes, scale is present
No epithelial disruption
9. Papulosquamous disease
4a. Epithelium intact?
Epithelial disruption
10. Eczematous diseases

Question #1:

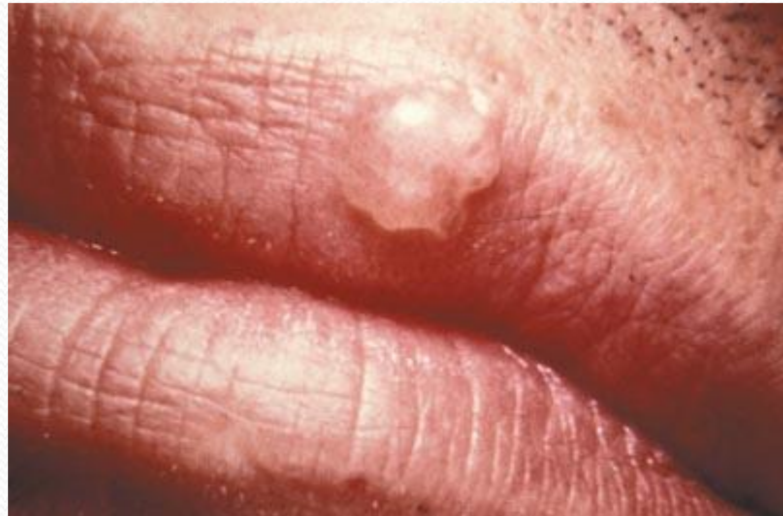
- **ARE THERE BLISTERS?**

- If YES…
- What type of fluid is within the blister?
  - Clear fluid?
  - Pus?



I. VESICULOBULLOUS DISEASES

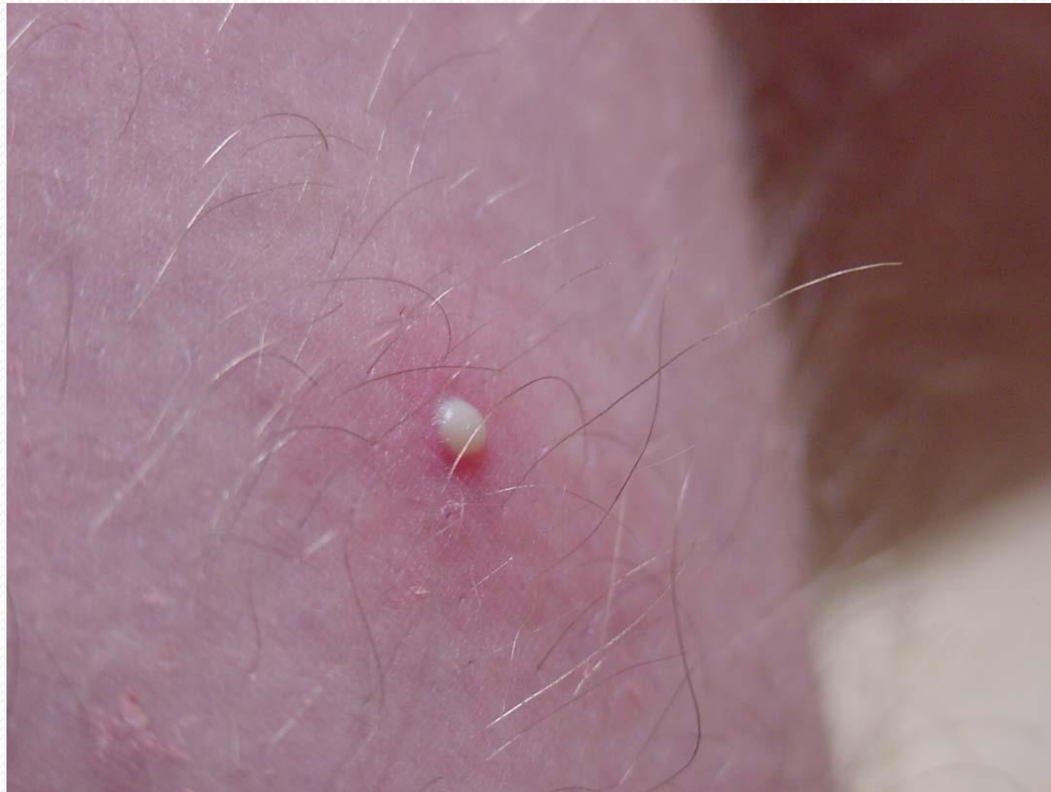
Blisters with clear fluid

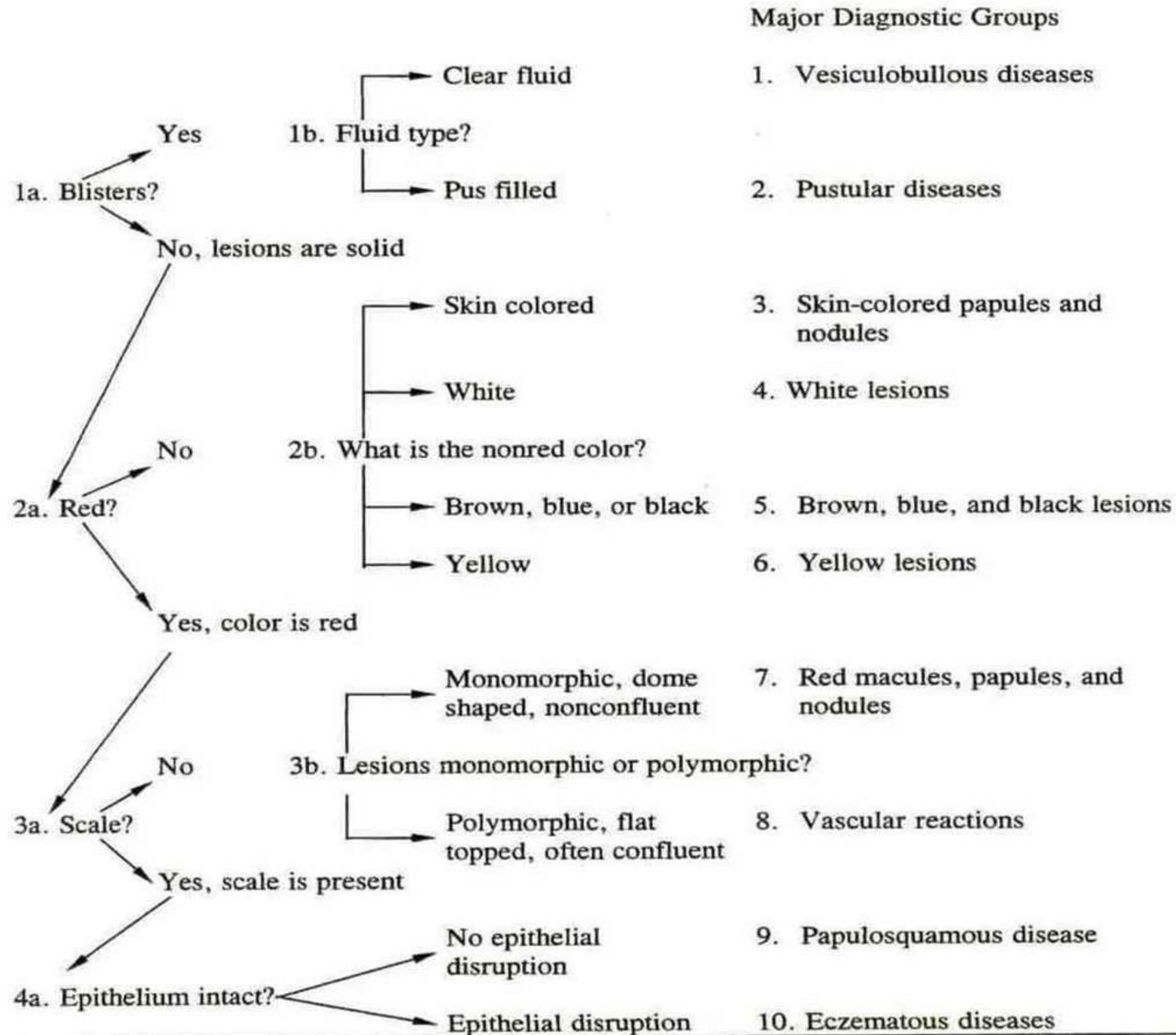


Small = Vesicle
Large = Bulla

II. PUSTULAR DISEASES

II. Blisters with PUS

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NO, the lesions are solid.

- Question #2a:

ARE THE LESIONS RED?

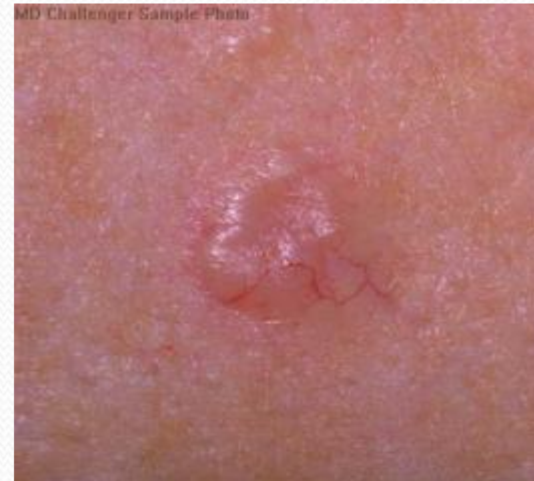
- If YES, continue with the algorithm
- If NO…

- Question #2b:
- WHAT IS THE COLOR OF THE LESIONS?

THE LESIONS ARE…

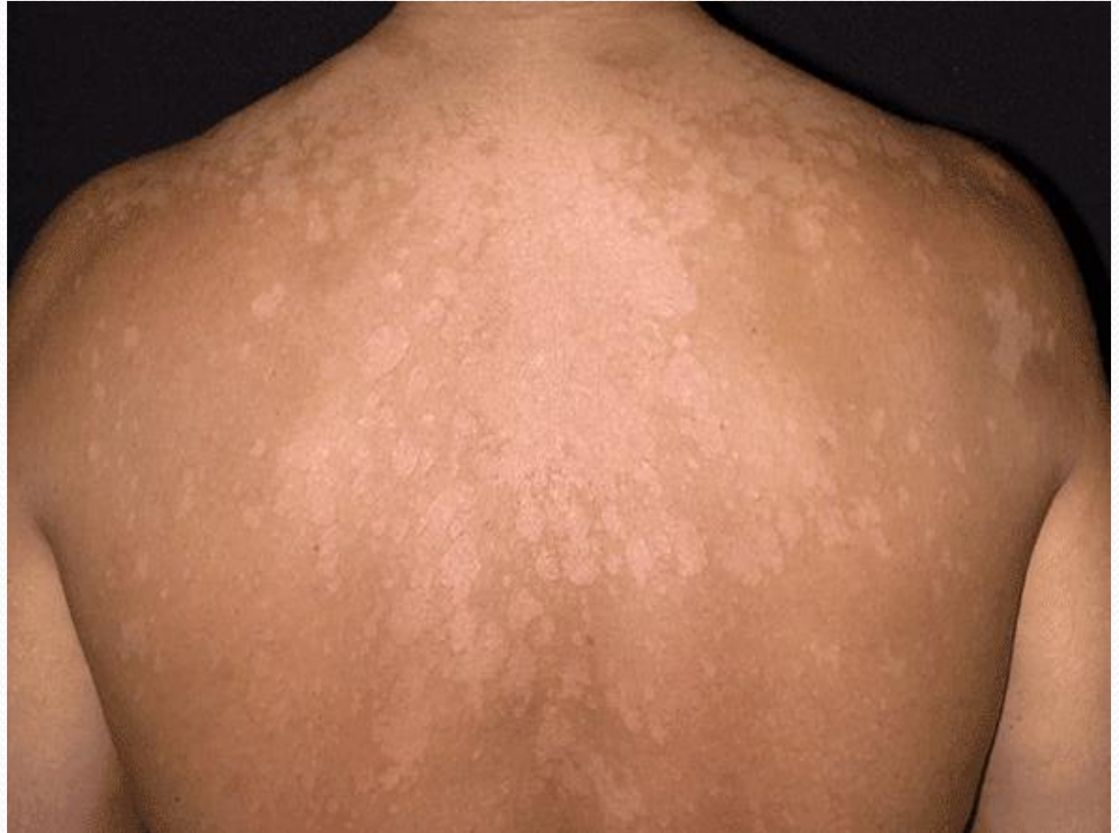
SKIN COLORED

III. SKIN COLORED PAPULES AND NODULES



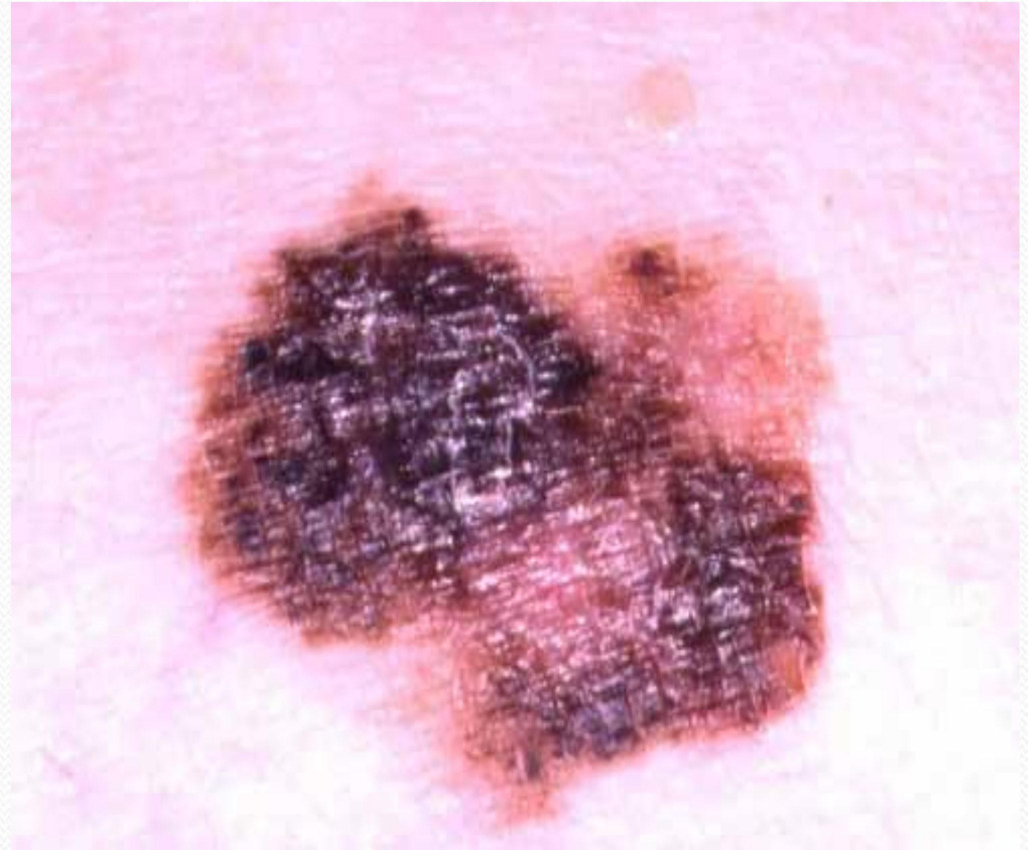
WHITE

IV. **WHITE LESIONS**



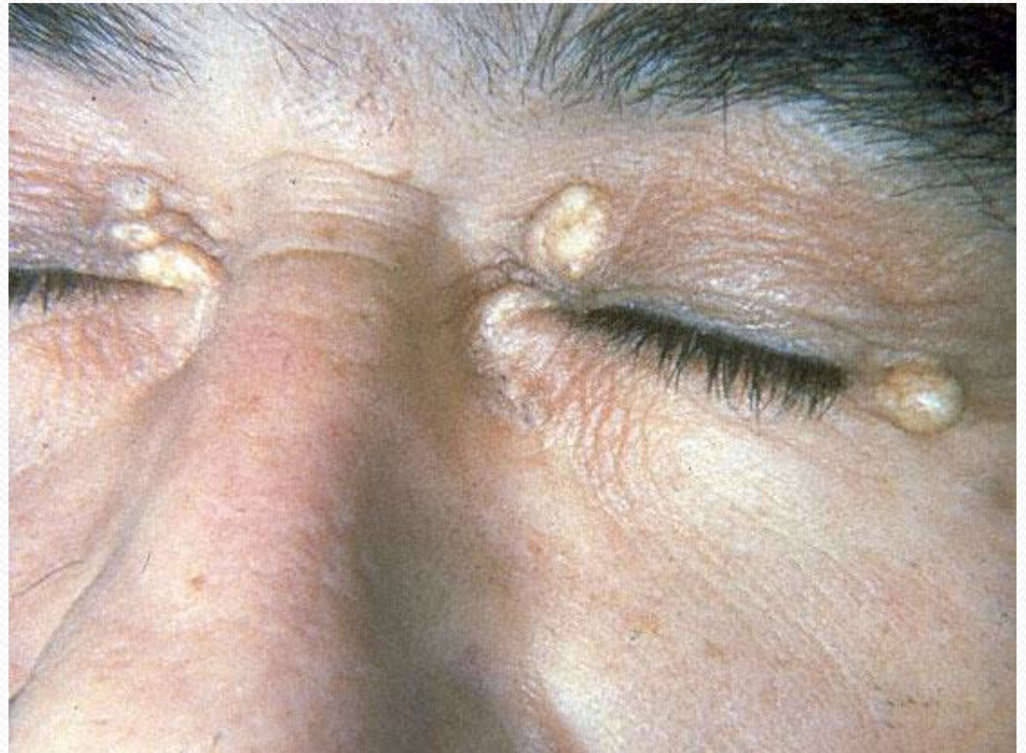
BROWN, BLUE, or BLACK

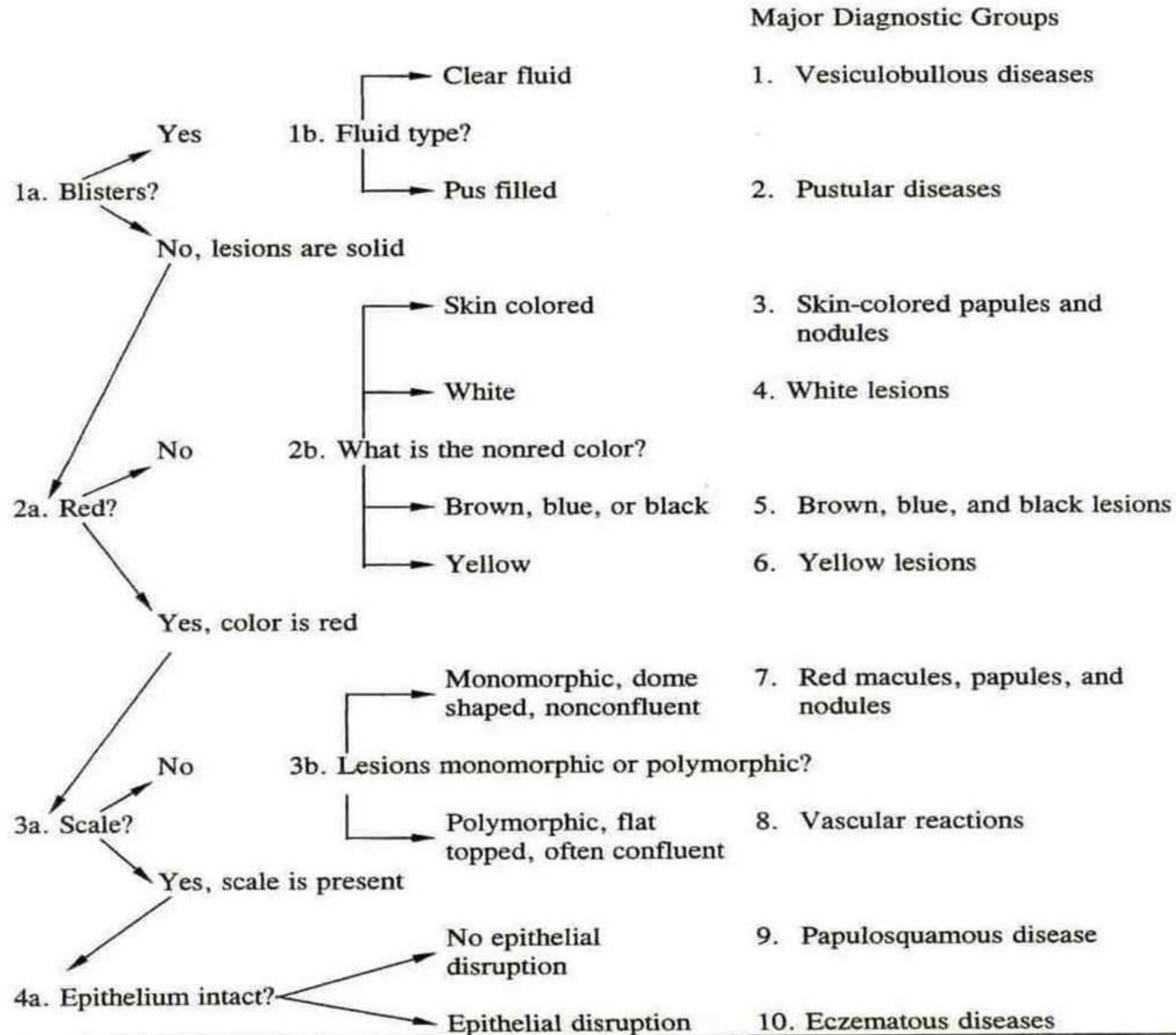
V. BROWN, BLUE OR BLACK LESIONS



YELLOW

VI. YELLOW LESIONS





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YES, the lesions are SOLID and RED.

- # Question #3a

IS THERE SCALE?

- If YES, continue with the algorithm
- If NO…

Question #3b

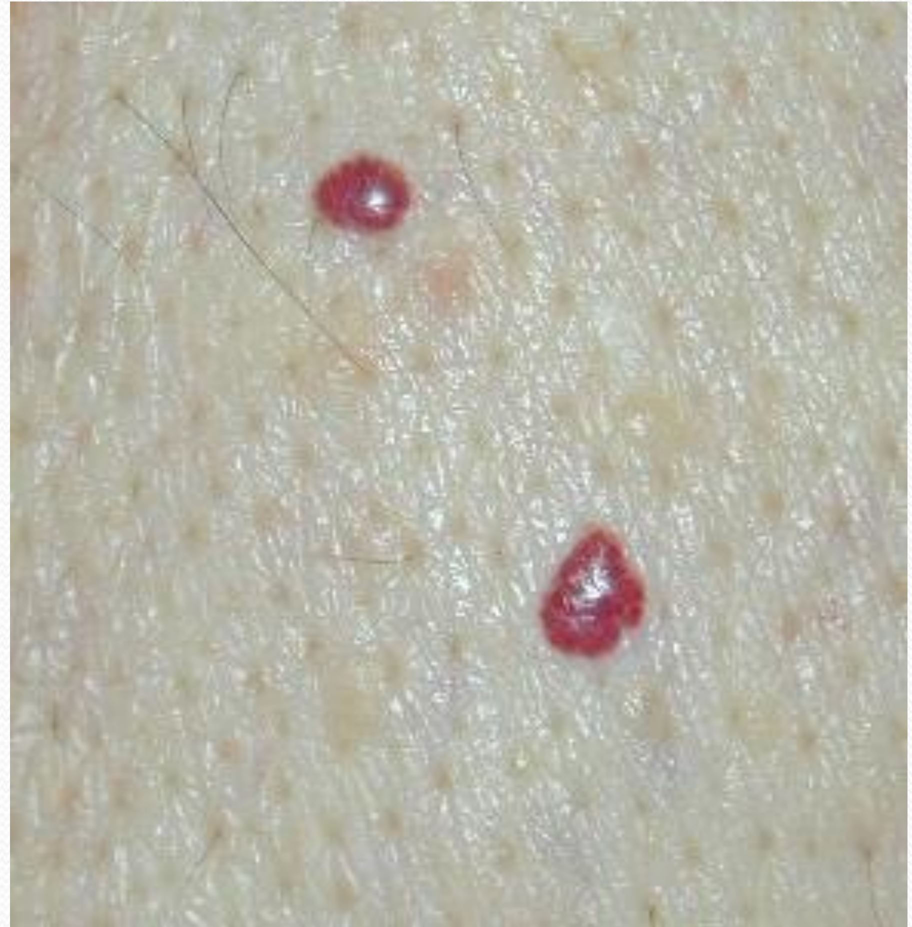
ARE THE LESIONS DOME-SHAPED OR FLAT-TOPPED?

The lesions are:

- SOLID
- RED
- DOME-SHAPED

(No scale)

VII. RED PAPULES AND NODULES

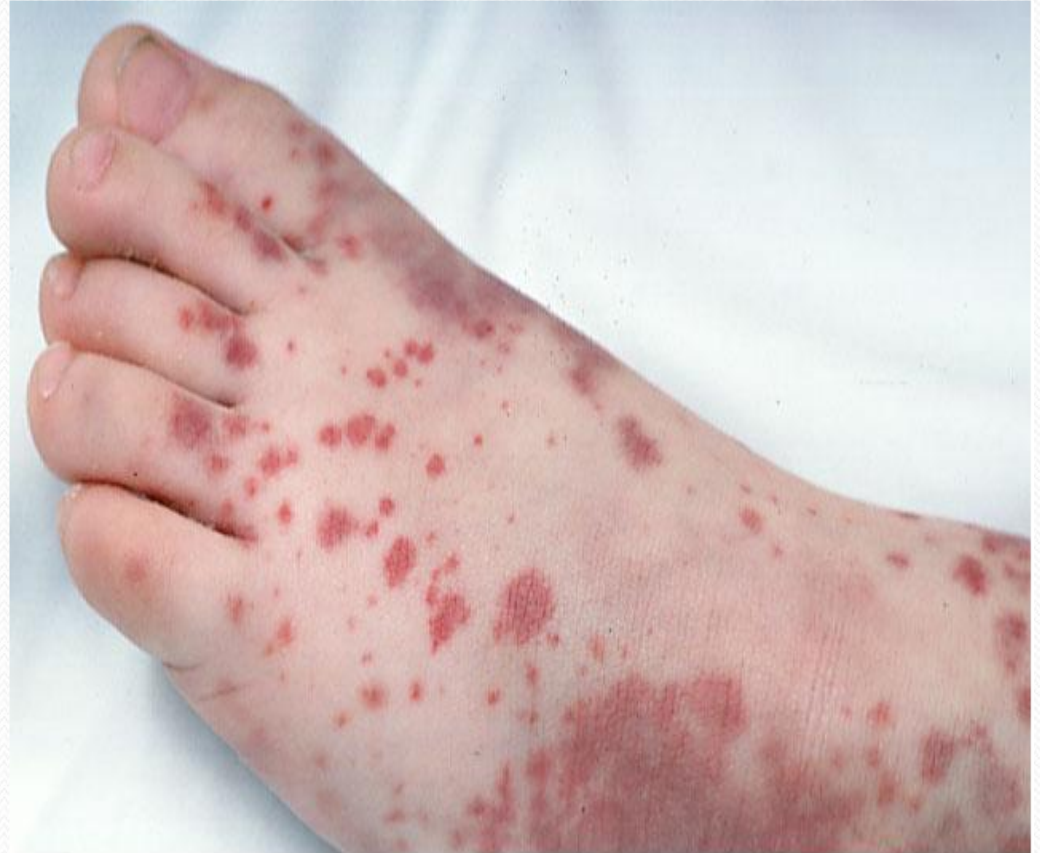


The lesions are:

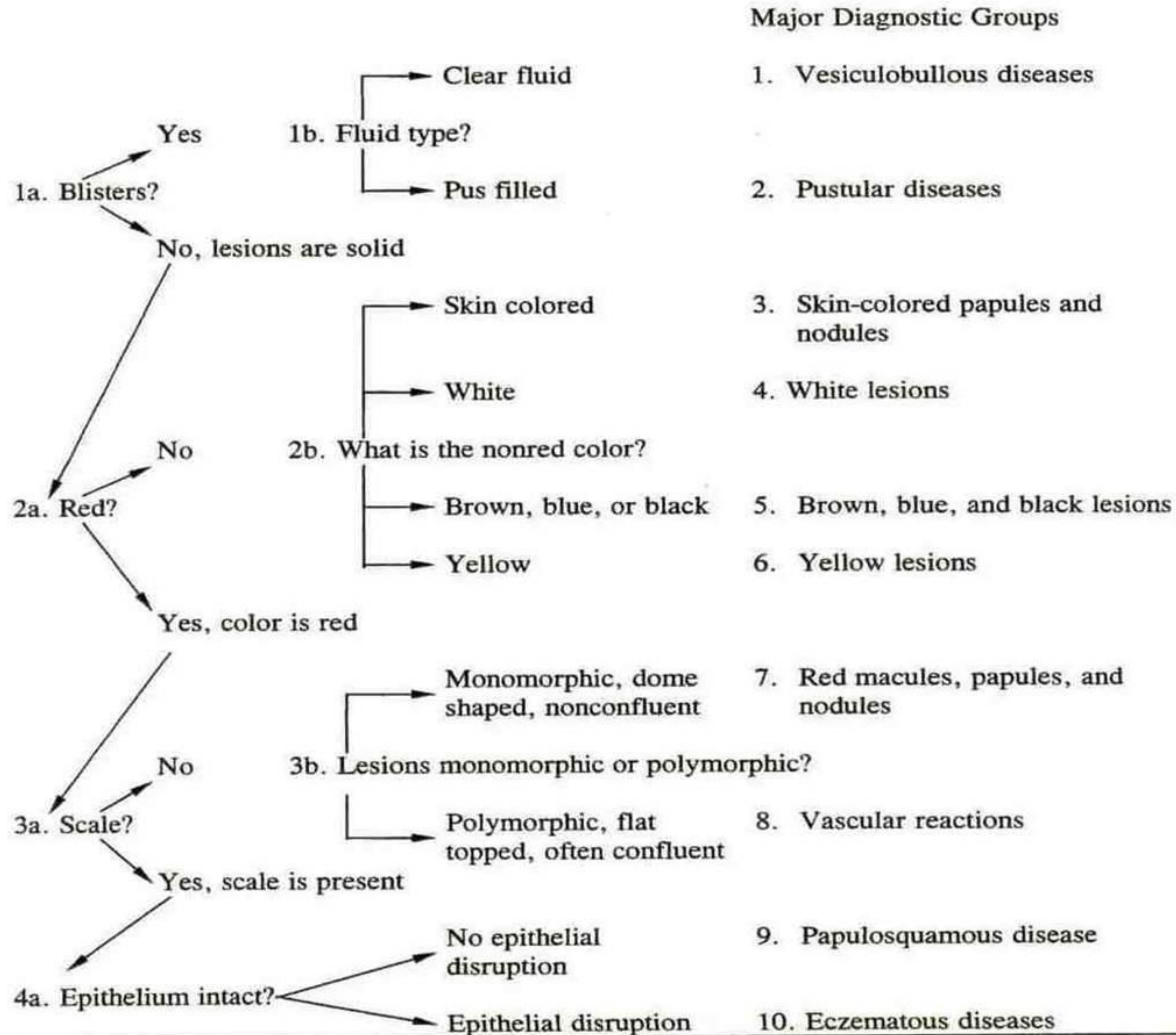
- SOLID
- RED
- FLAT-TOPPED

(No scale)

- **VIII. VASCULAR REACTIONS**



The last two categories…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YES, there is scale.

- The lesions are…
  - SOLID
  - RED and
  - SCALY

- Question 4:

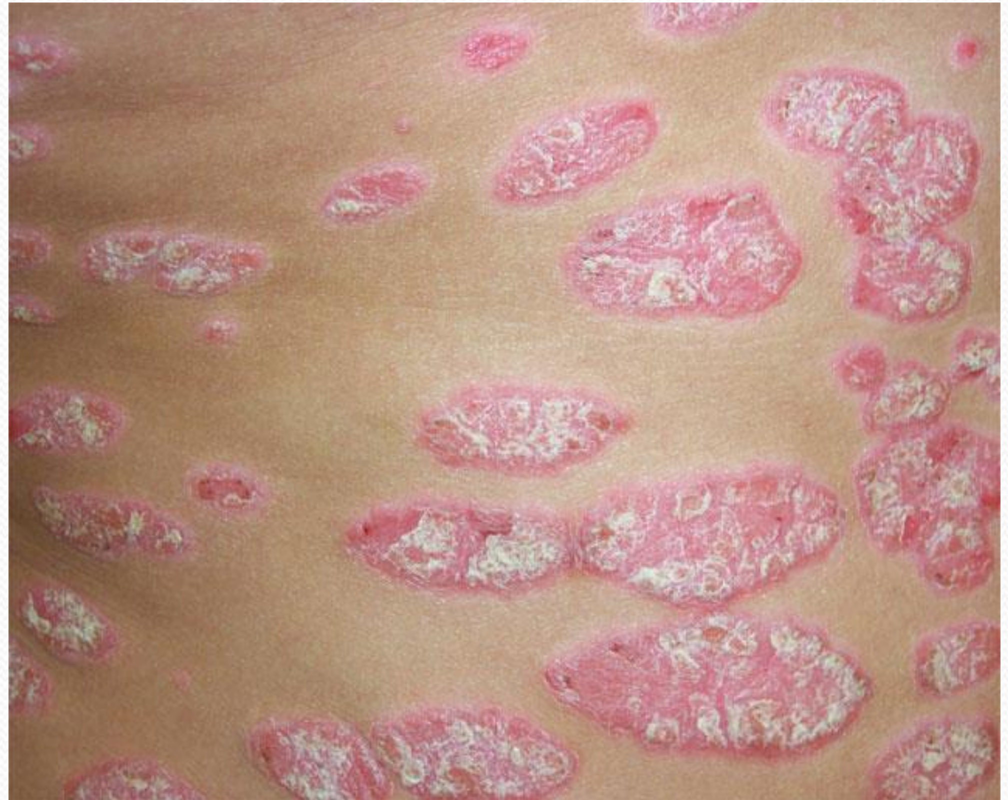
IS THERE EPITHELIAL DISRUPTION?

or

ARE THEY WELL-MARGINATED or POORLY-MARGINATED?

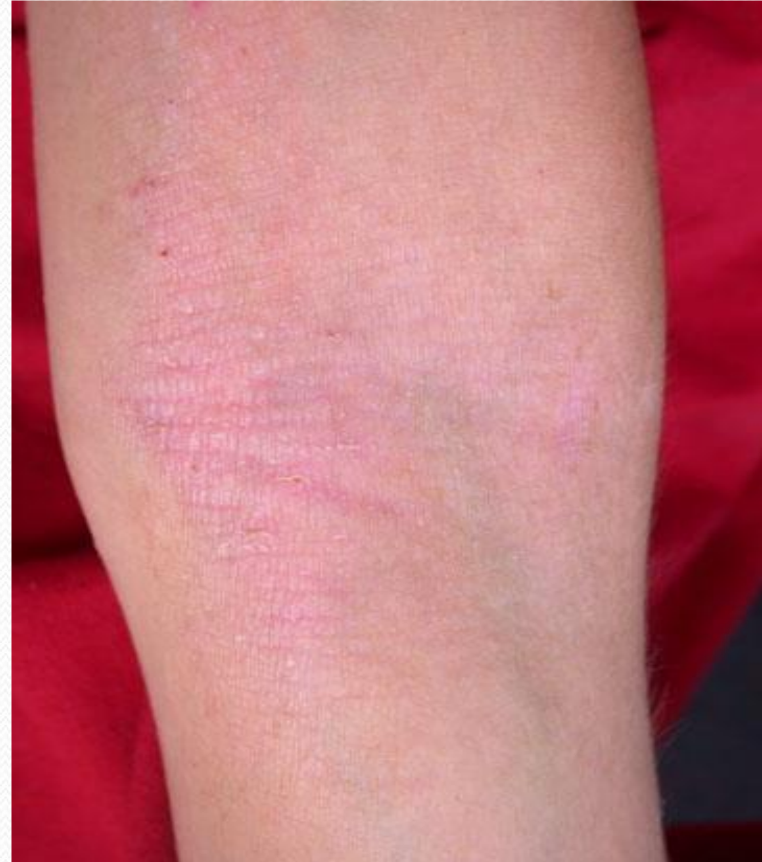
Well-marginated!

- Red
- Solid
- Scaly
- Well-marginated

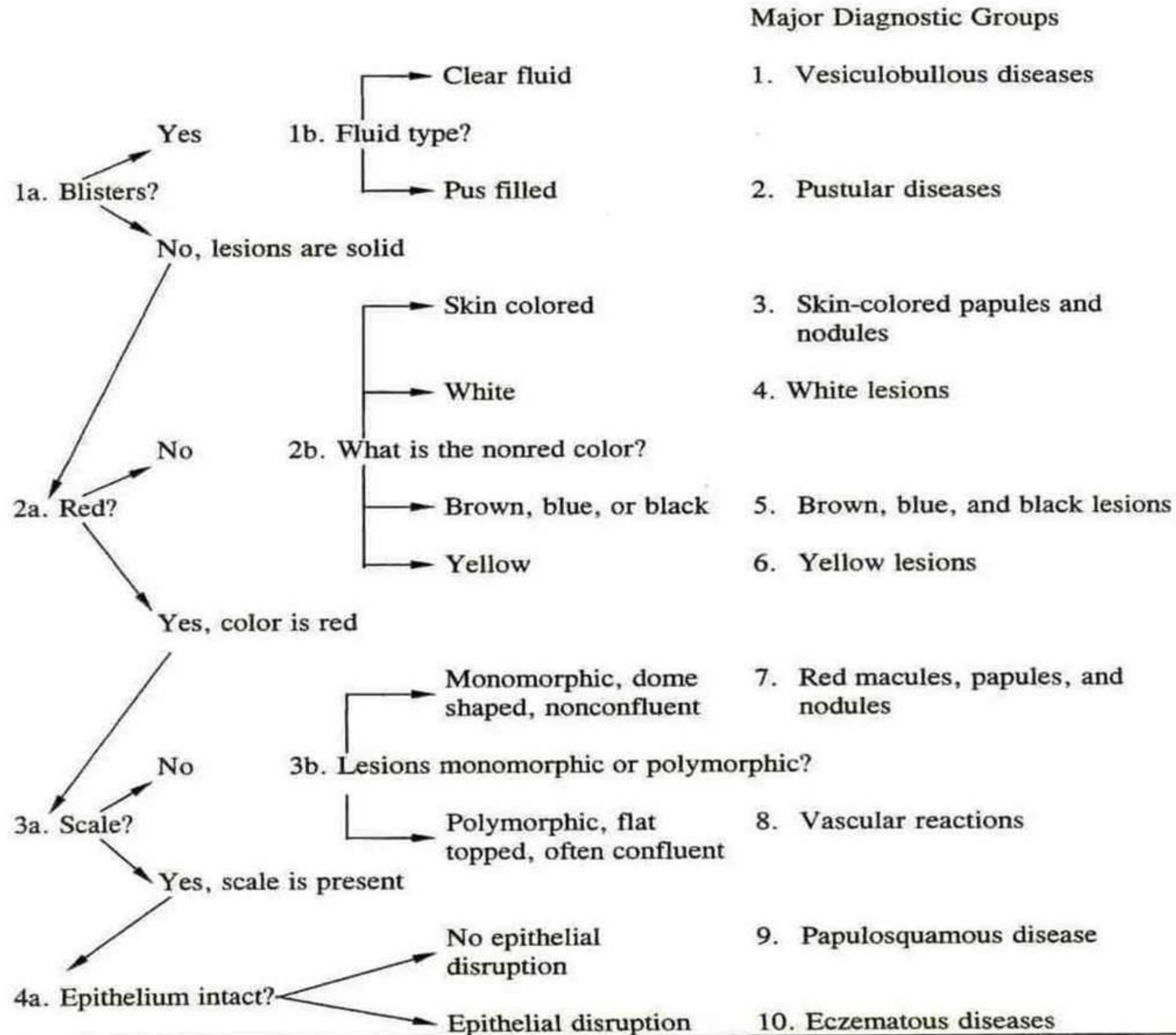


Poorly-marginated…

- Red
- Solid
- Scaly
- Poorly-marginated



X. ECZEMATOUS DISEASES



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Now its time to cover some of the diseases…

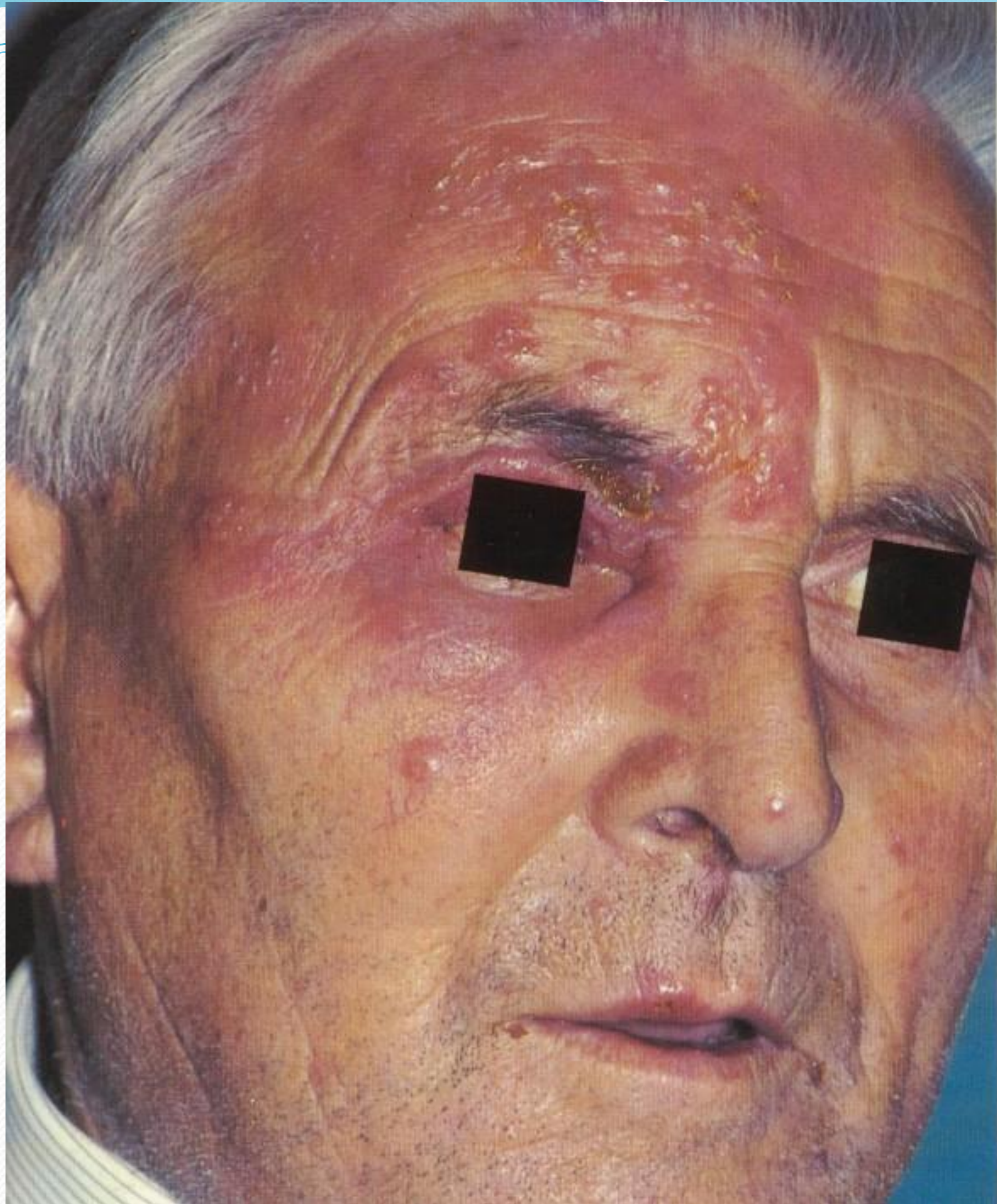
Dermatology 201

The diseases

Vesiculobullous Diseases

Case 1

- 65 year old man
- Severe pain and **allodynia** for 2 days and then **subsequently developed a rash**



Herpes Zoster

Description:

- On the right V1 branch of the trigeminal nerve dermatome, there are grouped vesicles on an erythematous plaque.

Epidemiology:

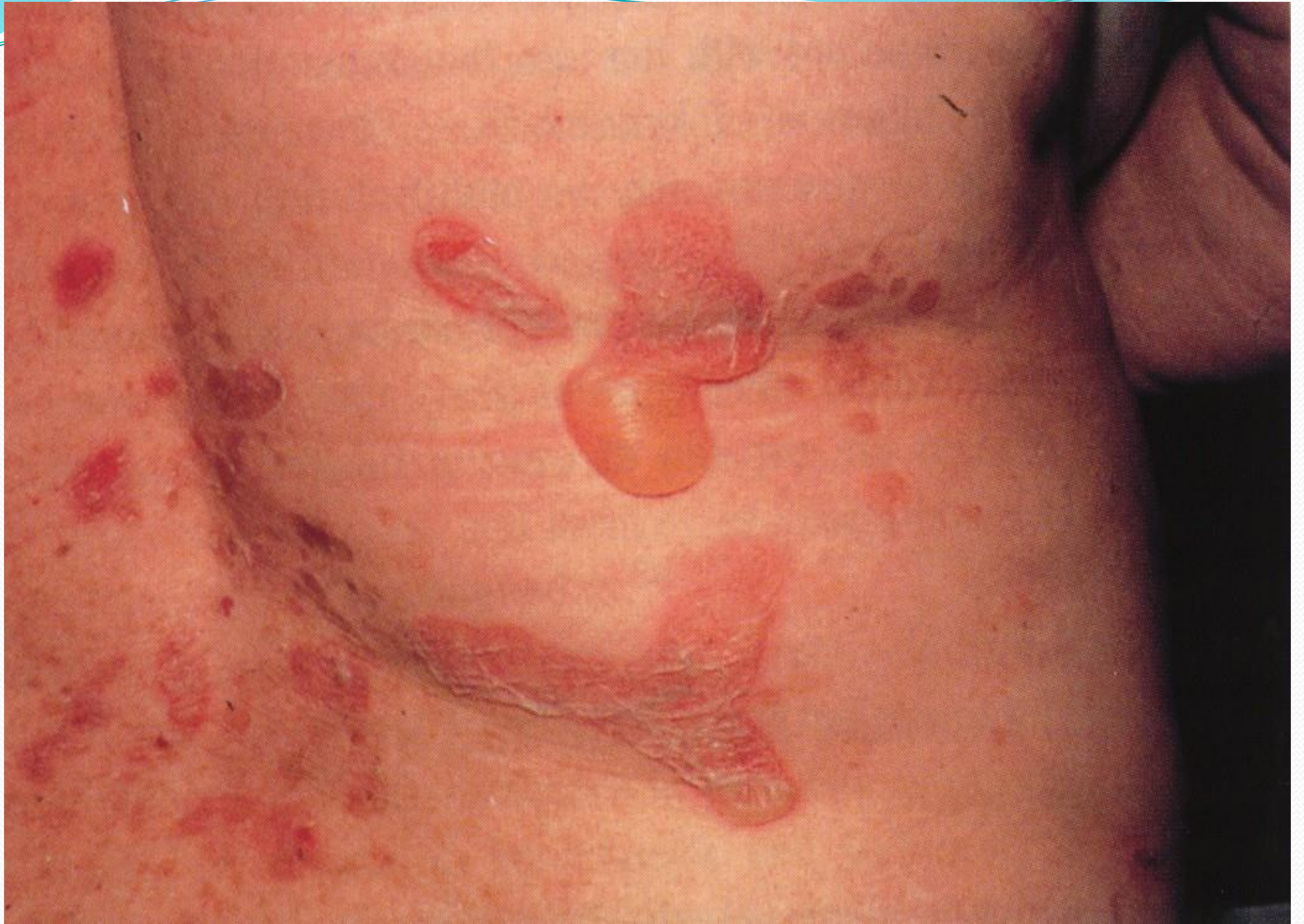
- Who is at risk?

- What is the significance of the lesion on the tip of the nose?

- What is the disease called with involvement of the geniculate ganglion?

Case 2

- 55 year old woman from **Lebanon**
- A couple months ago, had a couple of erosive lesions in her **mouth** which were tender. They spontaneously resolved. Now has noted lesions on her **back and abdomen** which are painful and blister. The blisters **rupture easily and spread with lateral pressure.**



Pemphigus Vulgaris

Description:

•Multiple polymorphic 1-3 cm bullae on the lower back that are easily ruptured (also involving the mouth)

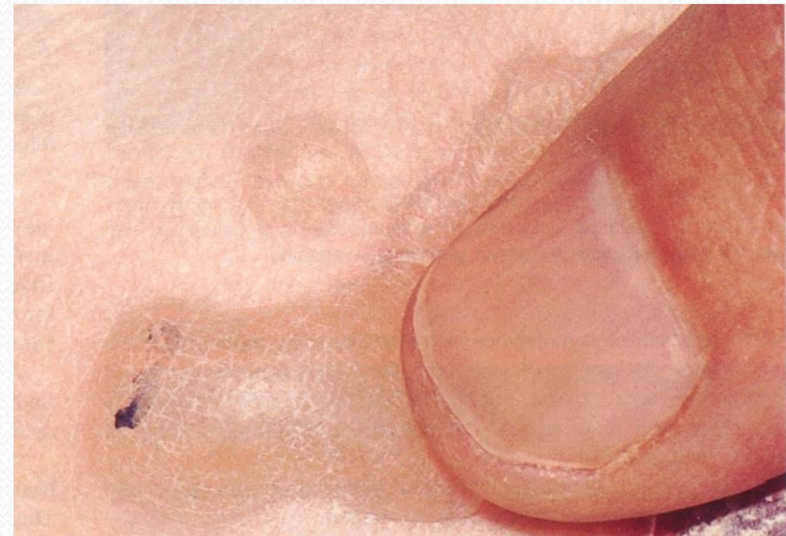
•Spread of the blister following application of lateral pressure to an active lesion: **NIKOLSKY' s SIGN**

Epidemiology:

•Age 40-60
•Middle Eastern descent

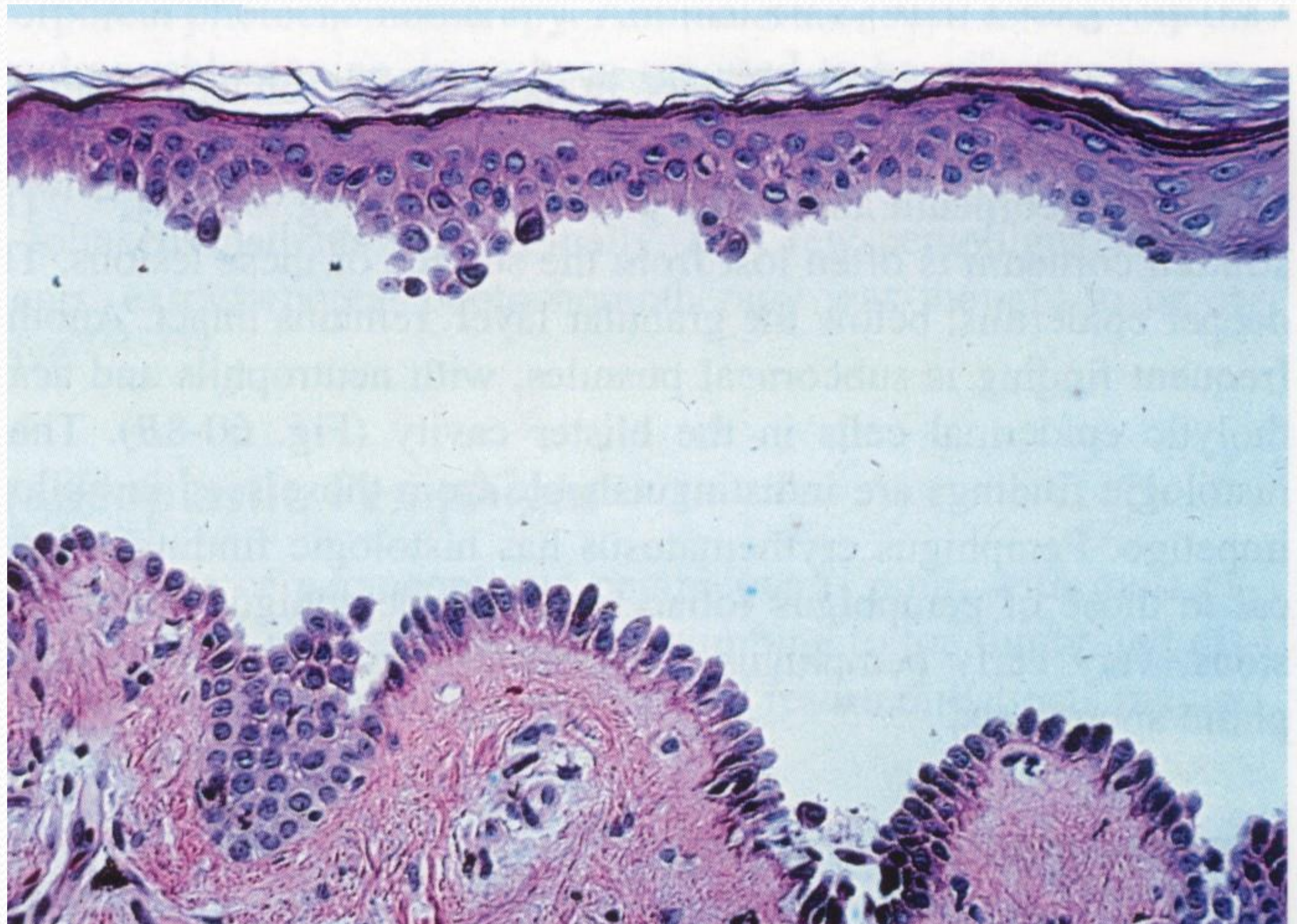
Diagnosis:

- **5 mm punch biopsy x 2!**
  - H and E (edge of the lesion)
  - Immunofluroescence (Michel' s media) (perilesional normal skin)



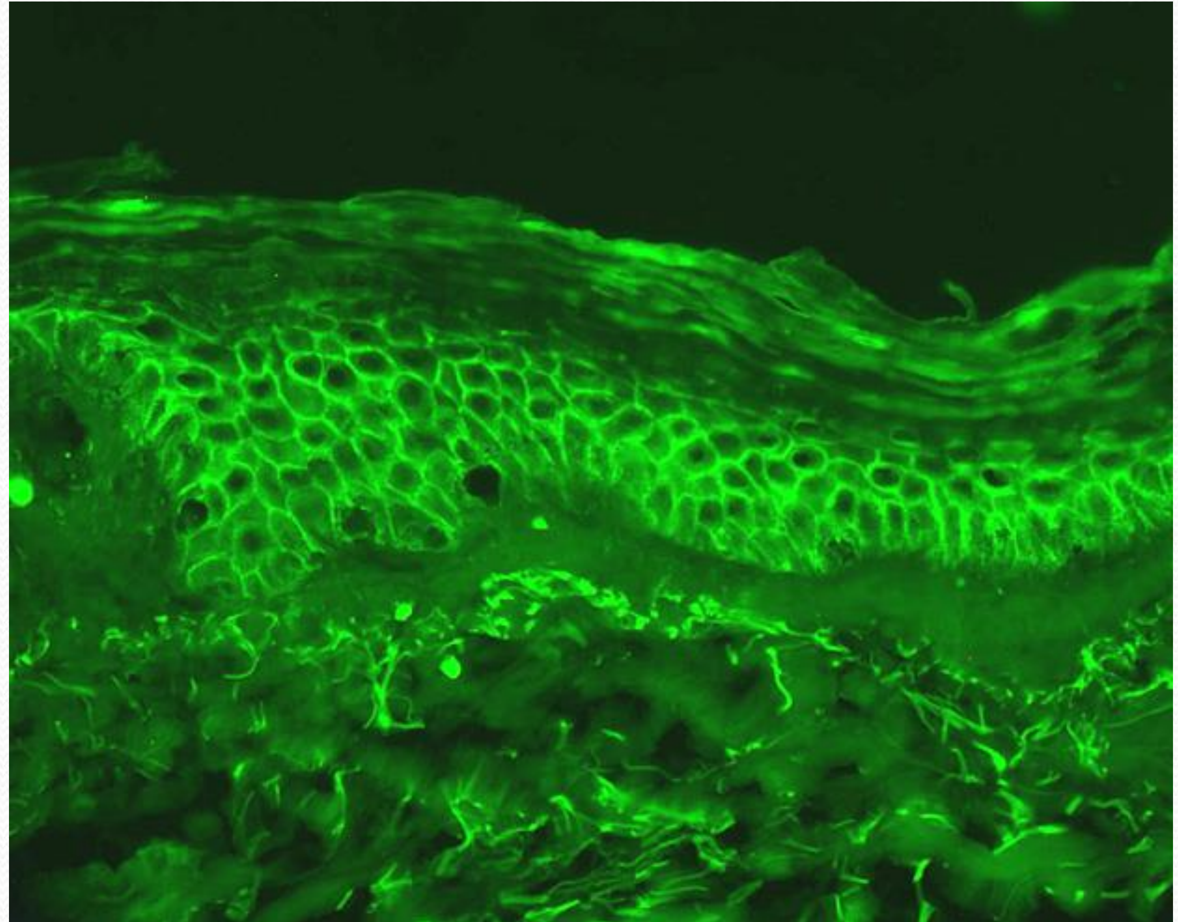
Pemphigus Vulgaris

Punch biopsy with H and E stain shows **acantholysis:** separation of the epidermis occurs **above the basal layer** revealing a “row of tombstones”.



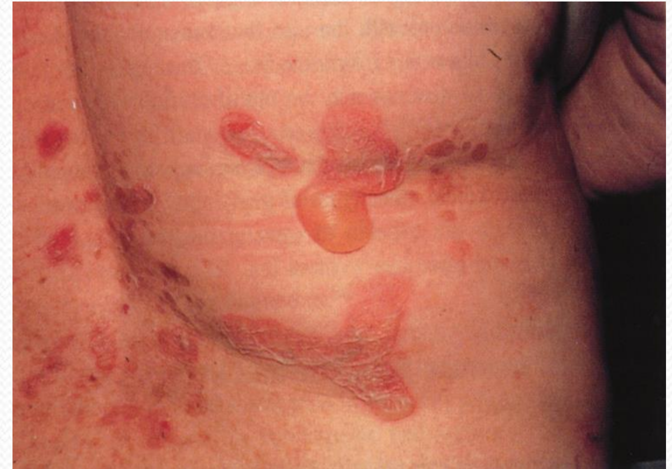
Pemphigus Vulgaris

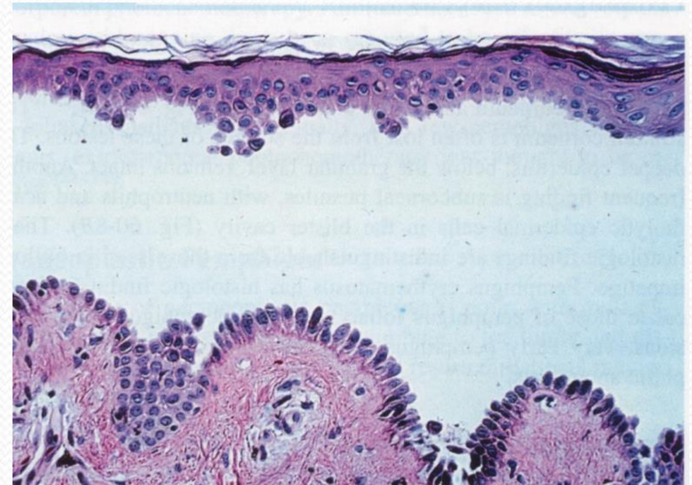
Direct immunofluorescence reveals **IgG and C3 stain at the cellular junctions** between the stratified squamous epithelial cells in the epidermis.



Treatment

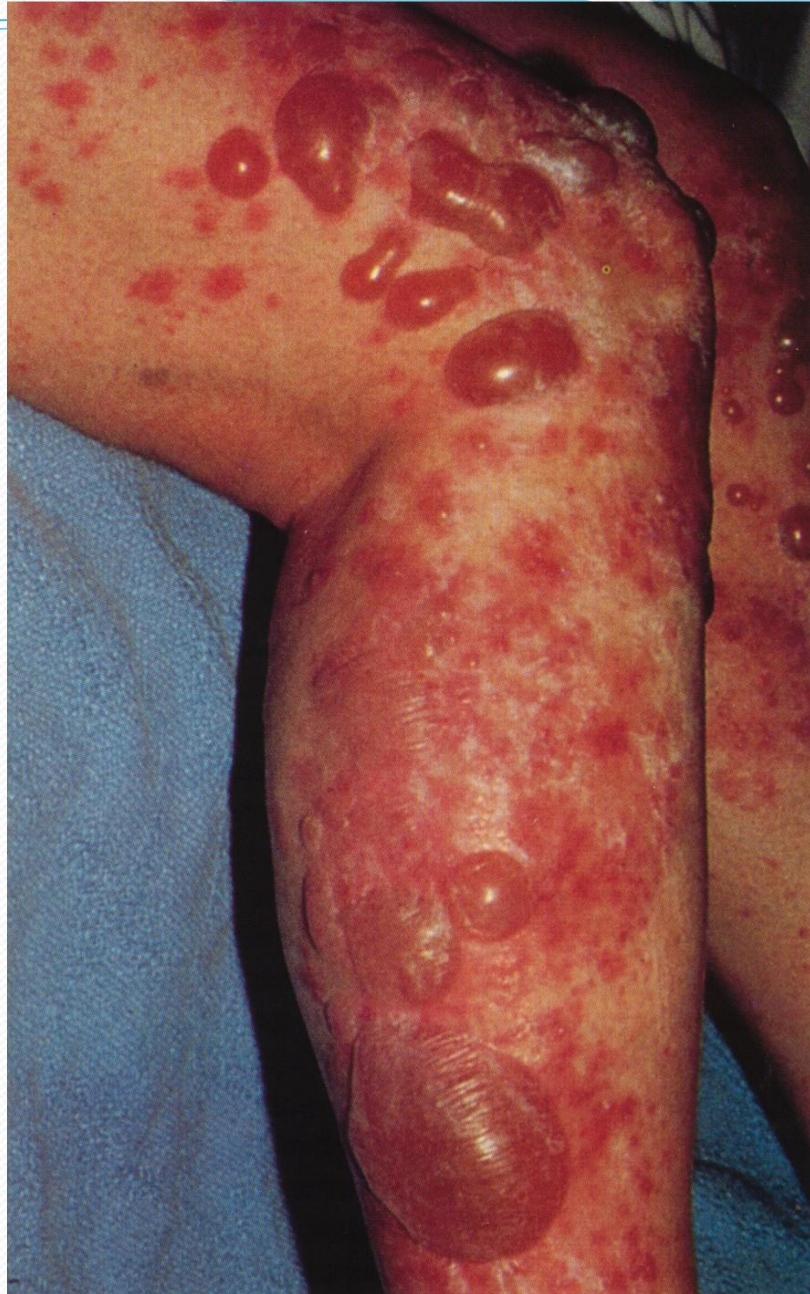
- Dermatology referral
- High-dose steroids
  - Prednisone 40-120 mg/day to start
  - Up to 200 mg/day
  - Complicated to manage
- Steroid sparing agent
  - Azathioprine or Cyclophosphamide



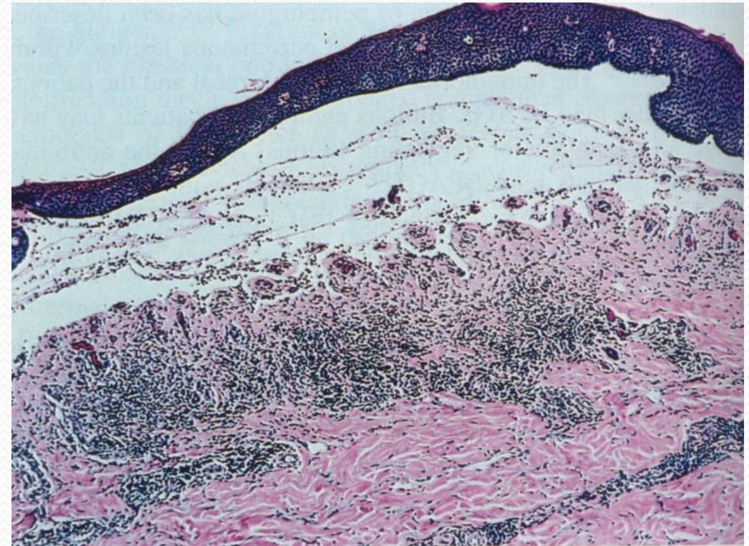


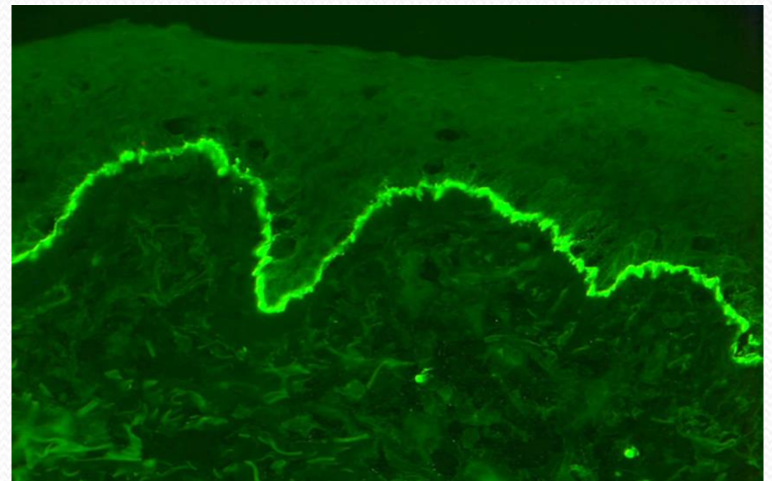
Case 3

- 70 year old woman
- 2 months ago had “hive-like” lesions which continued until the current lesions appeared



Bullous Pemphigoid





Description:

- On the legs, there are many 1-5 cm bullous lesions with firm, unruptured roofs on erythematous skin (often start as urticarial type lesion)

Epidemiology:

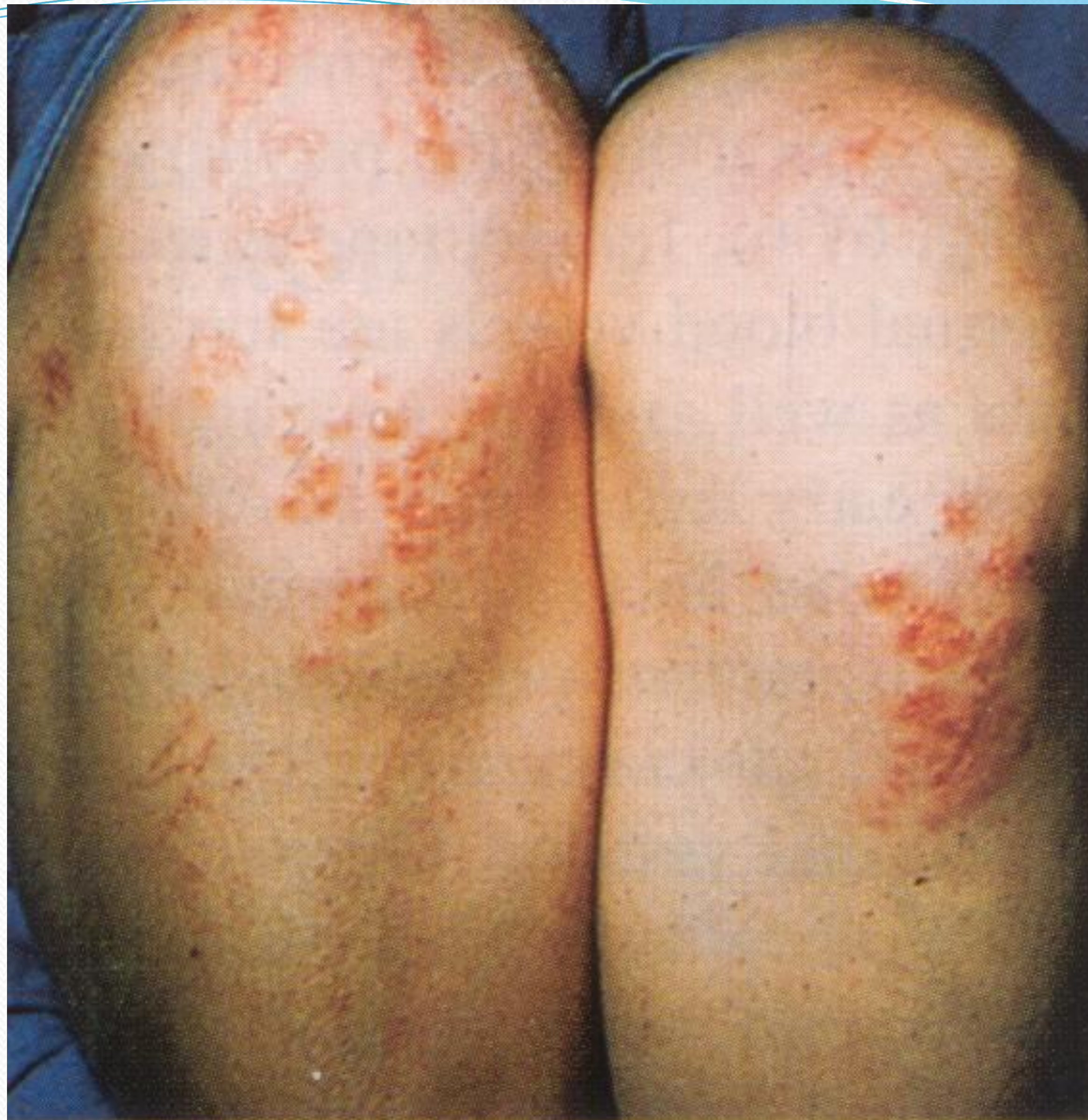
- > Age 60 or childhood

Diagnosis:

- You tell me!
- **Treatment:**
- Prednisone to induce remision
- Steroid-sparing agents
- Dapsone

Case 4

- 25 year old woman
- Intensely pruritic and "burning" rash on knees, elbows, and buttocks for the past several weeks. She has a past medical history of Hashimoto's thyroiditis for which she takes thyroid supplement.



Dermatitis Herpetiformis

Description:

- On the extensor sides of both knees, there are small grouped vesicles on an erythematous base. (strikingly symmetrical, annular pattern)

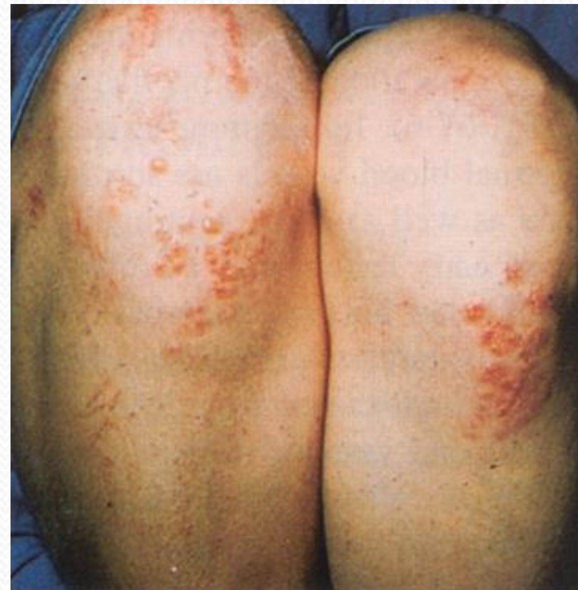
Epidemiology:

- Age 30-40

Diagnosis:

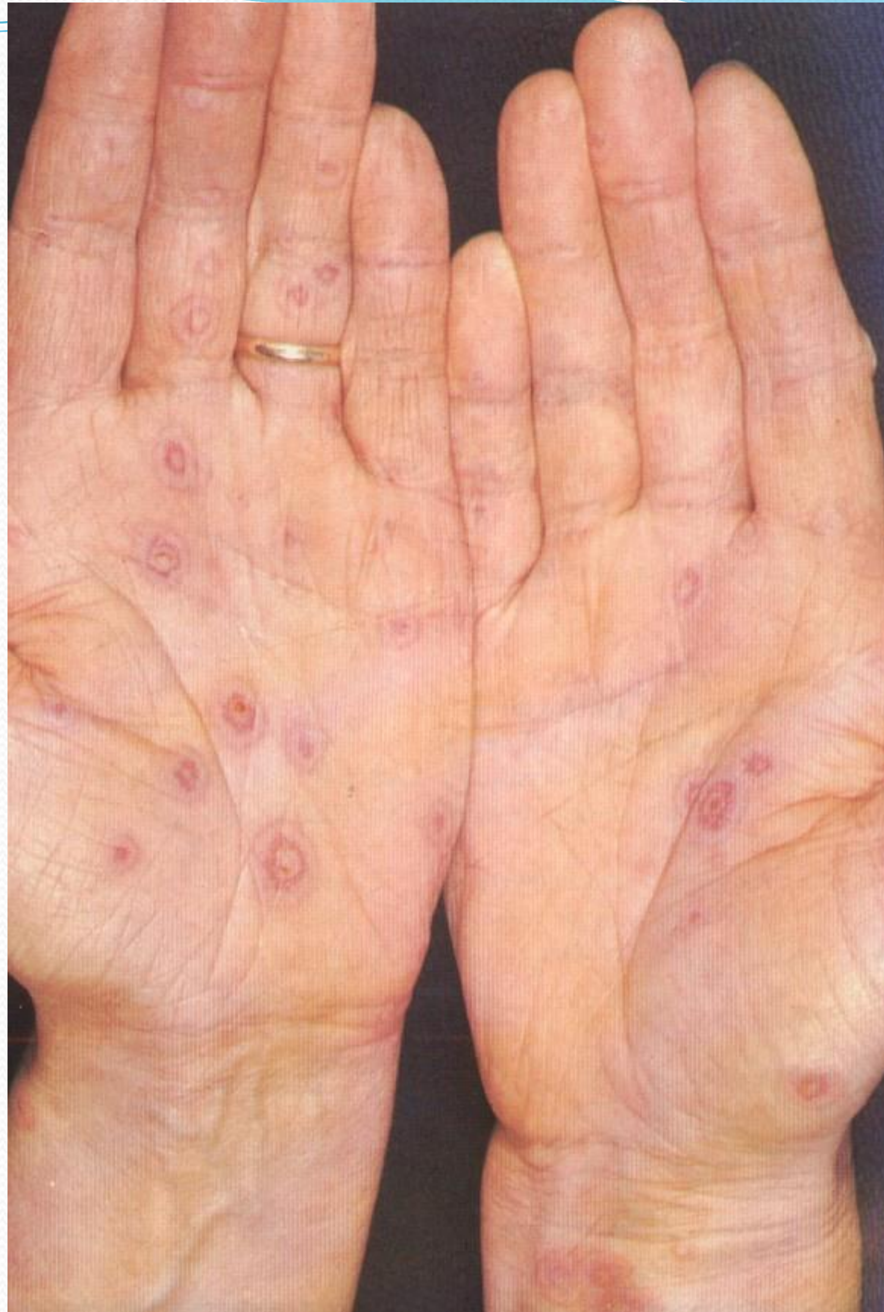
- You tell me!

- What autoantibody is involved and seen on biopsy?
- What treatment is helpful to control the disease?



Case 5

- 28 year old woman
- History of a **lesion on her lip approximately 2 weeks ago**, which was painful and crusted and went away spontaneously. Now, complains of diffuse rash **involving her palms and soles** and arthralgias.



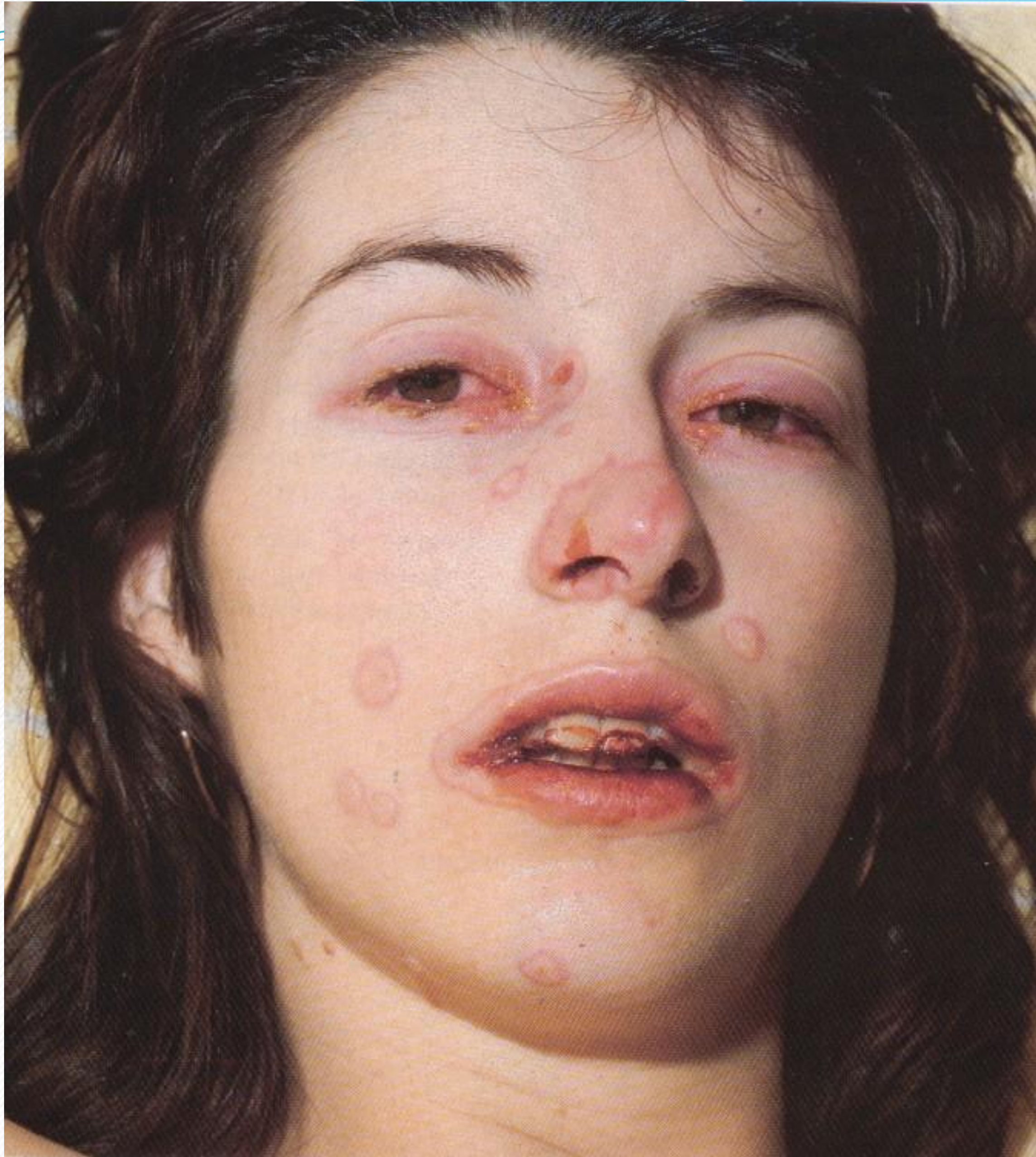
Erythema Multiforme Minor

- <u>Description:</u>
- On the palms of both hands there are multiple 5 mm-1 cm targetoid lesions with central vesicles that appear necrotic.

- <u>Pathology:</u>
- Immune complex deposition in cutaneous microvasculature with mononuclear cells predominating (type 3 hypersensitivity)

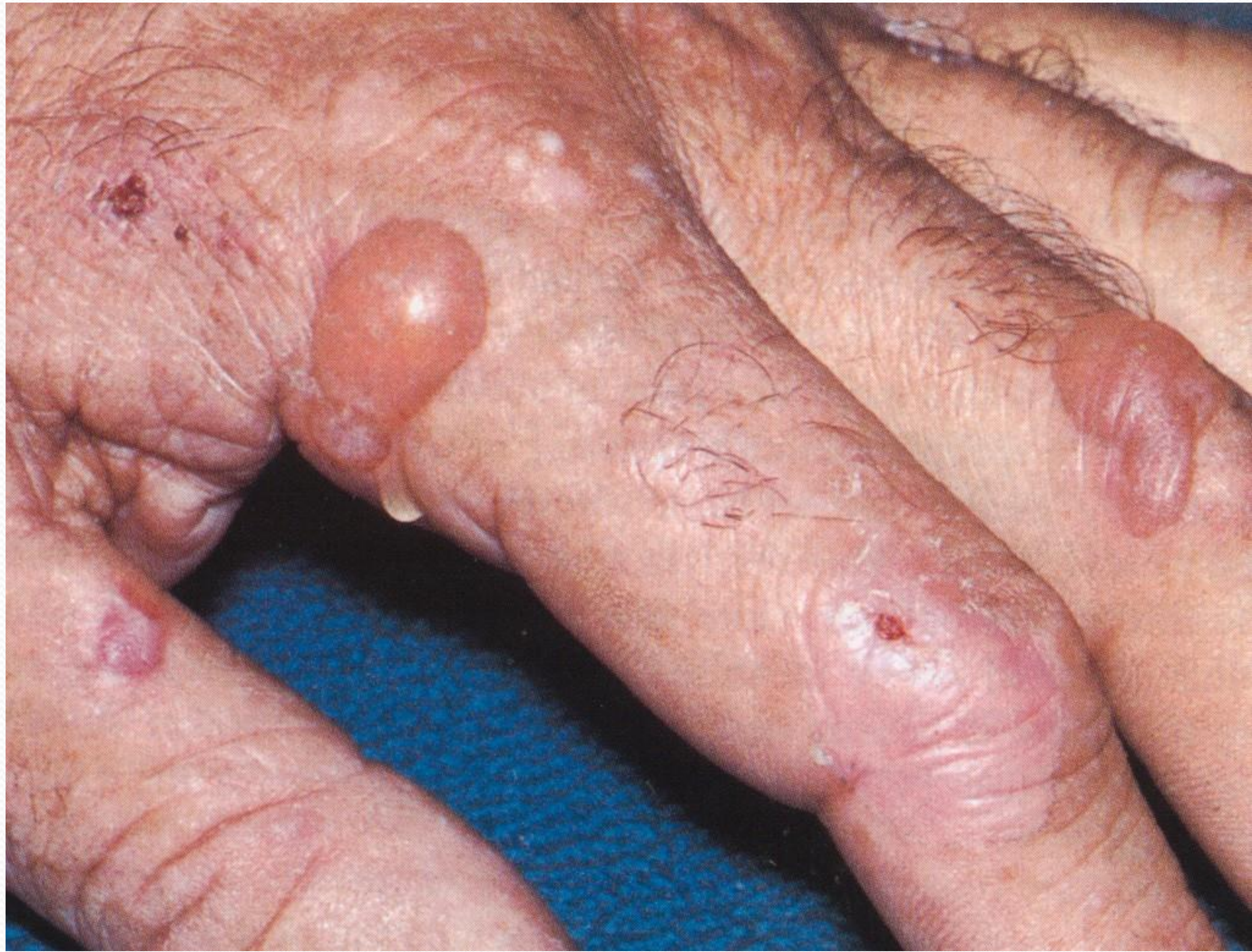
- What 3 infections are often linked to EM Minor?
  - **Herpes simplex virus**
  - Coccidiodomycosis
  - Mycoplasma

- What is the spectrum of disease?
  - Erythema multiforme minor
  - Erythema multiforme major (SJS)
  - Toxic epidermal necrolysis (TEN)



Case 6

- 50 year old man
- Painful blisters in sun-exposed areas; heal with scarring, several months duration
- History of IVDU and chronic renal insufficiency



Porphyria Cutanea Tarda (PCT)

Description:

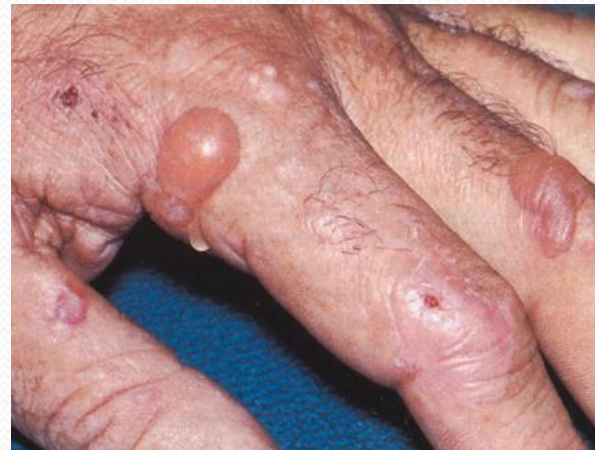
- On the dorsum of the hand, there are two 1 cm unruptured bullae, on the second MCP joint, there are three white papules, and on the second PIP joint there is a pink well- circumscribed scar.

Pathophysiology:

- Enzyme in heme synthesis "UROD" functioning at 25% capacity with build up of uroporphyrin in urine and plasma

Associations:

- HEPATITIS C (50%) (IVDU)
- Liver disease
  - Iron overload or etoh abuse
- Renal failure
  - Porphorins are renally excreted



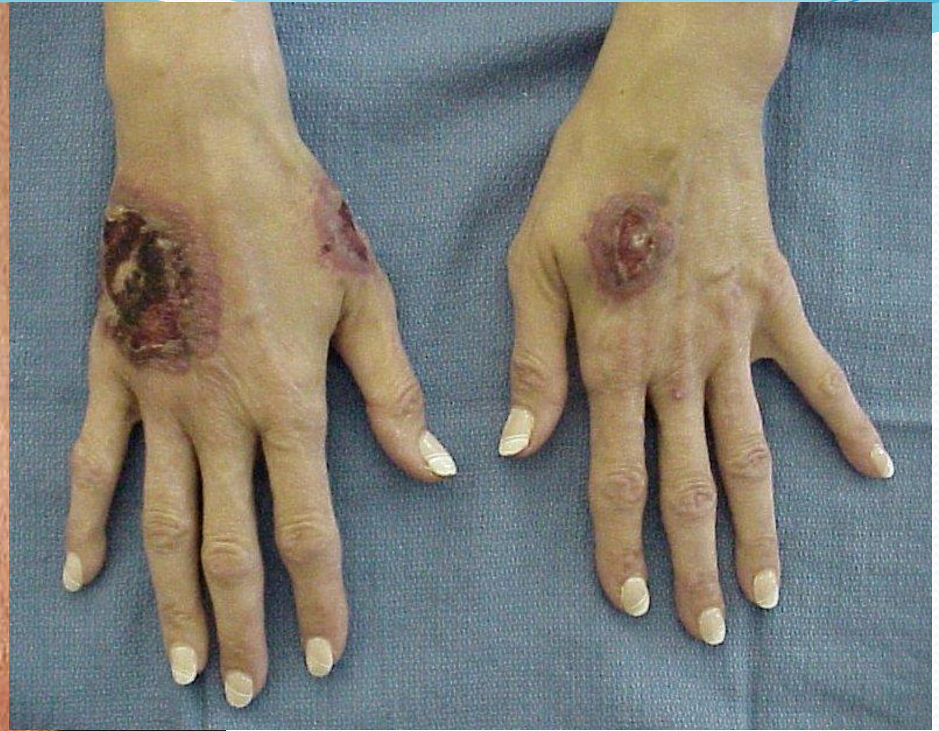
Vesiculobullous Diseases

- Herpes Simplex
- Herpes Zoster
- Pemphigus Vulgaris
- Pemphigus Folaceous
- Bullous Pemphigoid
- Dermatitis Herpetiformis
- Erythema Multiforme
- Porphyria Cutanea Tarda

PUSTULAR

Case 1

- A 42 year old woman
- Complains of a deep ulcer on the anterior shin which began 3 weeks ago. The patient thinks that she might have injured her leg on the edge of a coffee table, but isn't sure. She developed a nodule which broke down into a deep ulcer. On ROS, she has intermittent diarrhea and crampy abdominal pain.

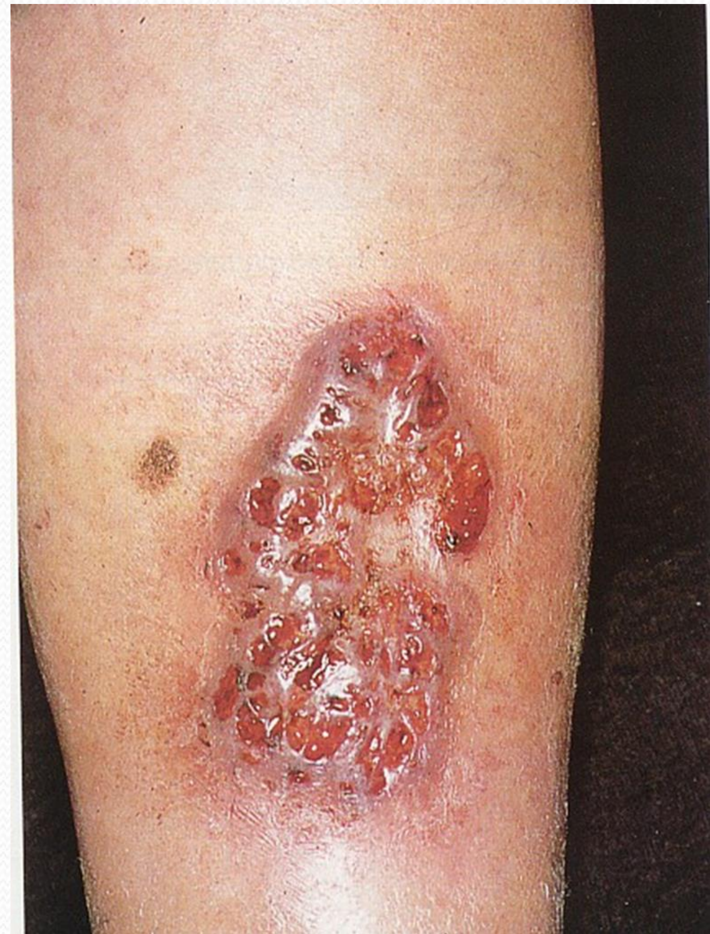


Pyoderma Gangrenosum

- Irregular, boggy, blue-red ulcer with undermined "heaped up" borders surrounding a purulent, necrotic base

- What systemic disease is it most commonly associated with?

- What should you NOT do to the lesion? Why?



Pustular and Pseudopustular Diseases

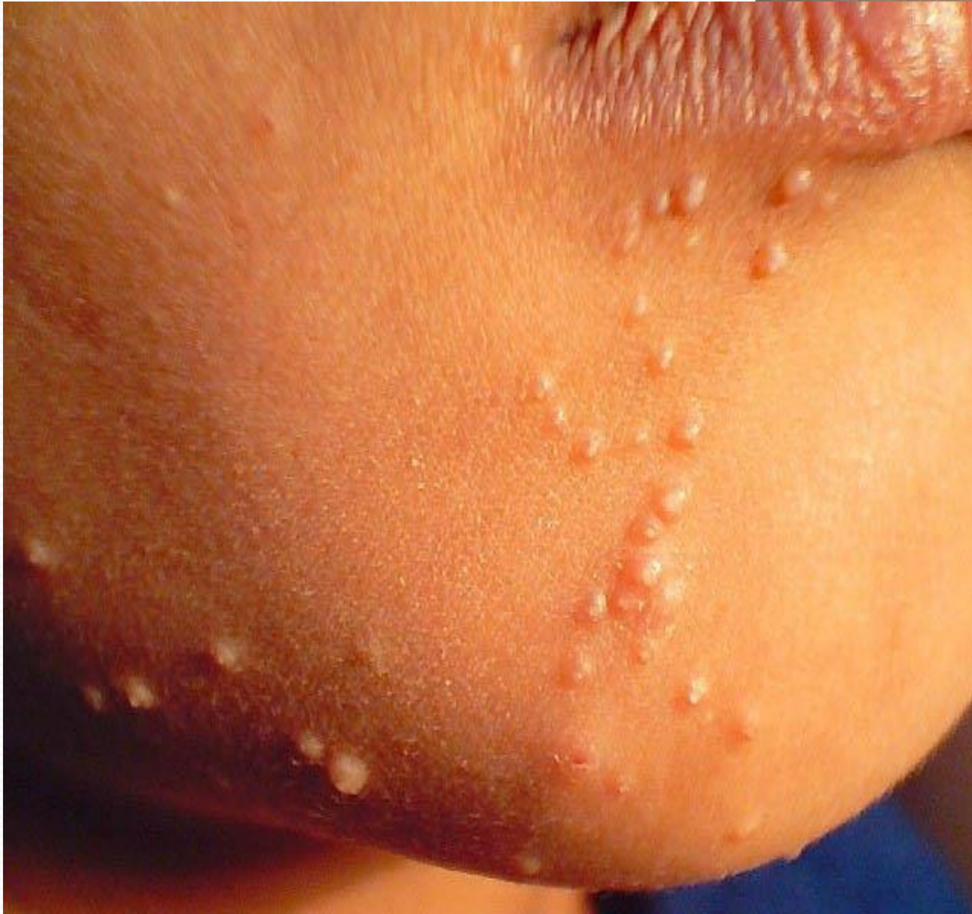
- Superficial Folliculitis
- Pyoderma Gangrenosum
- Perioral dermatitis
- Rosacea
- Hidradenitis Suppuritiva
- Keratosis Pilaris

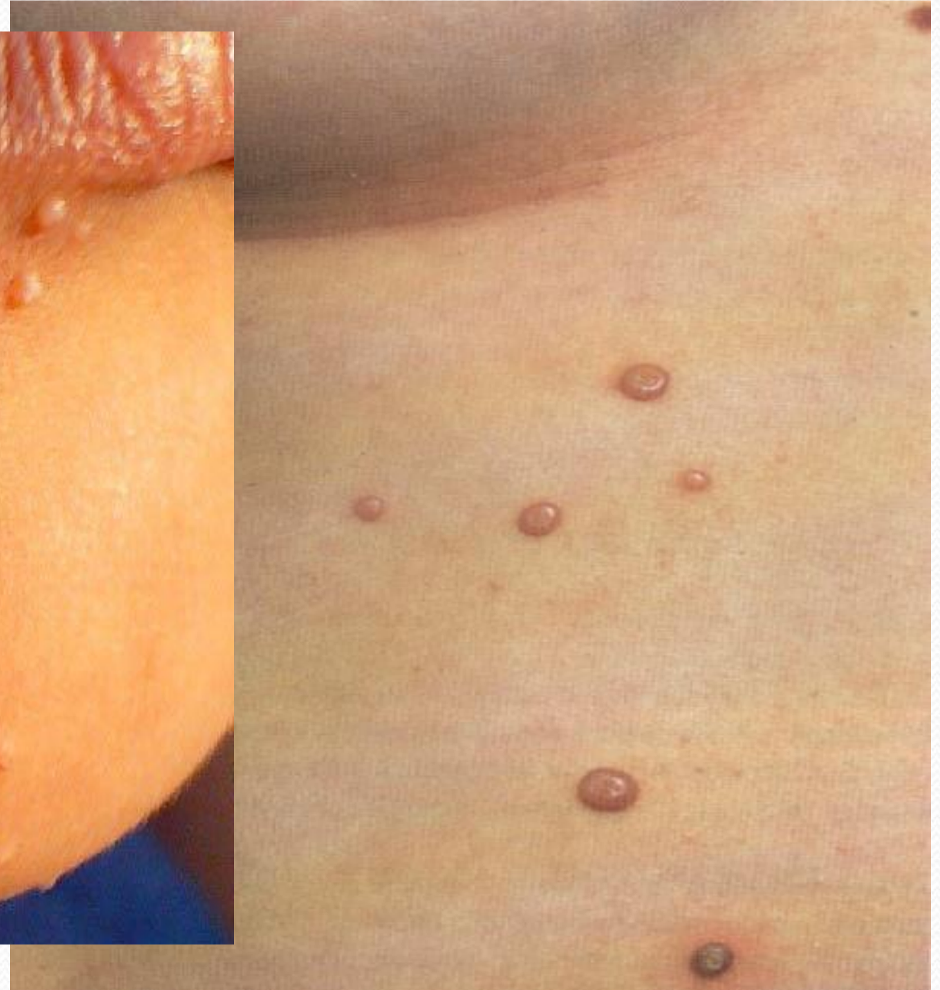
SKIN-COLORED PAPULES AND NODULES

Case 1

- 19 year old sexually active male
- Lesions noted on face for the past 2-3 months
- Not pruritic or painful
- No systemic symptoms

Case 1

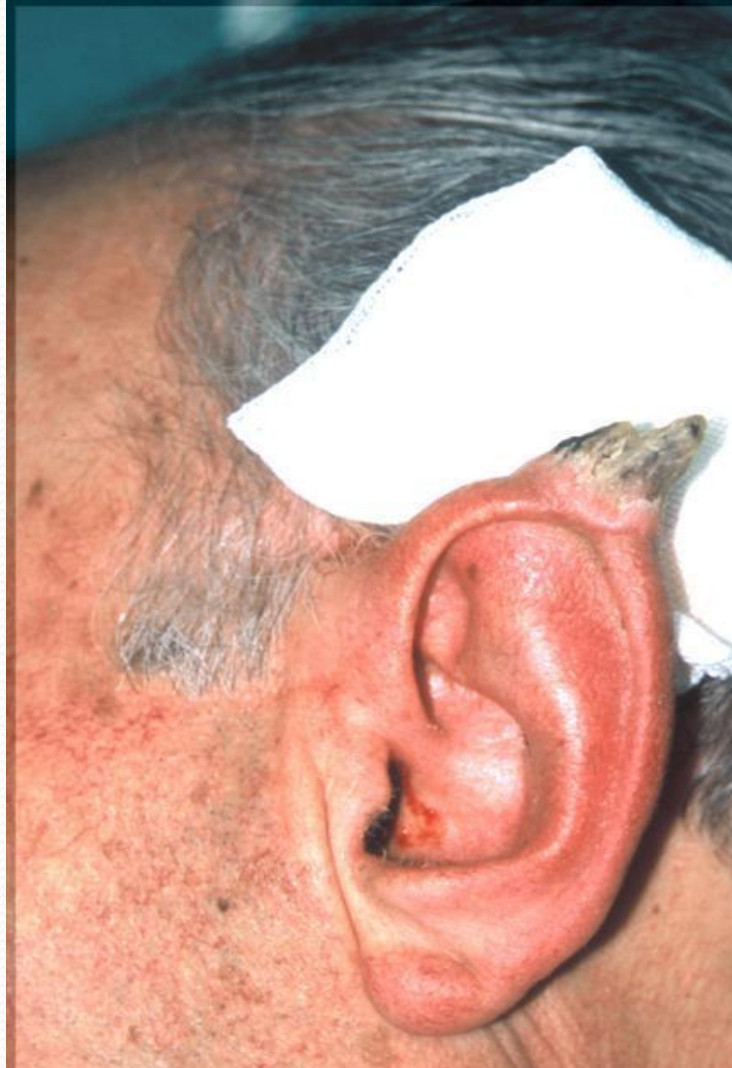




Molluscum Contagiosum

- Pearly-white or skin colored papules or nodules with **central umbilication**
- Children, Young Adults (sexually transmitted)
- What is the causative virus?
- Multiple facial lesions suggest what disease?

Case 2



Cutaneous Horn

- Differential:
  - Keratoacanthoma
  - Actinic Keratosis
  - Squamous Cell Carcinoma

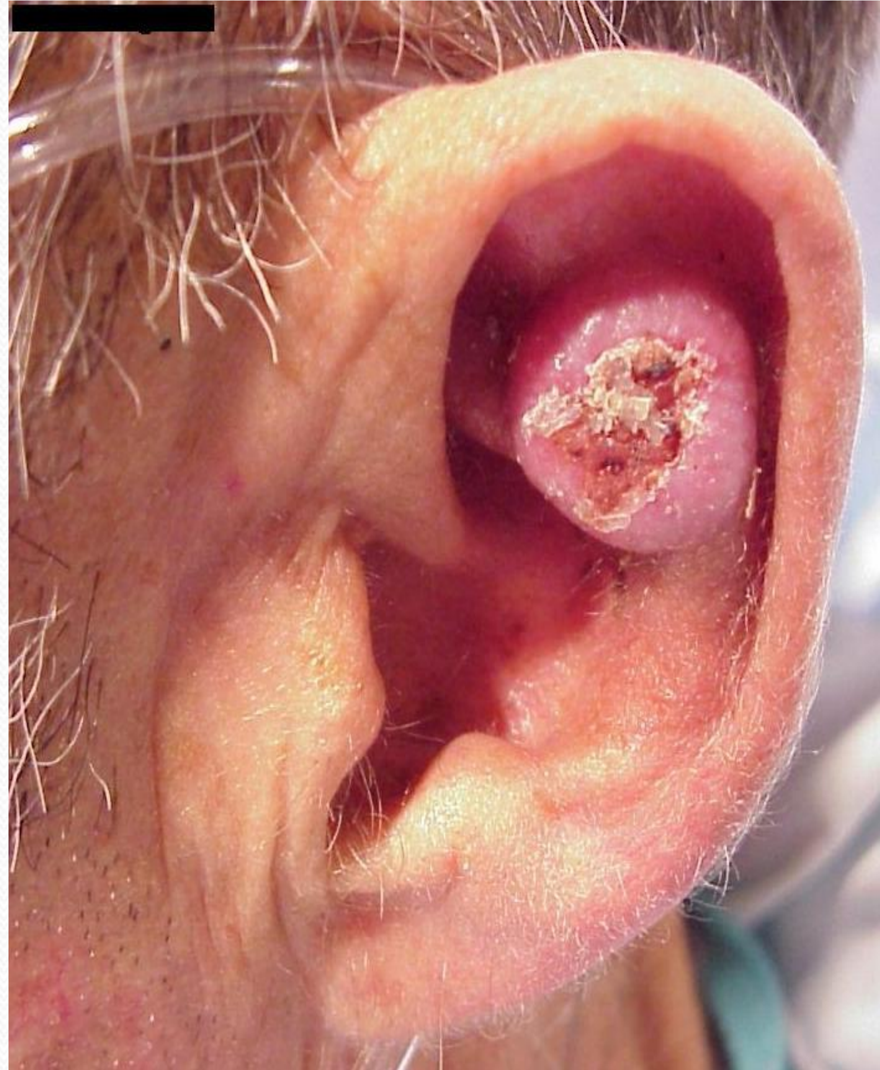
Keratoacanthoma

- Benign but mimics SCC

- Rapid growth
- Cental keratotic plug

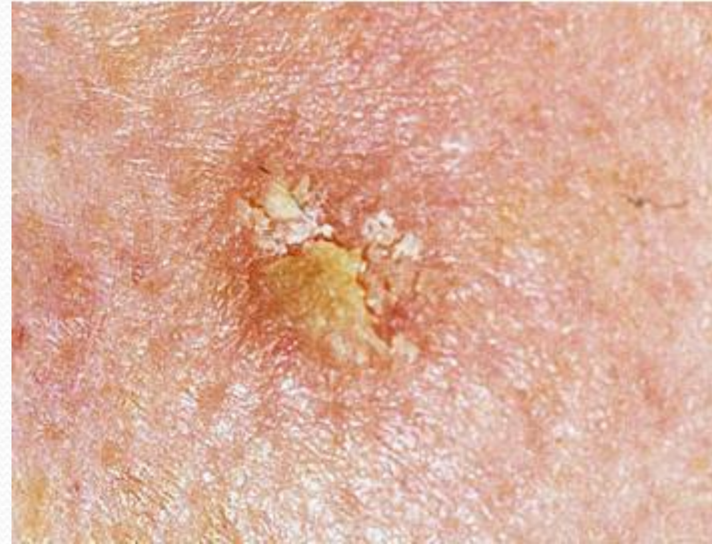
- Heals with scarring

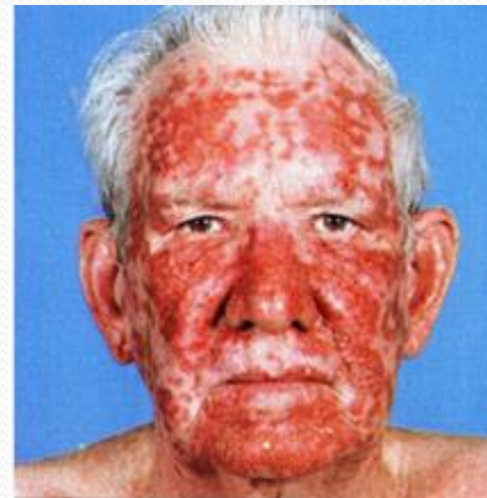
- Surgical removal



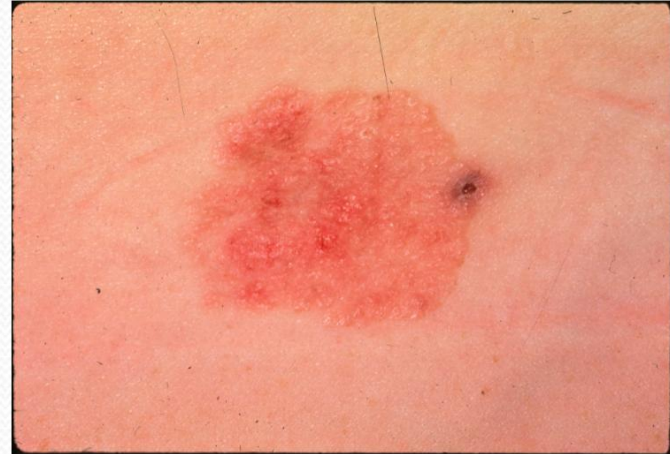
Actinic Keratosis (AK)

- Sun exposure
- Rough red scaly hyperkeratotic papules
- Rx: Cryotherapy if few; Efudex (topical 5-FU)if generalized
- SCC from AK: 1:1000

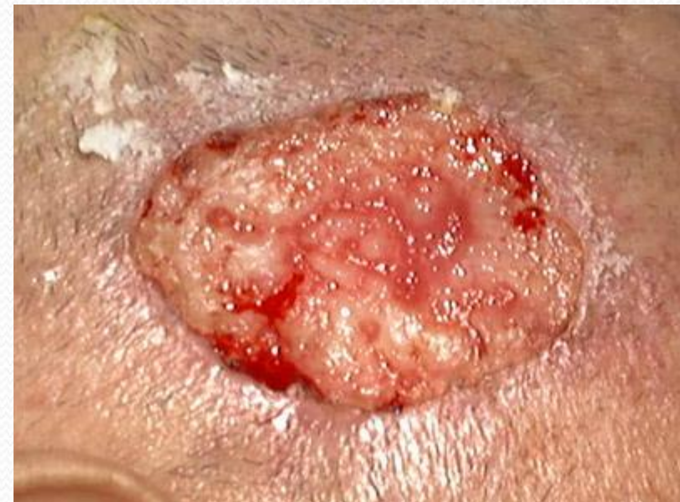




Squamous Cell Ca. (SCC)



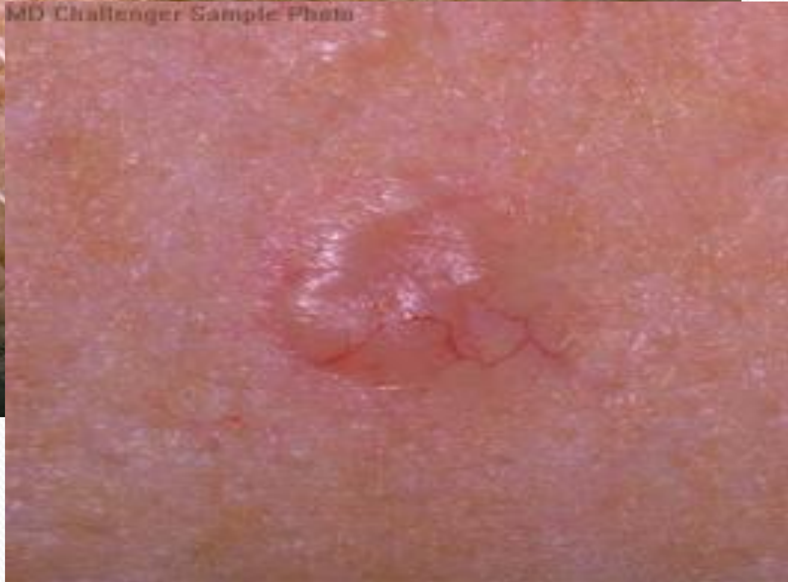
- SCC In Situ = Bowen's
- Well marginated, hyperkeratotic plaque usually in sun-exposed area



- Invasive SCC
  - Ulcerated
  - Metastatic (3-4%)
  - Risks:
    - Immunosuppression
    - Areas of chronic inflammation
    - Burn scars

Case 3

- 40 year old man
- Native to Arizona, likes to golf and play tennis
- Lesion present for a couple months, occasionally bleeds


MD Challenger Sample Photo

Basal Cell Carcinoma

- **Most common** NMSC
- ~1,000,000 new BCC/year
- Classic: Skin-colored **pearly** papule with **telangiectasia** and rolled borders
- Categories: Superficial, Nodular, Pigmented, Sclerosing
- **Rarely metastatic** – local invasion "Rodent ulcer"

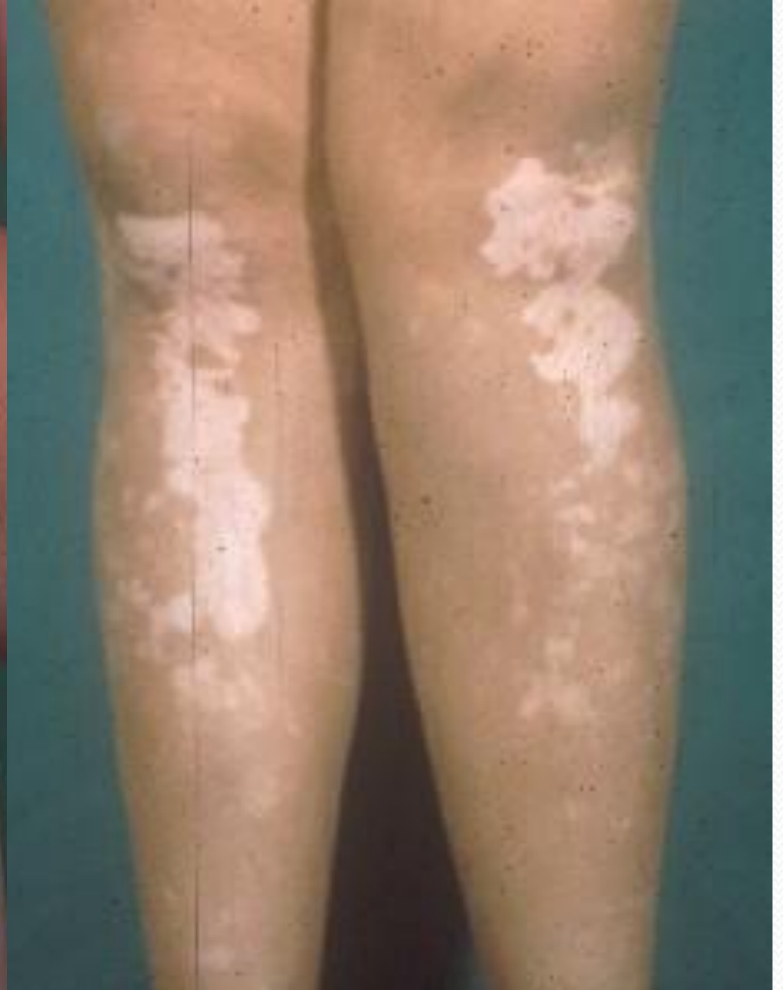
Skin-colored papules and nodules

- Verruca Vulgaris
- Verruca Plana
- Molluscum contagiosum
- Cutaneous Horn

- Keratoacanthoma
- Actinic keratosis
- Squamous cell CA
- Basal cell CA
- Epidermoid cyst
- Dermatofibroma

WHITE LESIONS

Case 1



Vitiligo

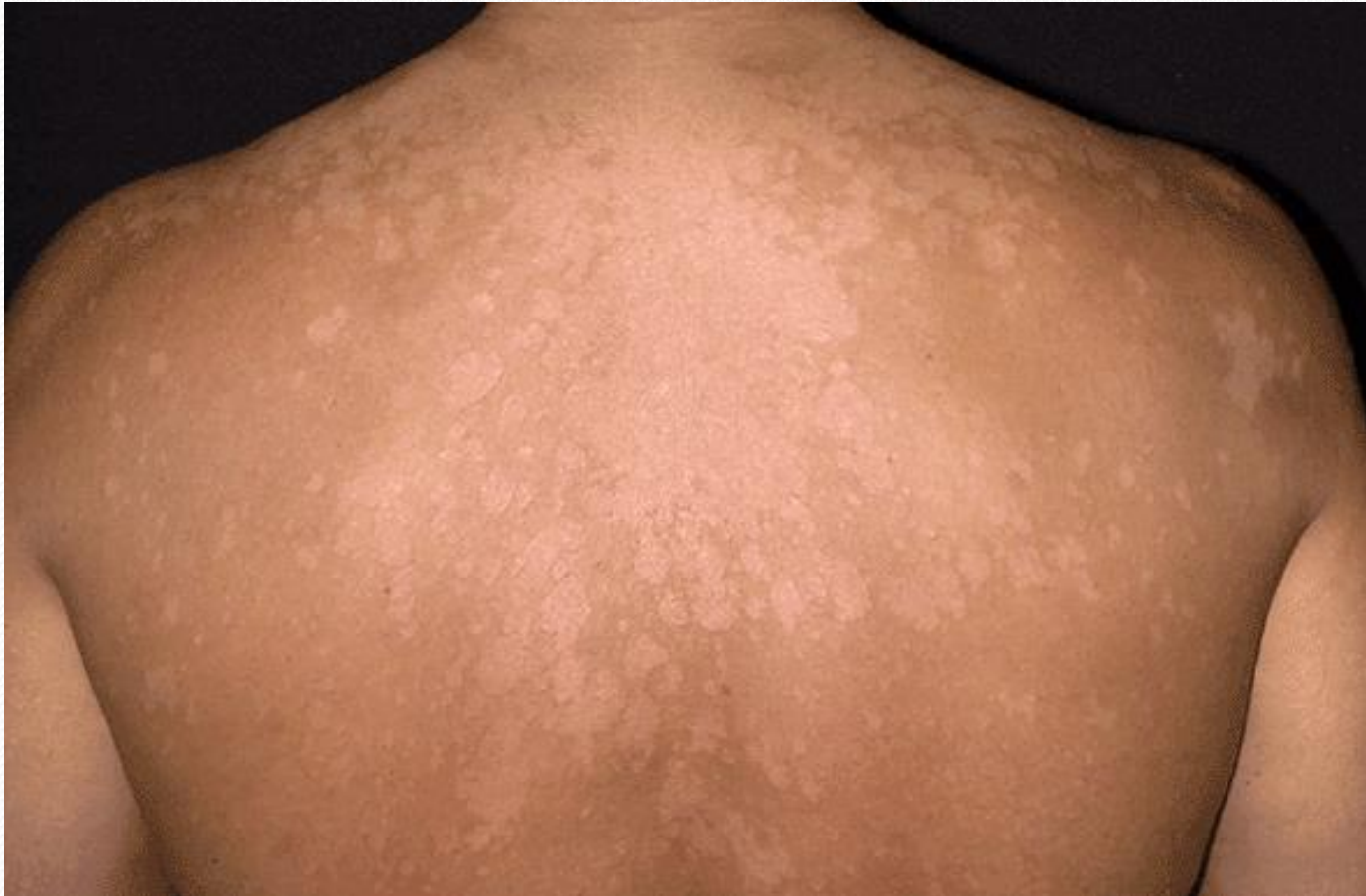
- Autoimmune destruction of melanocytes

- Poliosis: Vitiligo macule

- Association: Thyroid Disease (30%)
  - Also: Pernicious anemia, Addison's, Diabetes type 1

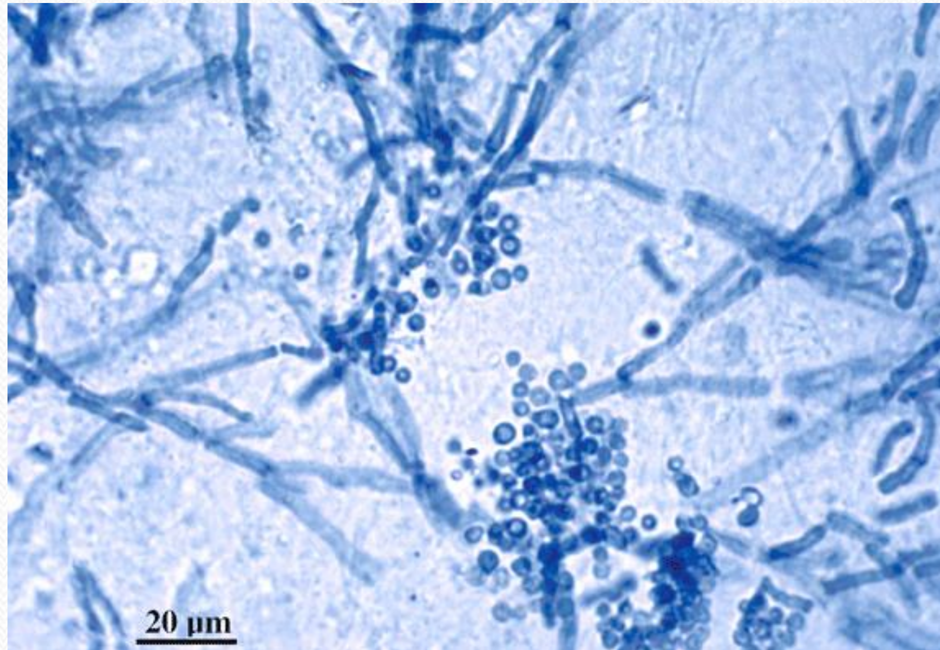
- Very difficult to treat in hairless areas!
  - Recruits melanocytes from follicles
  - Glucocorticoids and phototherapy

Case 2



Tinea Versicolor

- Clinical: Hyper or hypopigmented
- KOH: Spaghetti and meatballs

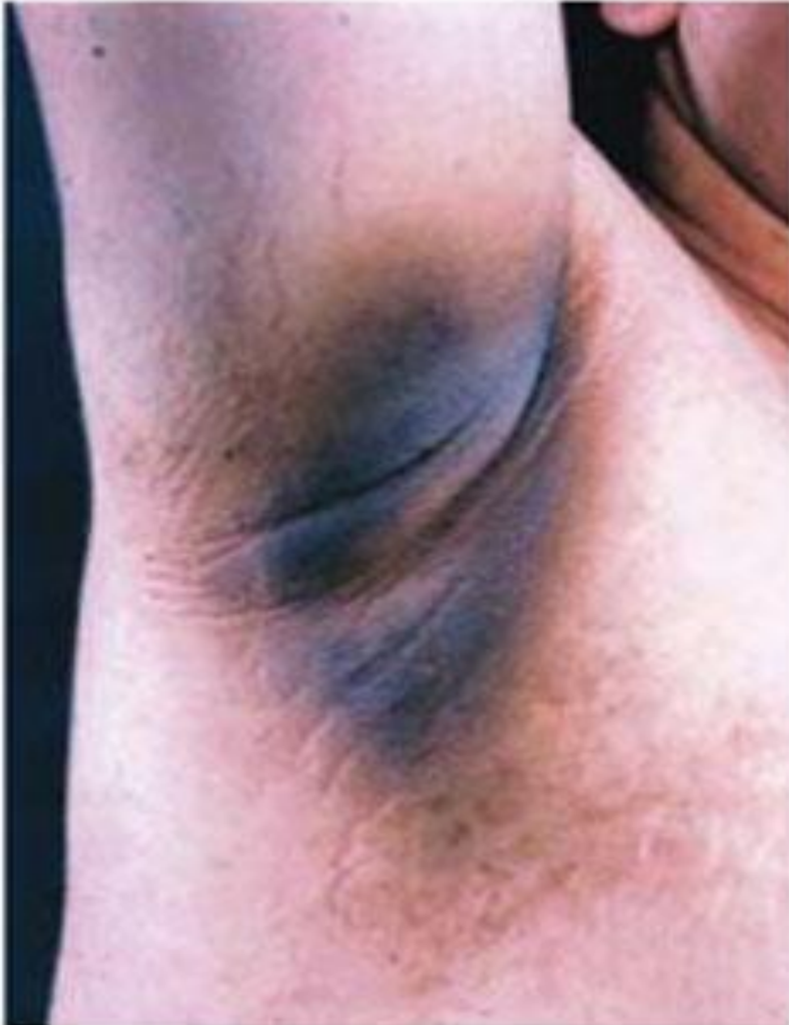


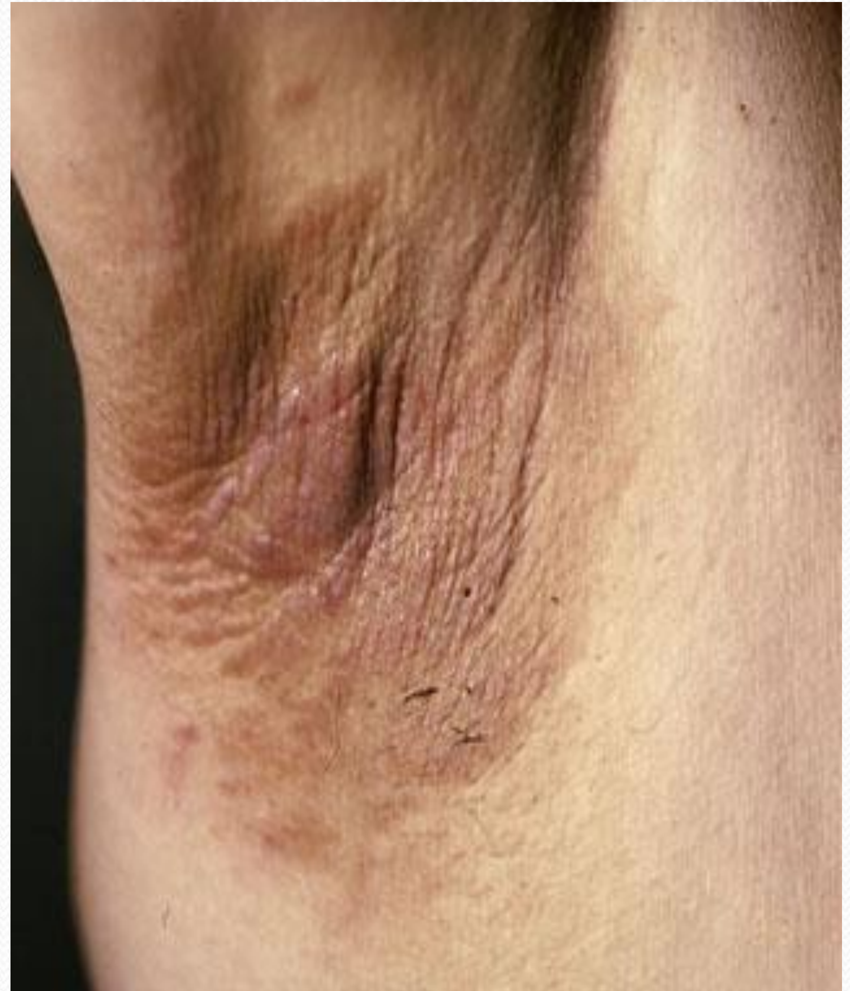
White lesions

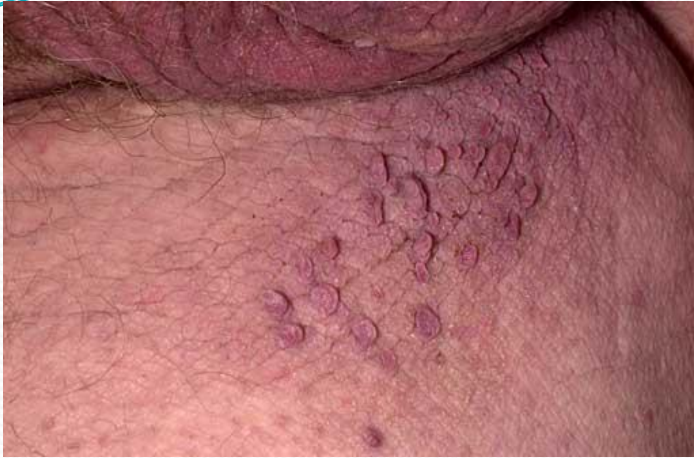
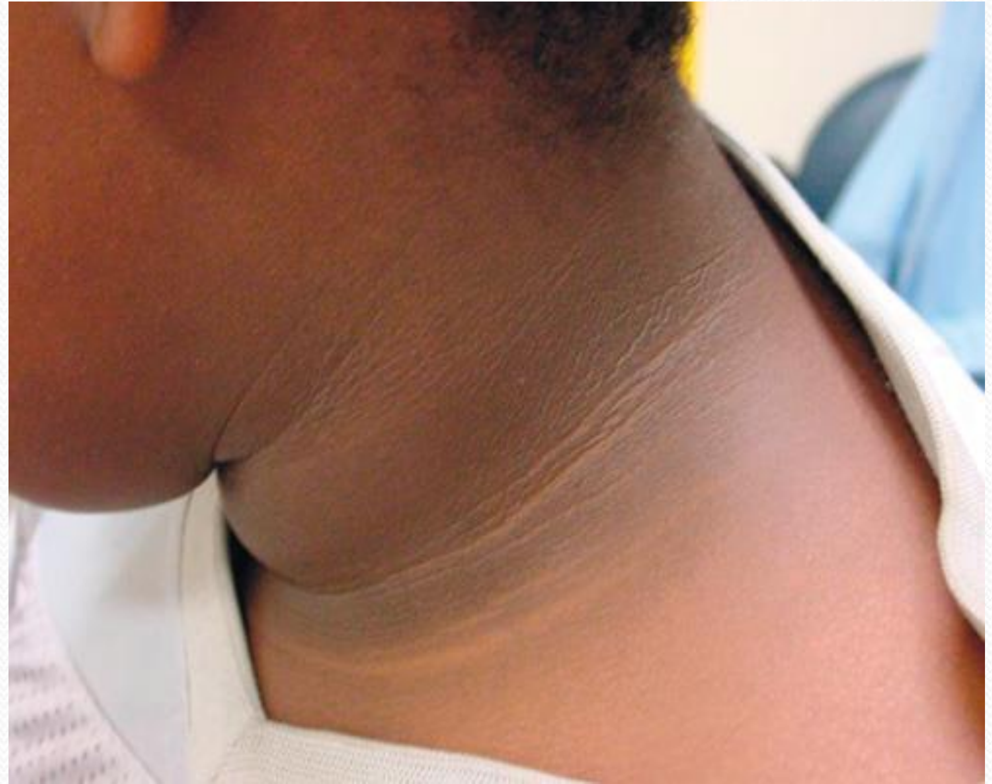
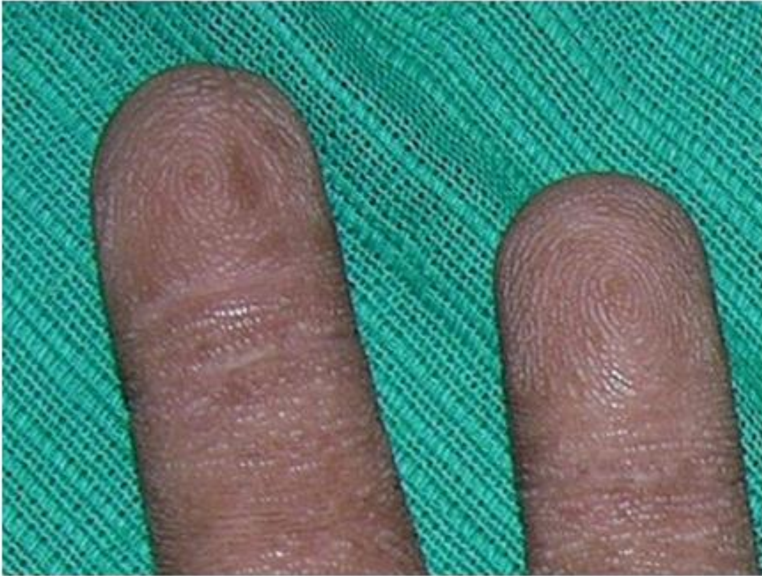
- Vitiligo
- Tinea versicolor

BLUE, BLACK, and BROWN LESIONS

Case 1





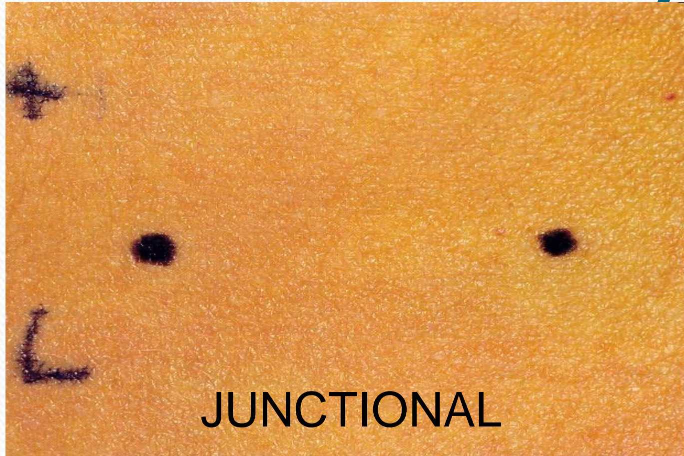




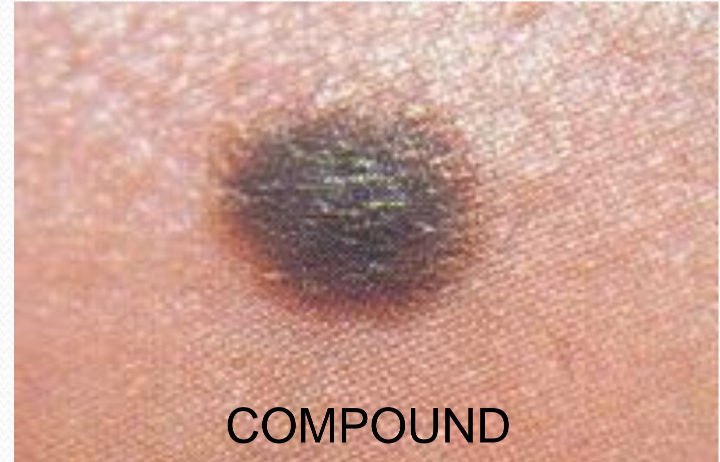
Acanthosis Nigricans

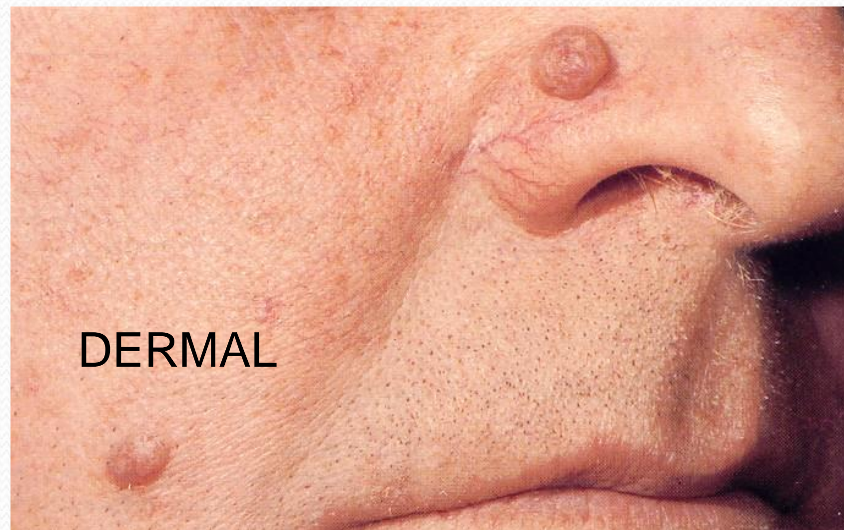
1. Internal Malignancy
   - Adenocarcinoma
   - More mucosal involvement

2. Insulin Resistance
   - Presumed mechanism: ↑↑ **IGF**
   - Skin tags (acrochordon)
   - Tripe palms

Case 2: Types of Nevi



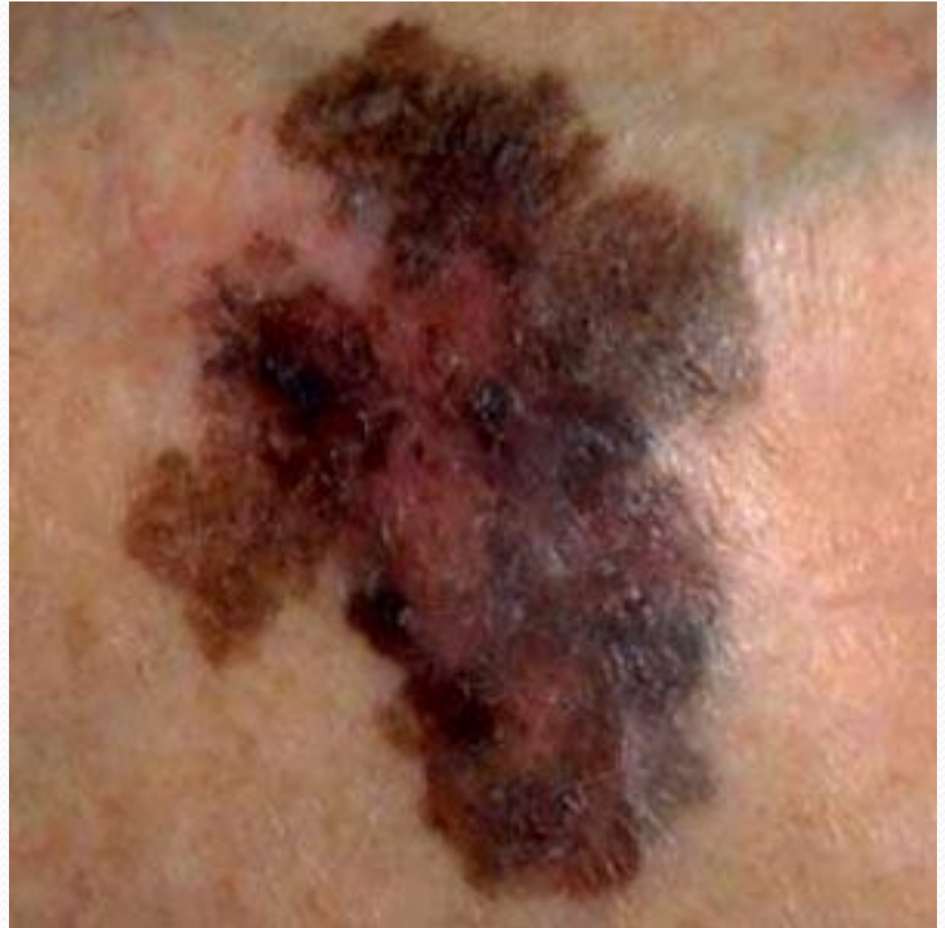




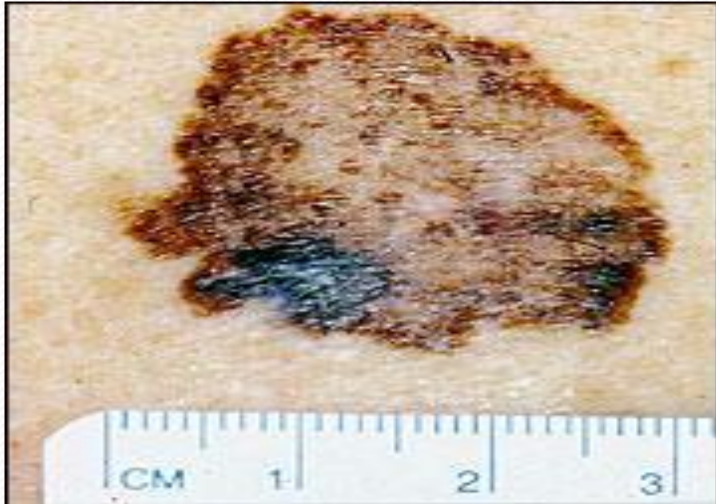
Case 3: Melanoma

- Asymmetry
- Border Irregularities
- Color Variation
- Diameter < 6mm
- Elevation

- Dermatologists like to refer to the “flag sign”.

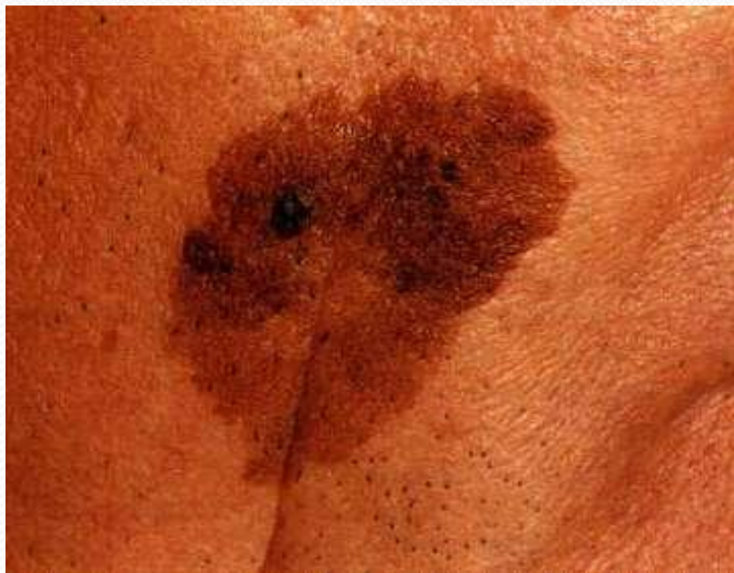


Types of melanomas

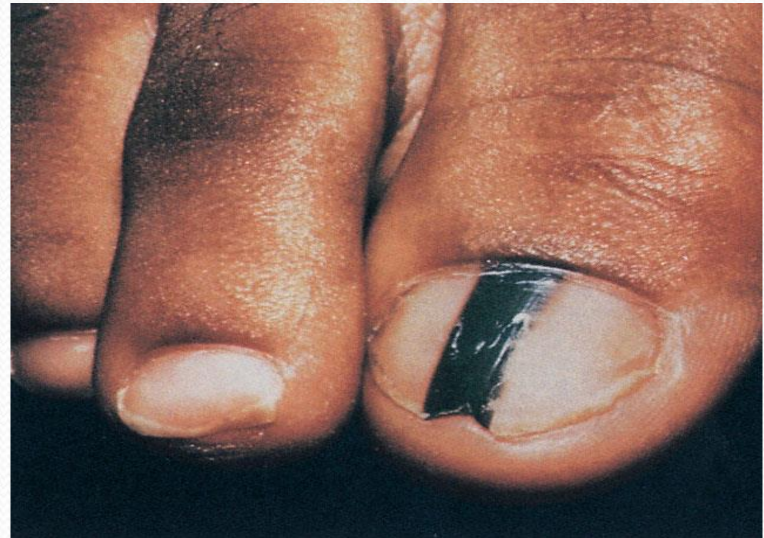


Superficial spreading

Nodular



Lentigo maligna melanoma



Acral melanoma

Blue, Black and Brown Lesions

- Acanthosis Nigricans
- Melasma
- Nevus
- Melanoma

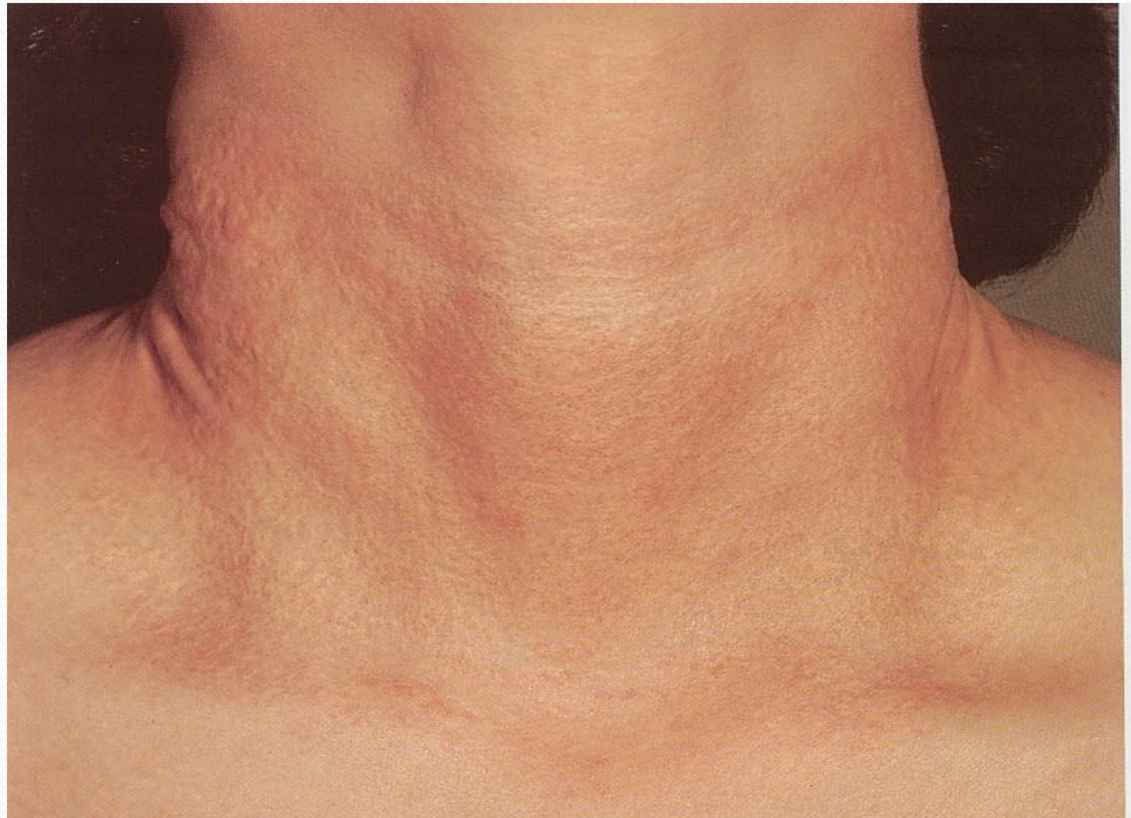
YELLOW LESIONS

Case 3

MI at age 37

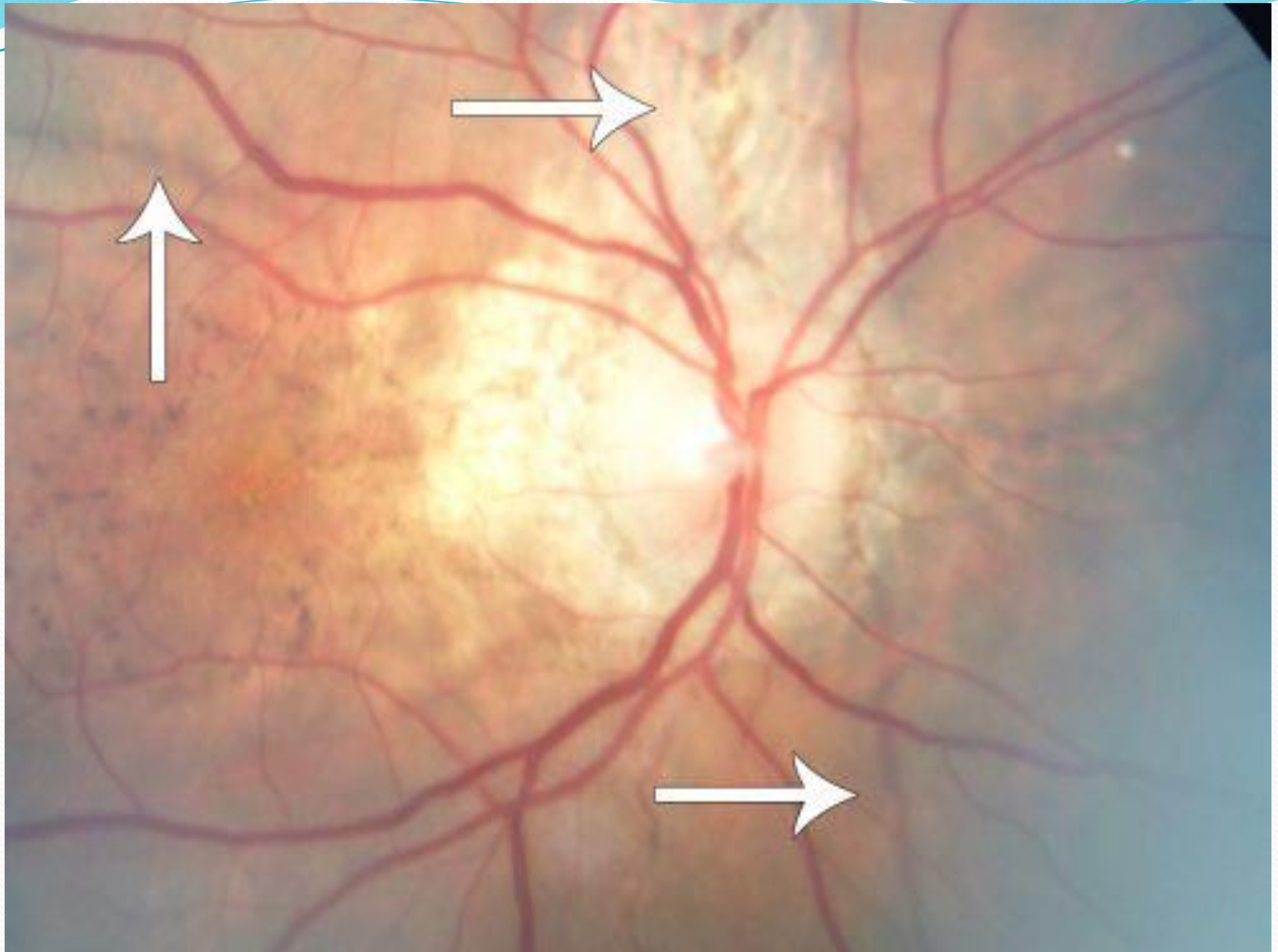
Angioid streaks on retinal exam

“Chicken-skin” appearance to neck



Pseudoxanthoma elasticum

- Connective tissue disorder (Elastin)
  - Skin: **Peau d' orange**
  - Blood vessels: **Premature MI**, Renovascular HTN, Claudication
  - Eye: **Angioid streaks of retina**
  - GI: Gastric artery hemorrhage (hematemesis)
- "Genetic Counseling"

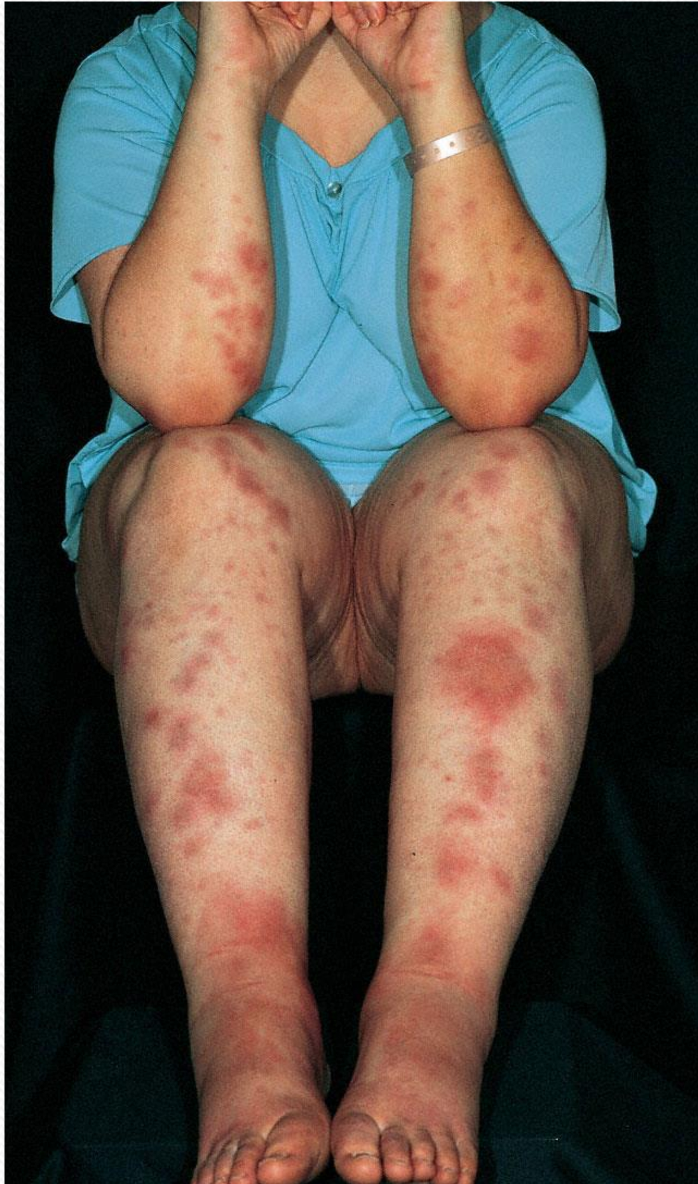


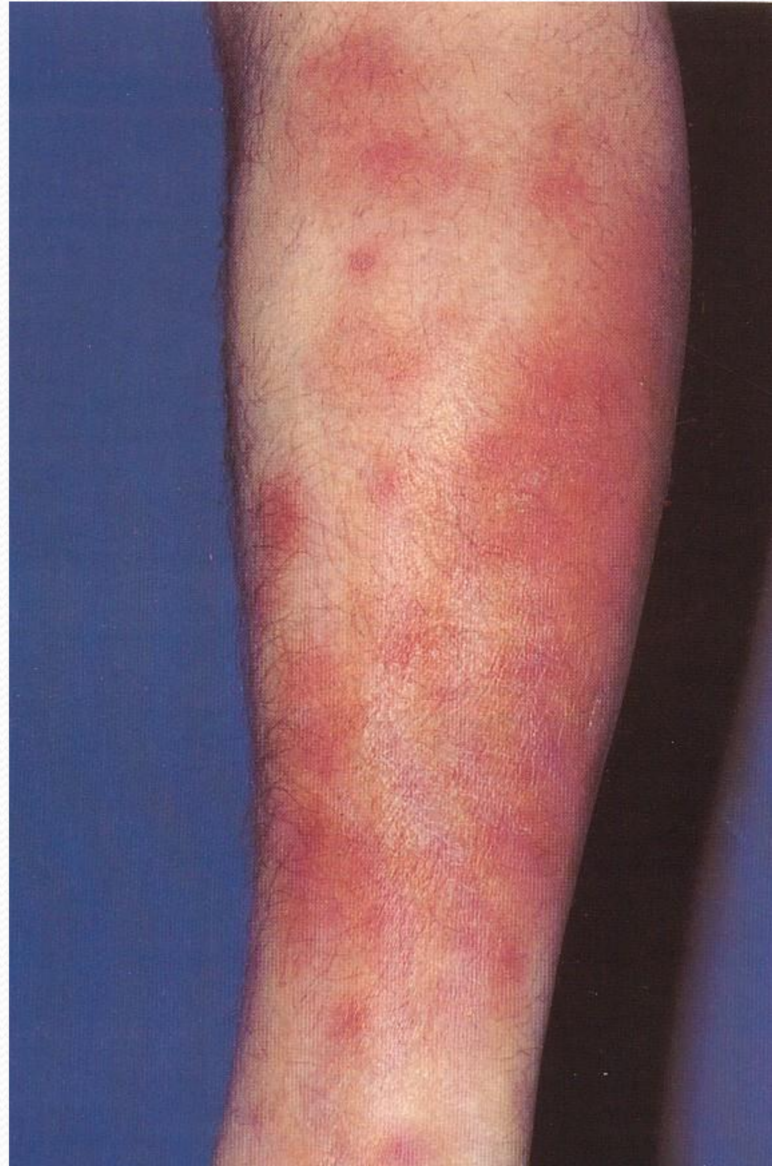
Yellow lesions

- Xanthomata
- Necrobiosis Lipoidica
- Pseudoxanthoma Elasticum

RED PAPULES AND NODULES

Case 1

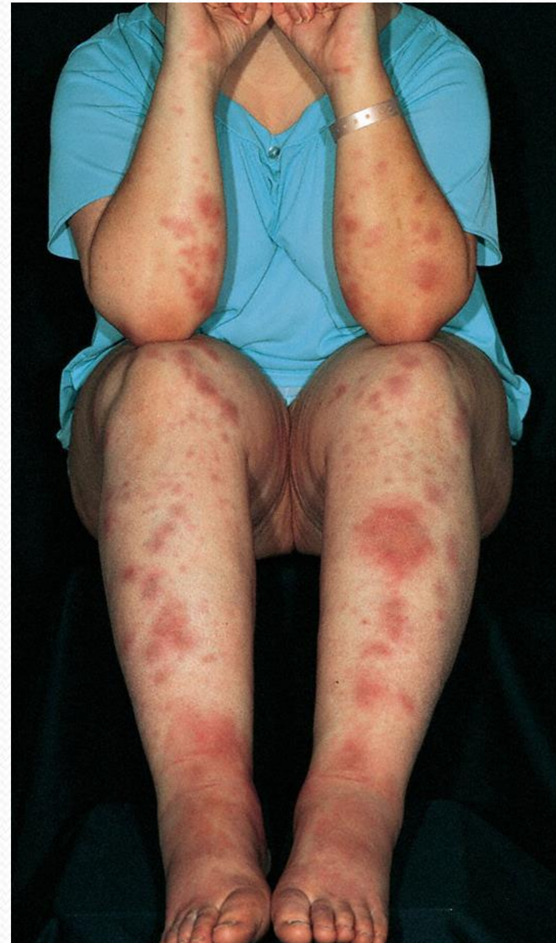




Erythema Nodosum (EN)

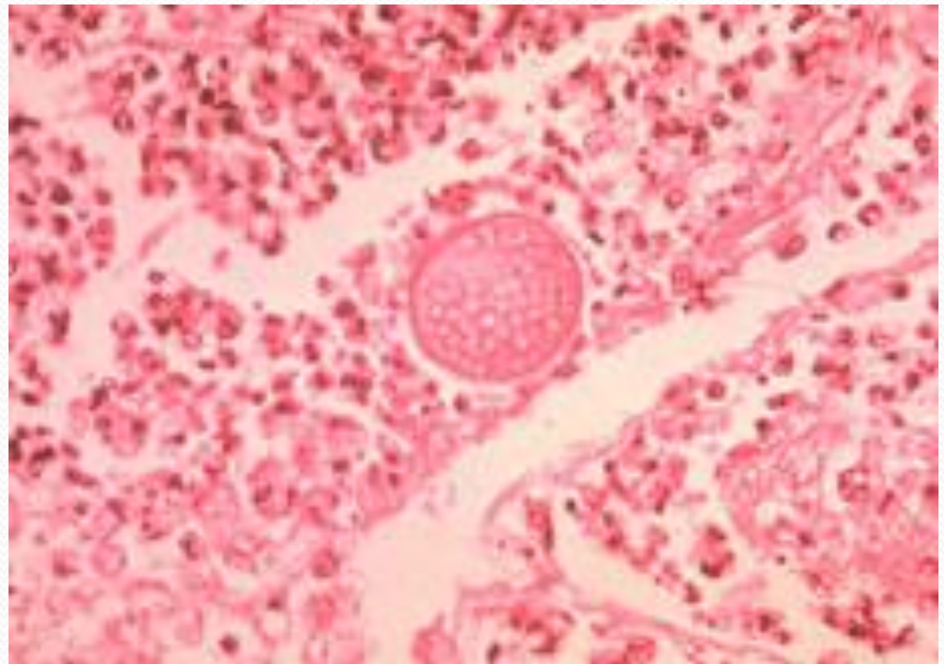
- NECK:
  - Post-streptococcal infxn
- CHEST
  - Cocci/Sarcoidosis
- ABDOMEN
  - Inflammatory bowel dz
- PELVIS
  - OCPs

- TENDER deep inflammation of CT around fat

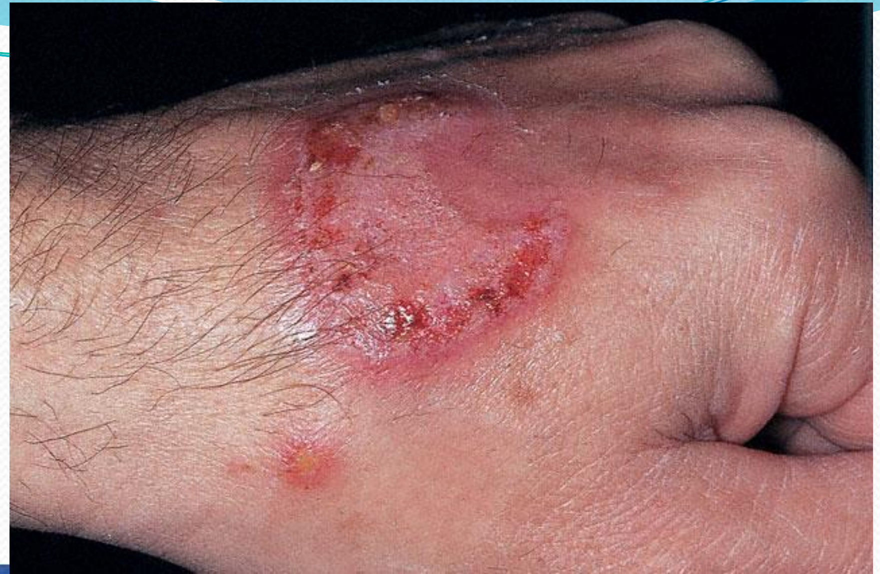


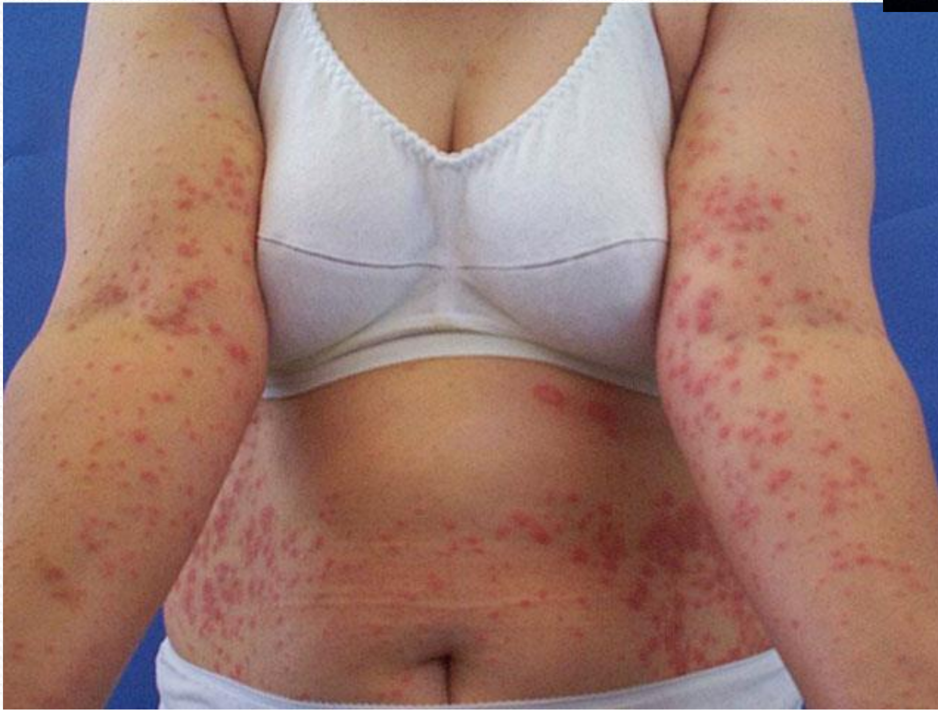
Erythema Nodosum (EN)

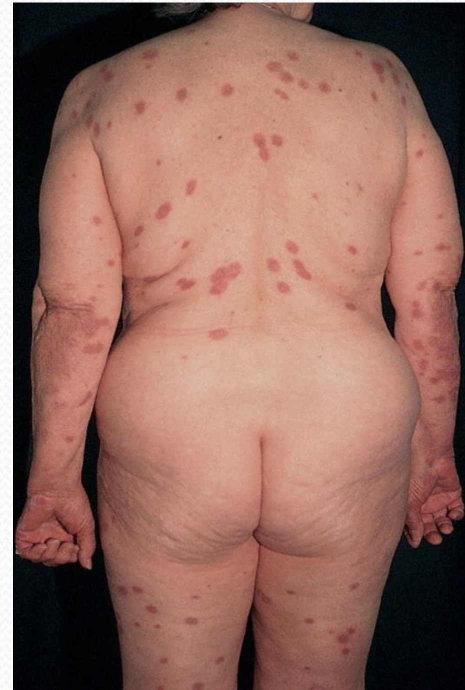
- Poststreptococcal
- Cocci
- OCPs
- IBD
- Sarcoidosis
- TENDER
- PANNICULITIS
  - Very deep



Case 2







SWEET'S SYNDROME (Acute Neutrophilic Dermatosis)

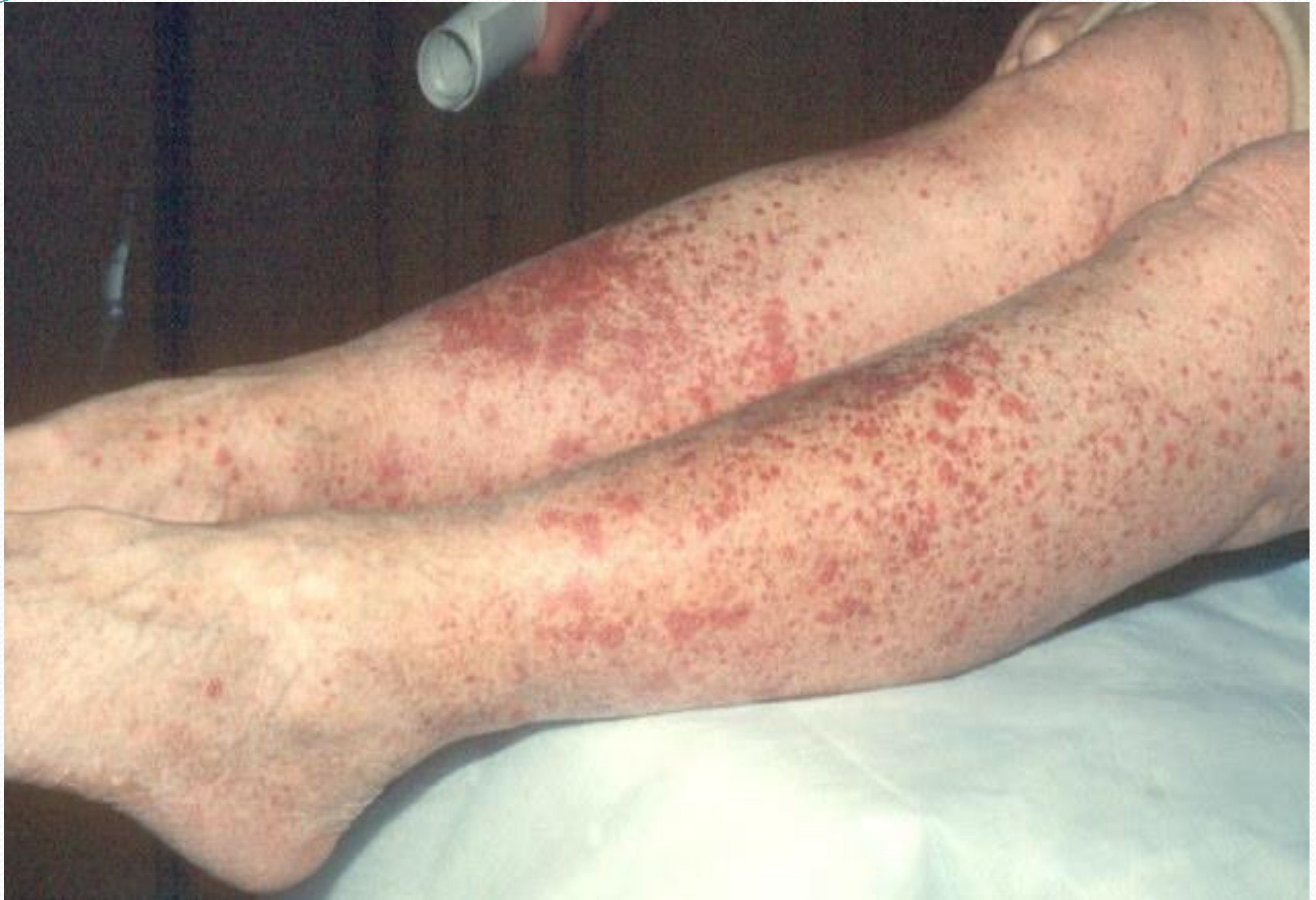
- Red tender plaques
- Sweet's is a reaction to an internal condition.
- It may follow:
  - Upper respiratory tract infection (strep throat)
  - Vaccination
  - **Inflammatory bowel disease** (UC or Crohn's)
  - Rheumatoid arthritis
  - Blood disorders including **leukemia** (AML).
  - **Internal cancer** (bowel, GU or breast)
  - Pregnancy
  - **Drugs** (G-CSF, NSAIDs, cotrimoxasole)
- Sometimes difficult to distinguish from PG

Red papules and nodules: (solid, red, non-scaling)

- Cherry angiomata
- Erythema nodosum
- Erythema chronicum migrans
- Sweet's syndrome

VASCULAR REACTIONS

Case 1

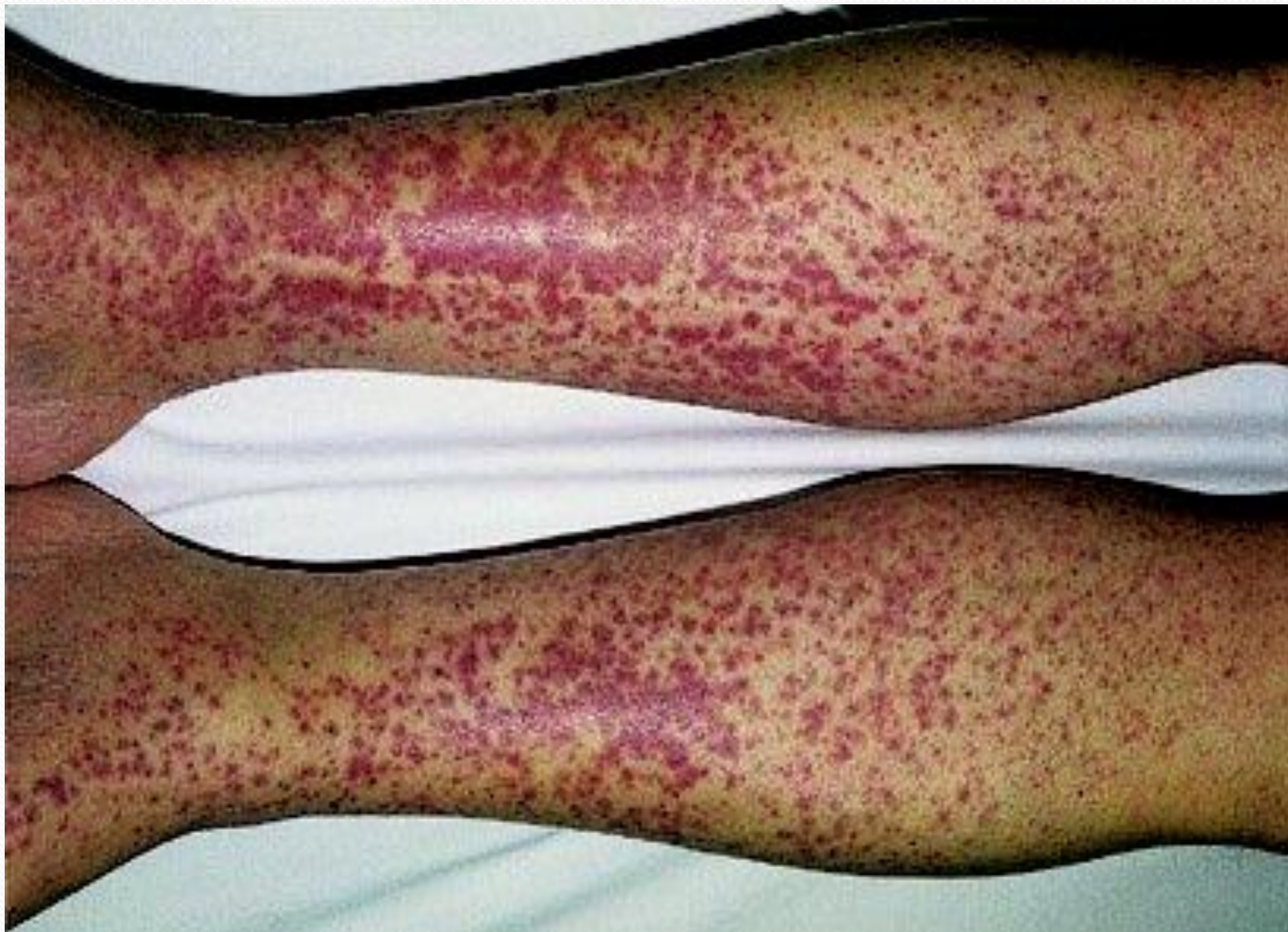


Leukocytoclastic Vasculitis

- Palpable Purpura
- Histologic diagnosis (no etiology)

- Small vessel necrotizing vasculitis
  - MOST COMMON
- Immune complexes in walls of post-capillary venules
- Major cause: Drugs

Case 2



Henoch-Schonlein Purpura

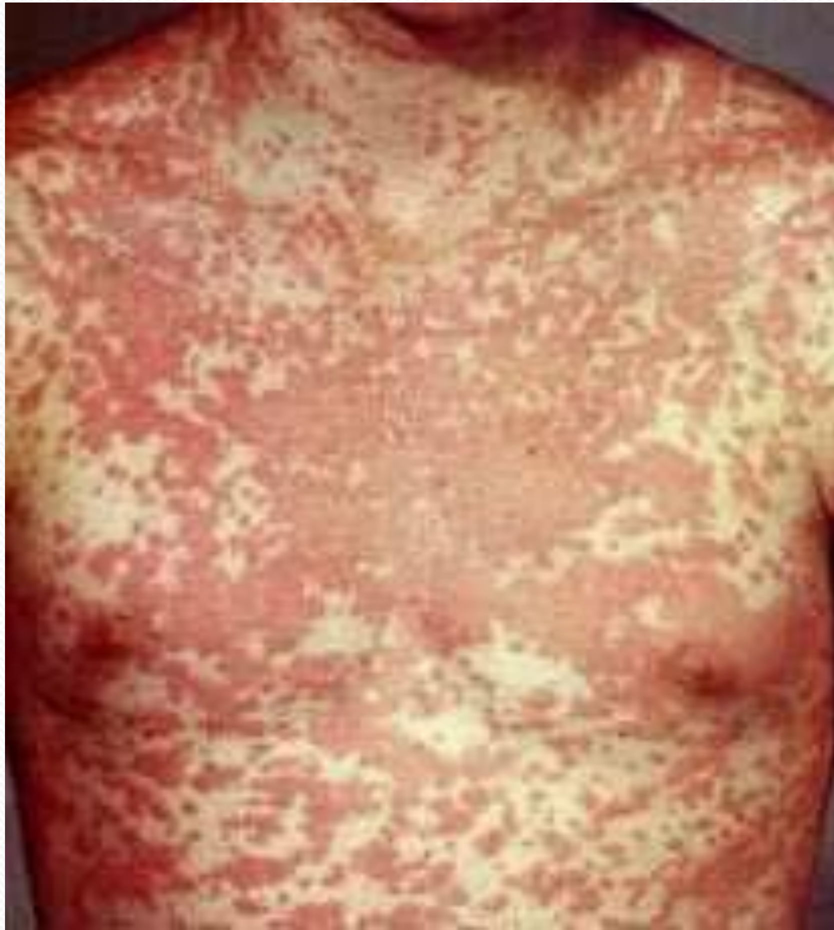
- Palpable Purpura
- Non-blanching on diascopy

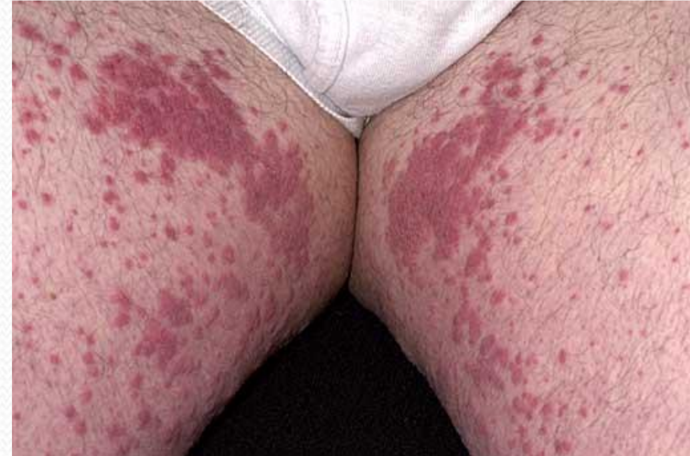
- Association? URI (75%)
- GI: Bowel angina or bloody diarrhea
- Arthritis

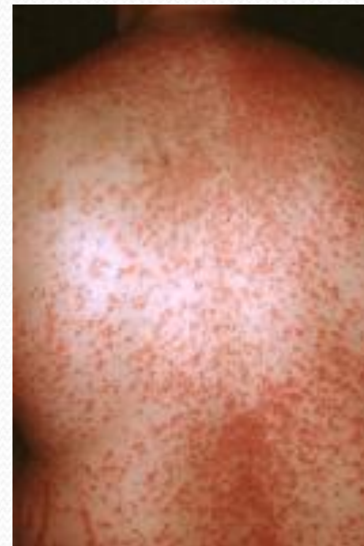
- UA…HEMATURIA (RBC casts)
- What is HSP localized to the kidney?

IgA Nephropathy (Berger's Disease)

Case 3:
Morbilliform Drug Eruption







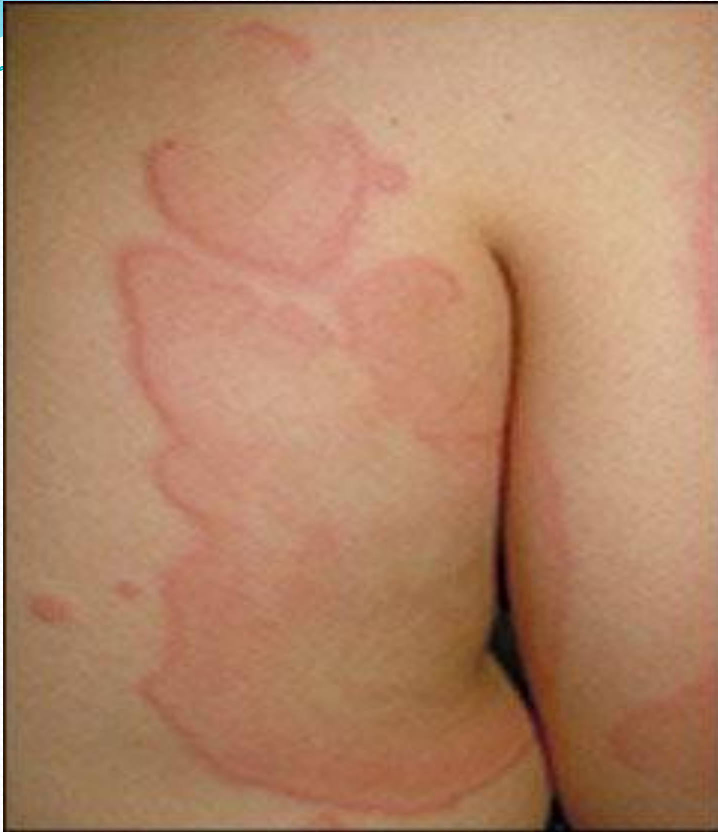
Morbilliform Drug Eruption

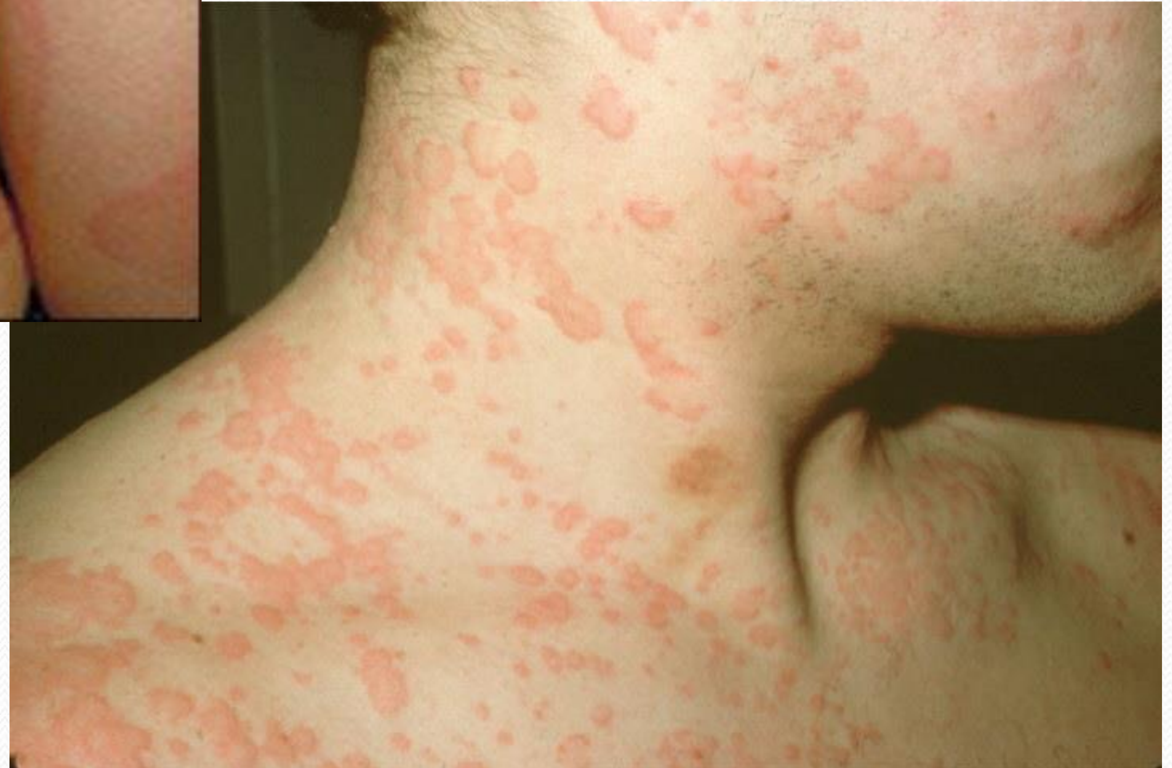
- Allopurinol
- Carbamezapine
- Beta-Lactam Abx
- Sulfonamides

- Starts 1-4 weeks after initiation of drug

- DRESS syndrome

Case 4





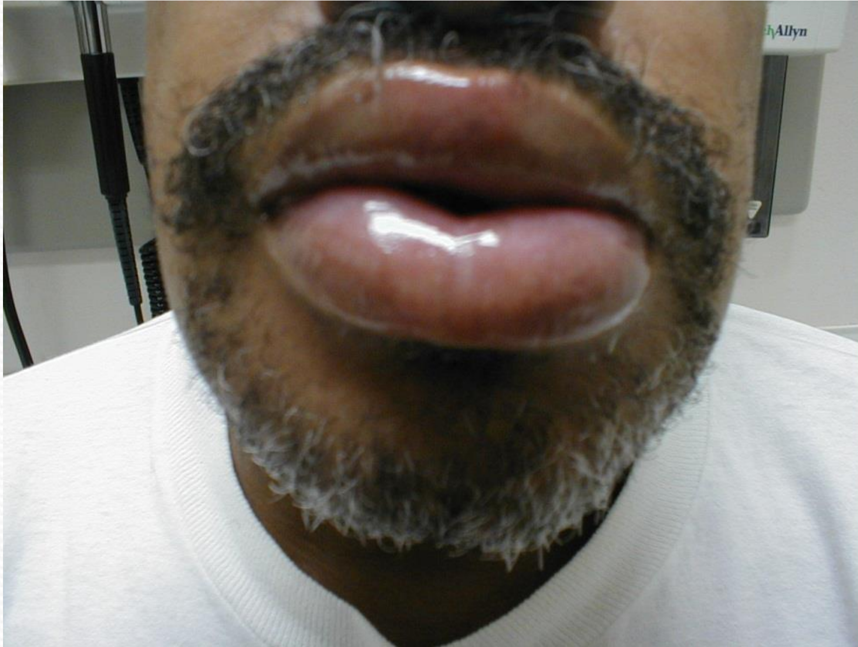
Urticaria

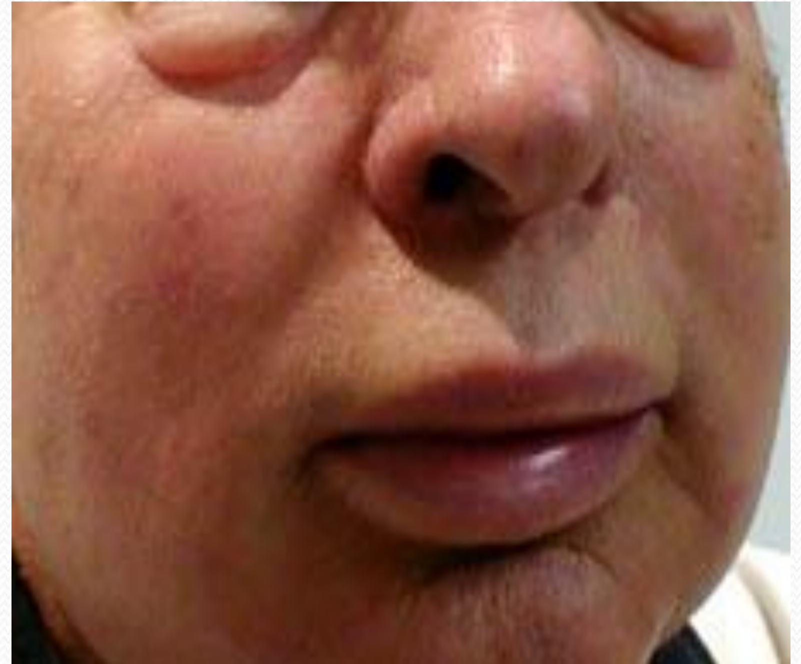
- Wheals (Hives)
- Blanching on diascopy

- Classification: Acute or Chronic
- Many physical and immunologic causes

- Changes in size and shape and can disappear - DYNAMIC

Case 5: Angioedema





- Hereditary or Acquired

First test to check is C4!

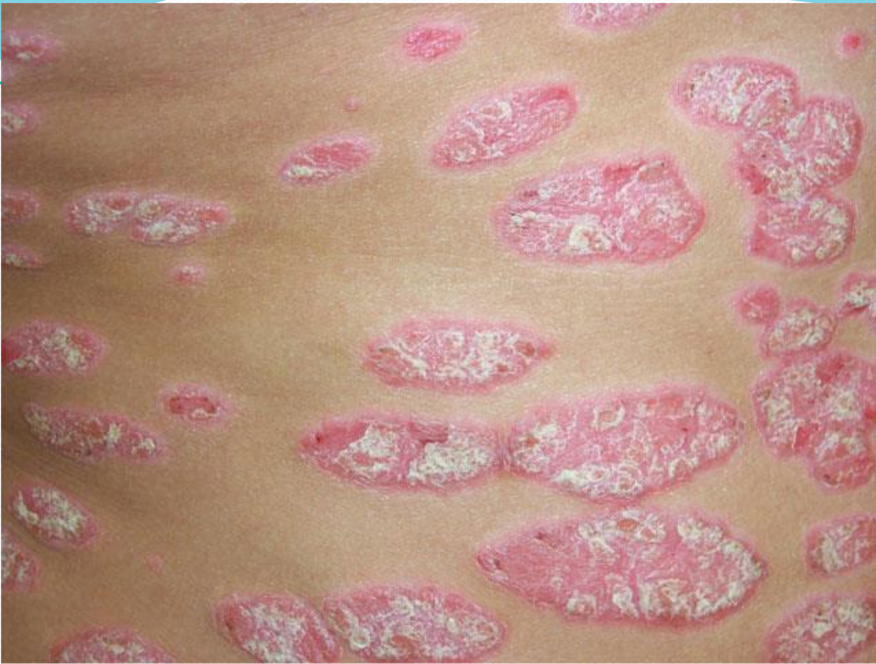
Vascular Reactions

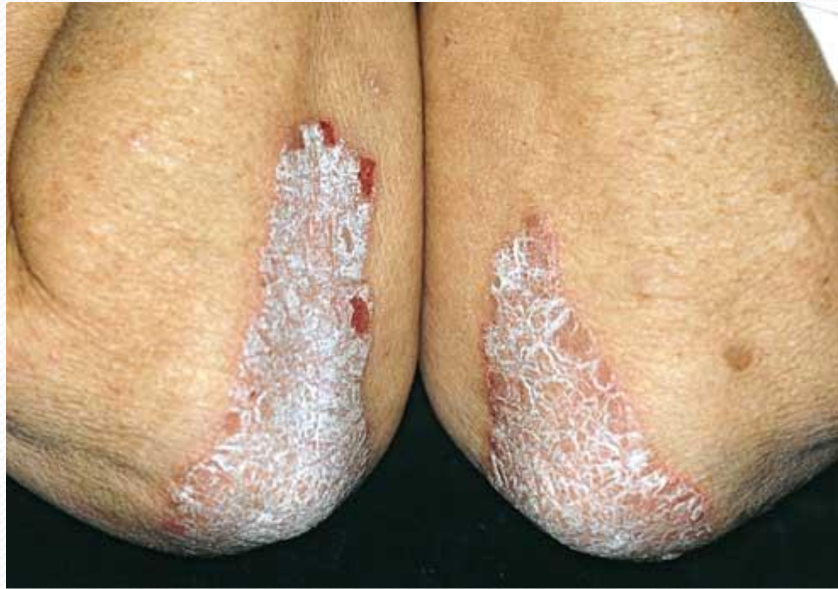
- Leukocytoclastic vasculitis
- Henoch-Schonlein Purpura
- Morbilliform drug eruption
- Urticaria
- Angioedema

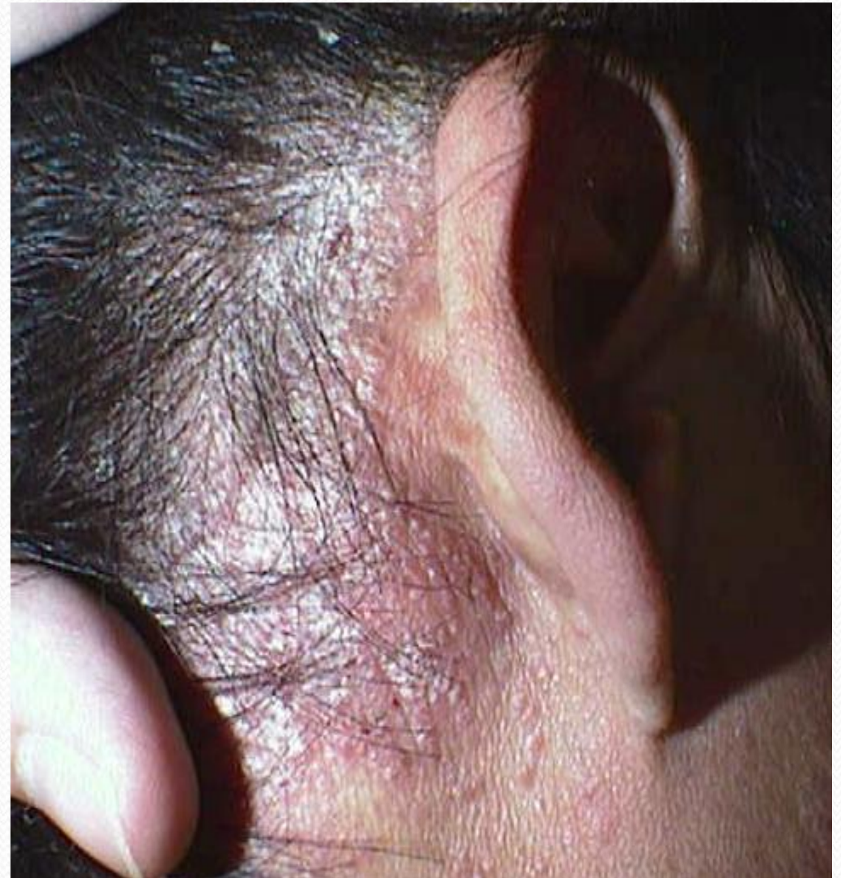
PAPULOSQUAMOUS

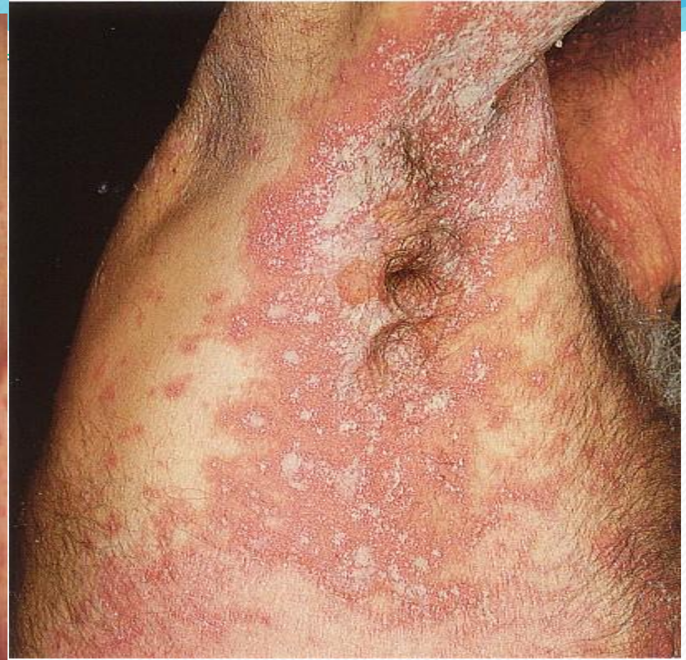
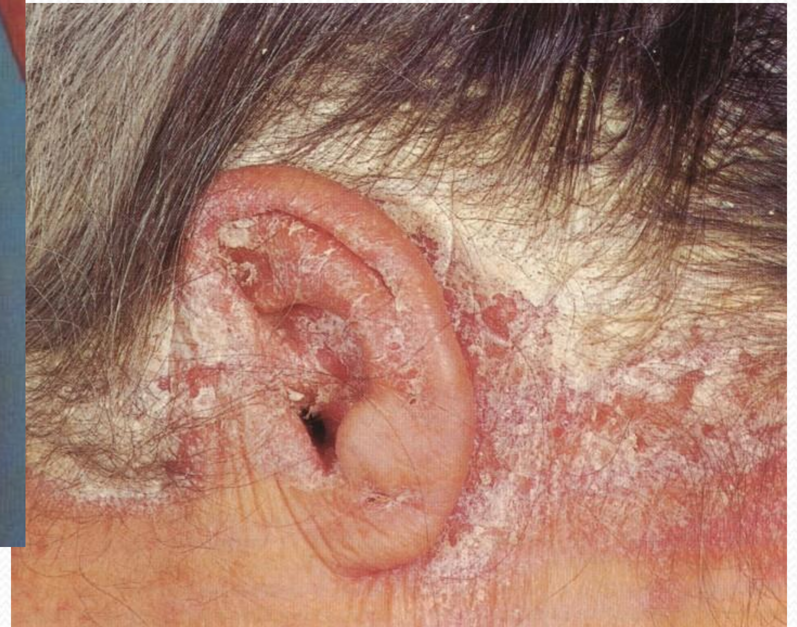
The 3 Ps, 3Ls, and Fungus!

Case 1



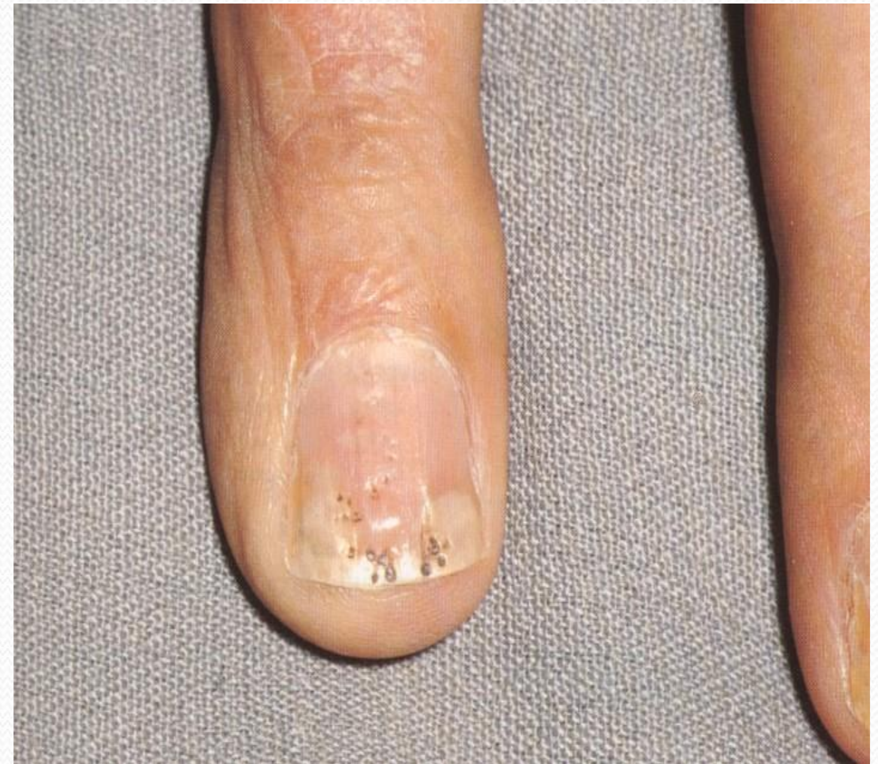




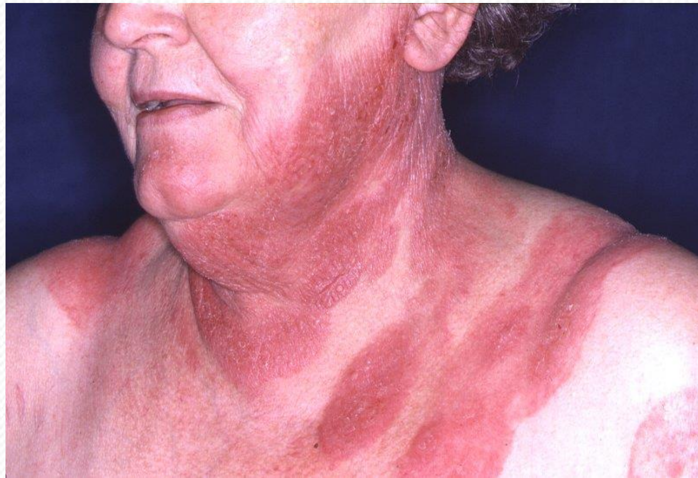
PSORIASIS

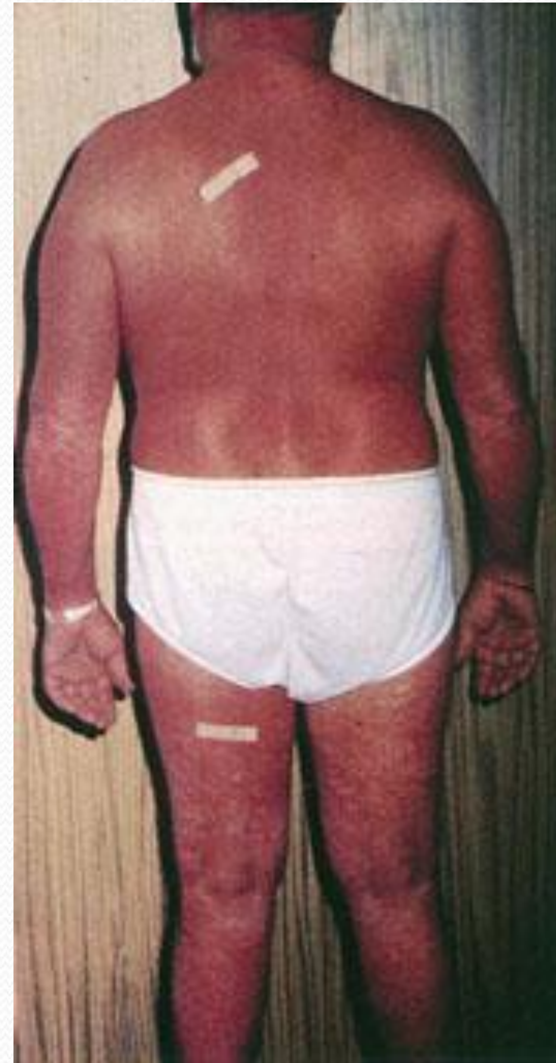
- Many types
  - Plaque
  - Scalp
  - Pustular
  - **Guttate**
    - **POST-STREP**
- Nail pitting
- Onycholysis
- Oil spots

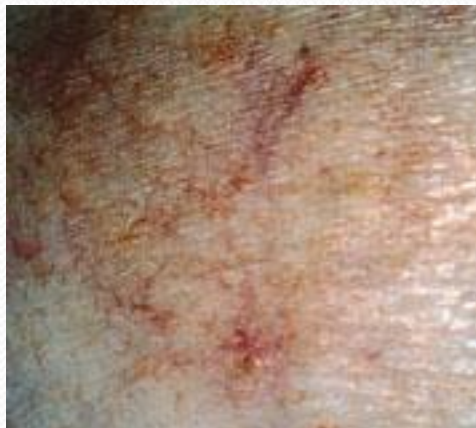


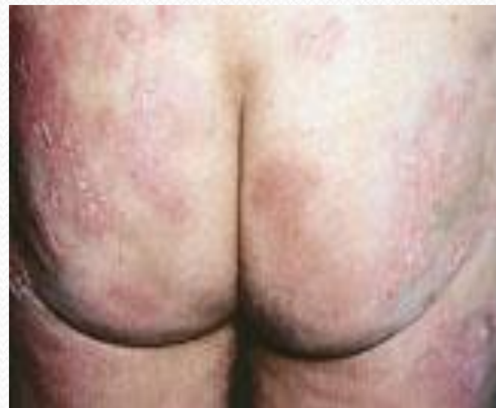
Case 2:

Parapsoriasis – Cutaneous T-cell Lymphoma (Mycosis Fungoides and Sezary Syndrome)

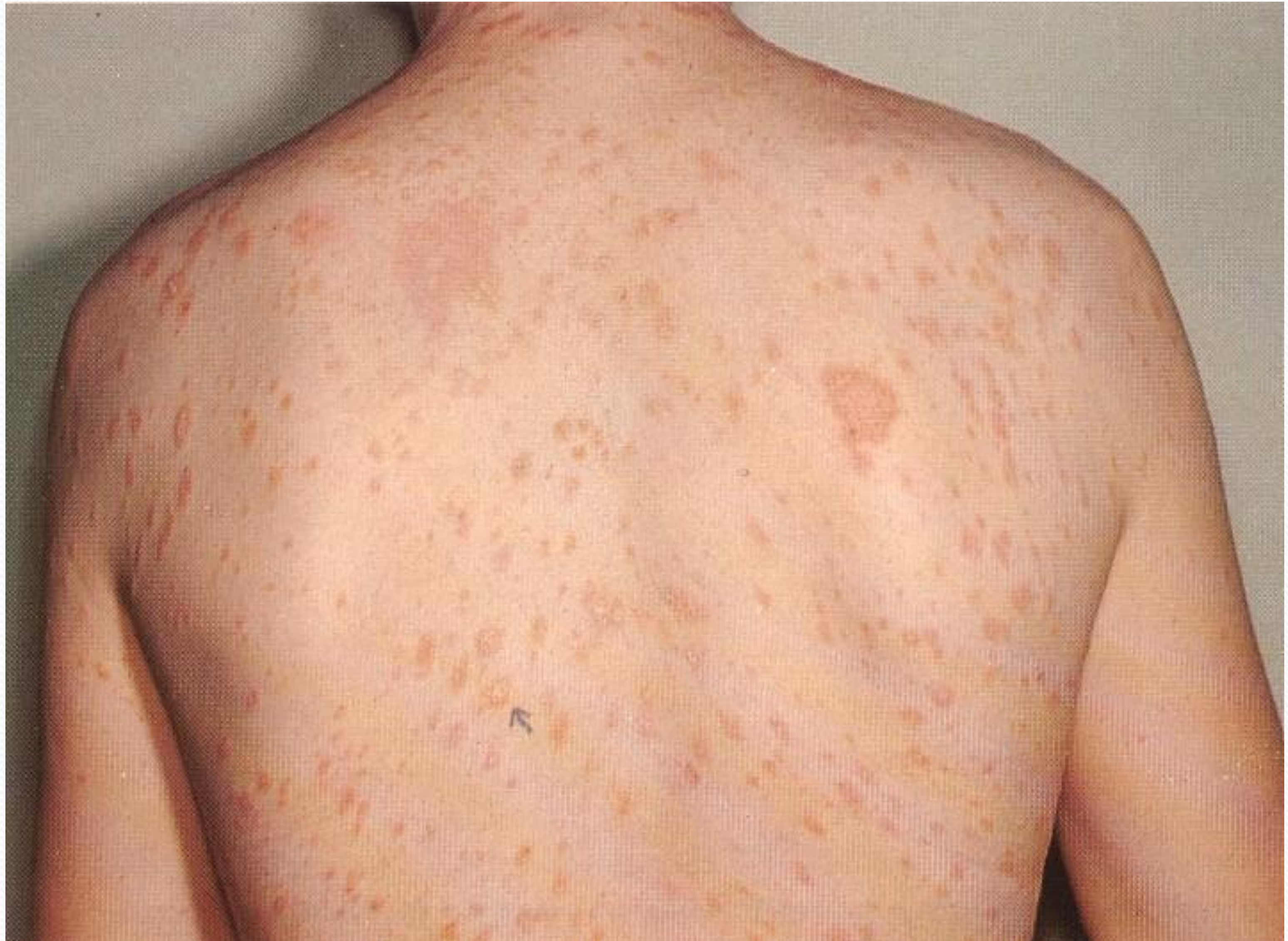




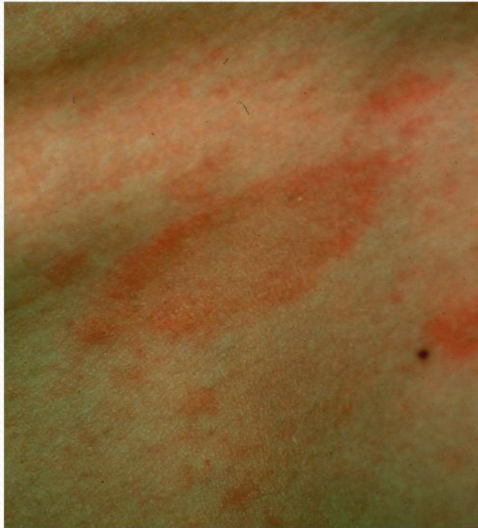


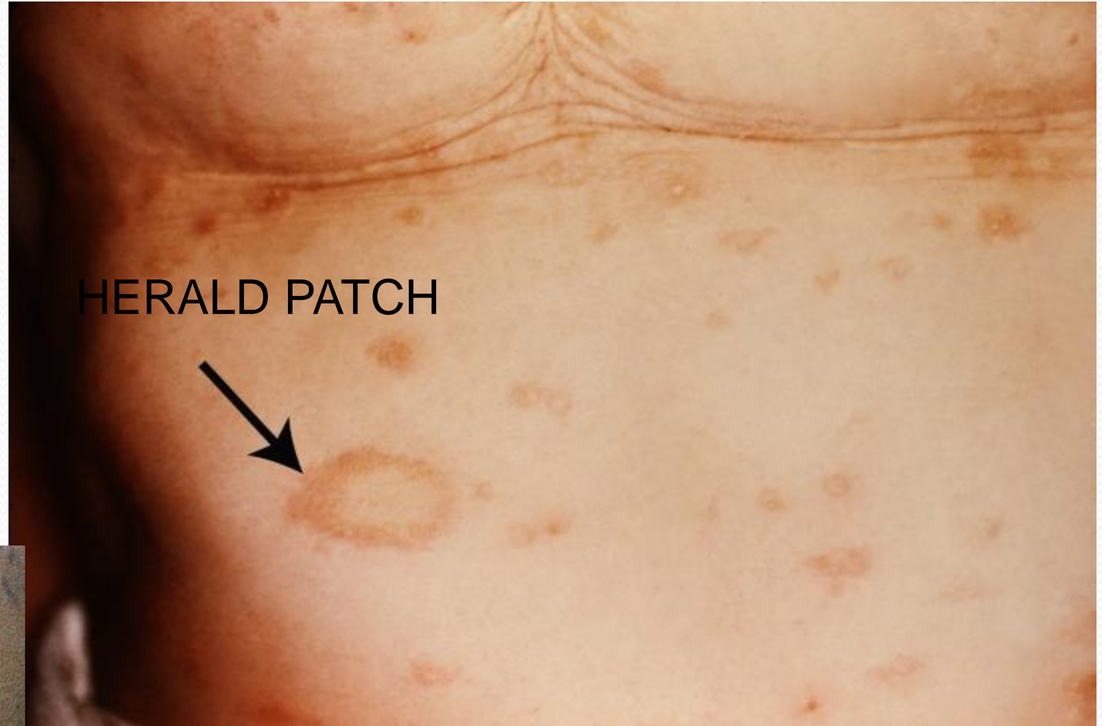


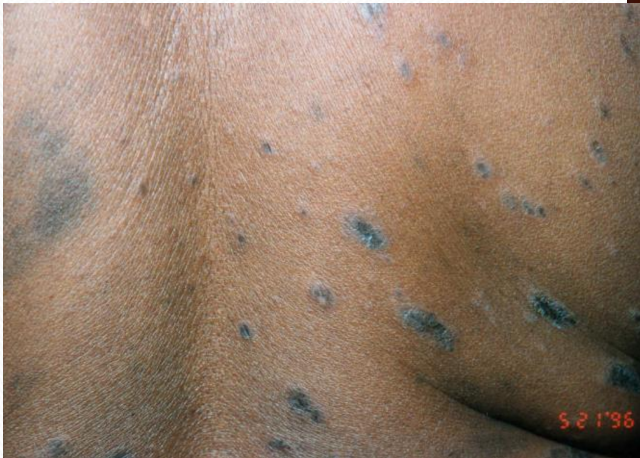
Case 3



Pityriasis Rosea







DISTRIBUTION?

PROBABLE VIRUS?

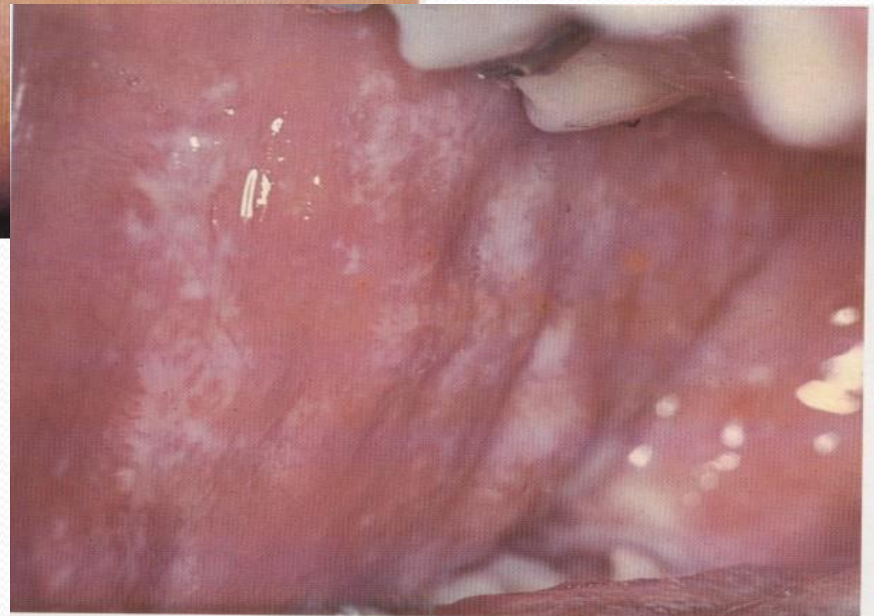
HHV-7

3Ps: Papulosquamous

- Psoriasis
- Parapsoriasis
- Pityriasis Rosea

- Now to the Ls…

Case 4



LICHEN PLANUS

Classic description

- 5Ps
  - PURPLE
  - POLYGONAL
  - PLANAR
  - PRURITIC
  - PAPULES
- What are the little white lines atop the LP?

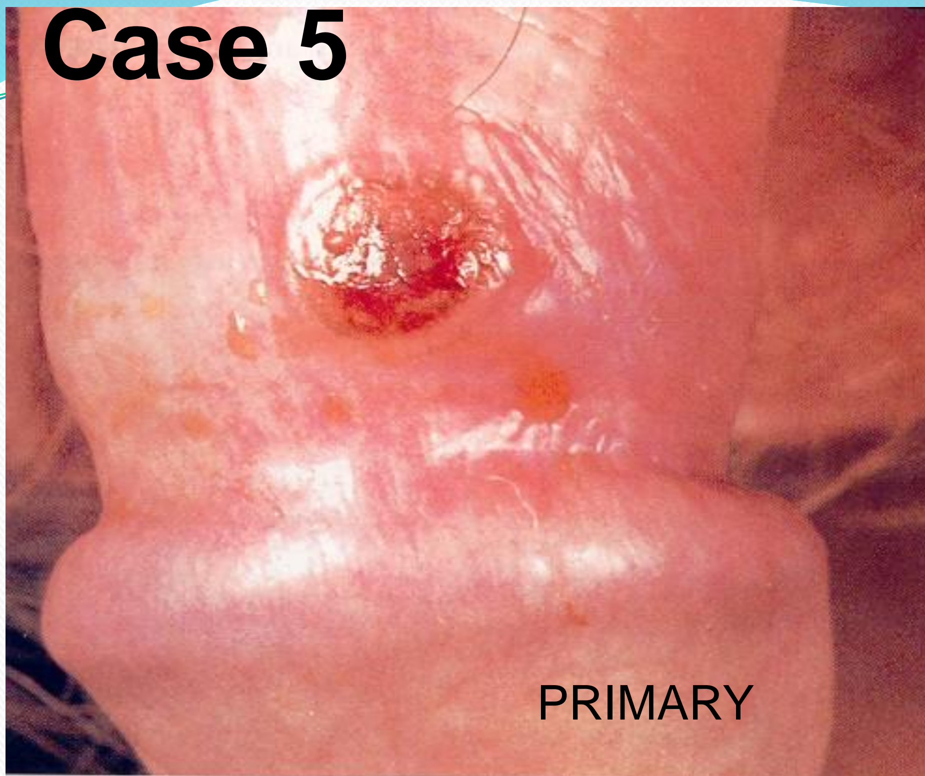
WICKHAM' S STRIAE

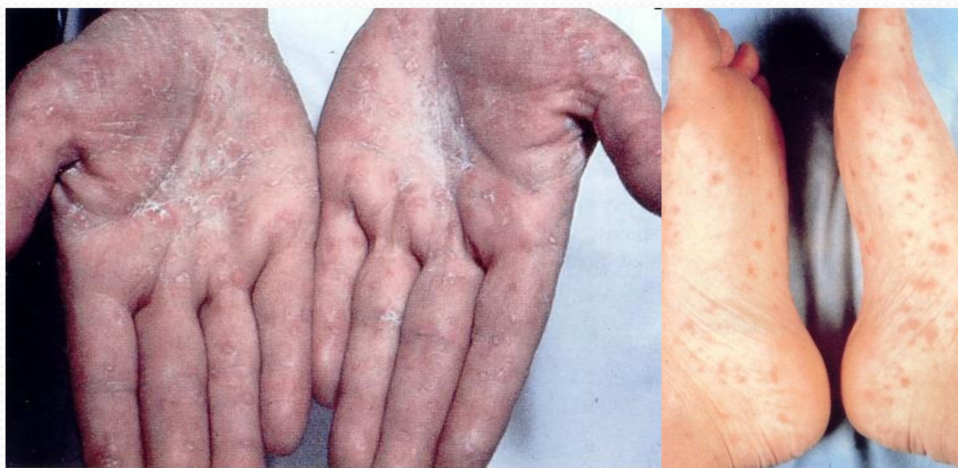
- Major Association?

HEPATITIS C

When you see a papulosquamous disease, be careful because it could be…

Case 5





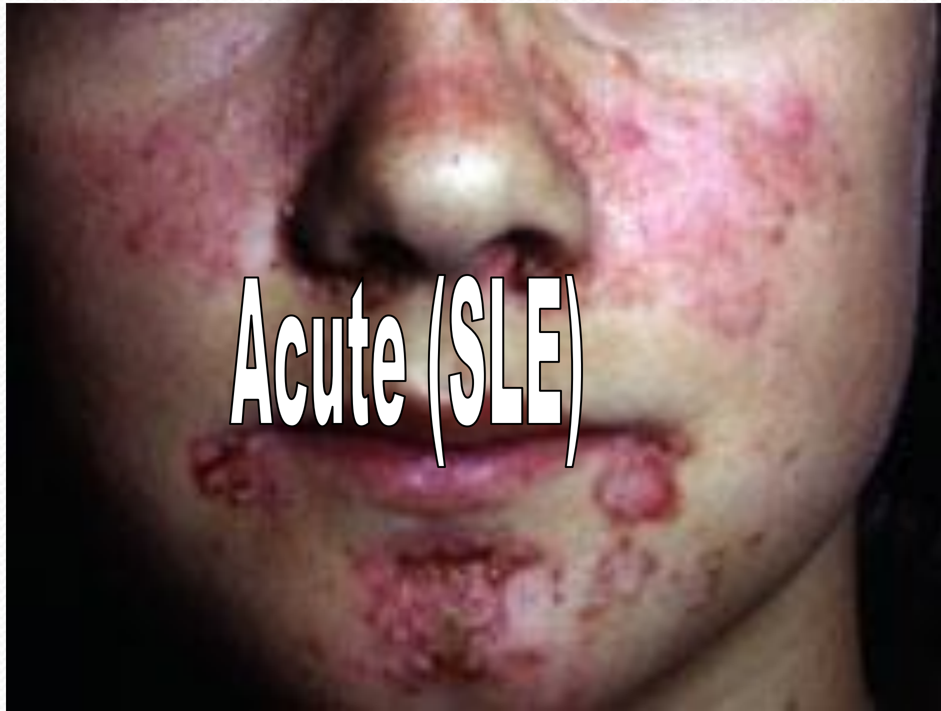
Lues (Secondary Syphilis)

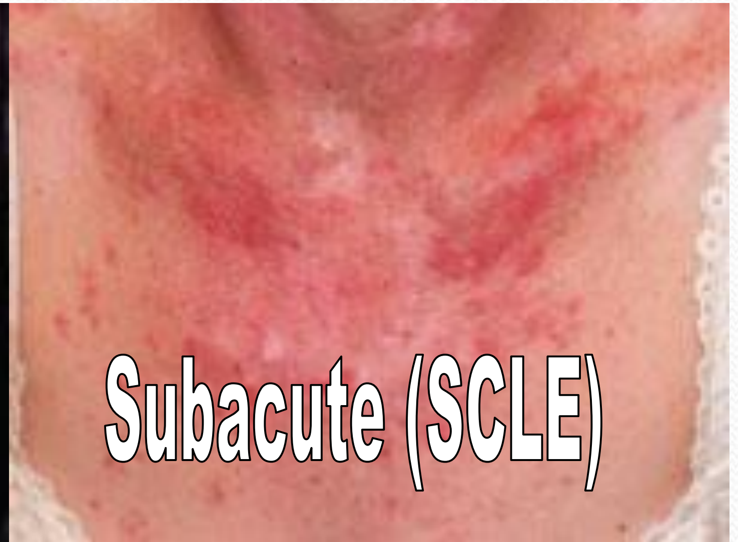
- Palms and soles involved
- Primary lesion: Chancre
- Secondary (in addition to rash)?

CONDYLOMA LATA

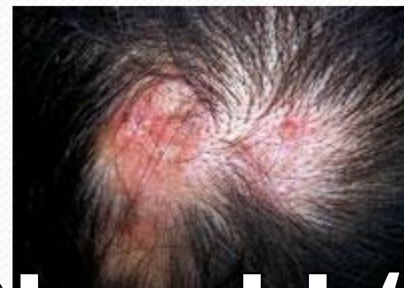
- Tertiary: Neurosyphilis

Case 6: LUPUS





KNUCKLE
SPARING

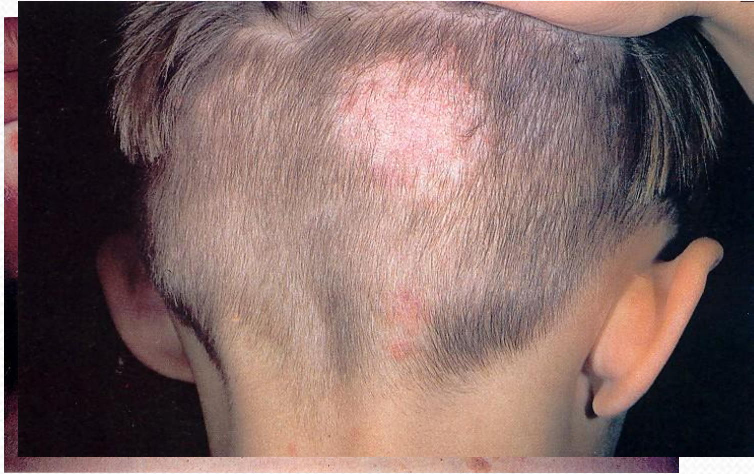


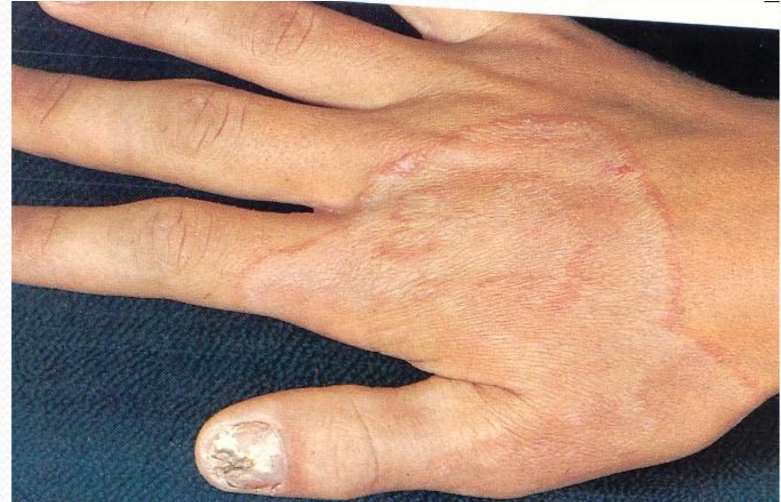
Discoid (DLE)

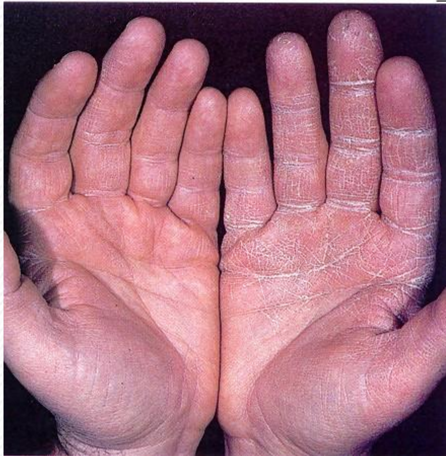
Papulosquamous= 3P' s, 3L' s

- Psoriasis
- Parapsoriasis
- Pityriasis Rosea
- Lichen Planus
- Lues (Secondary Syphilis)
- Lupus
- AND

Fungal Infections

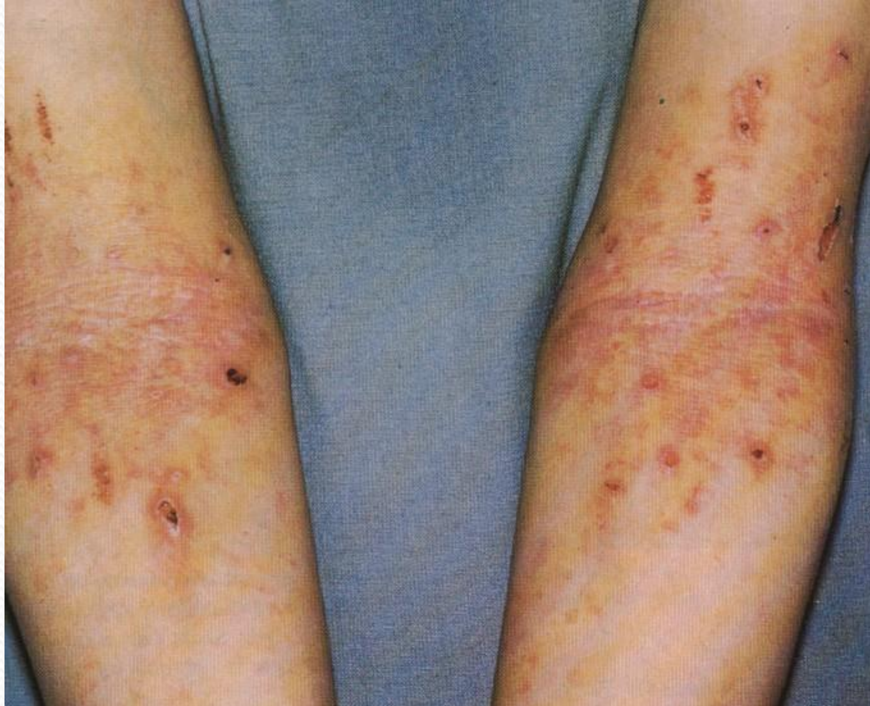


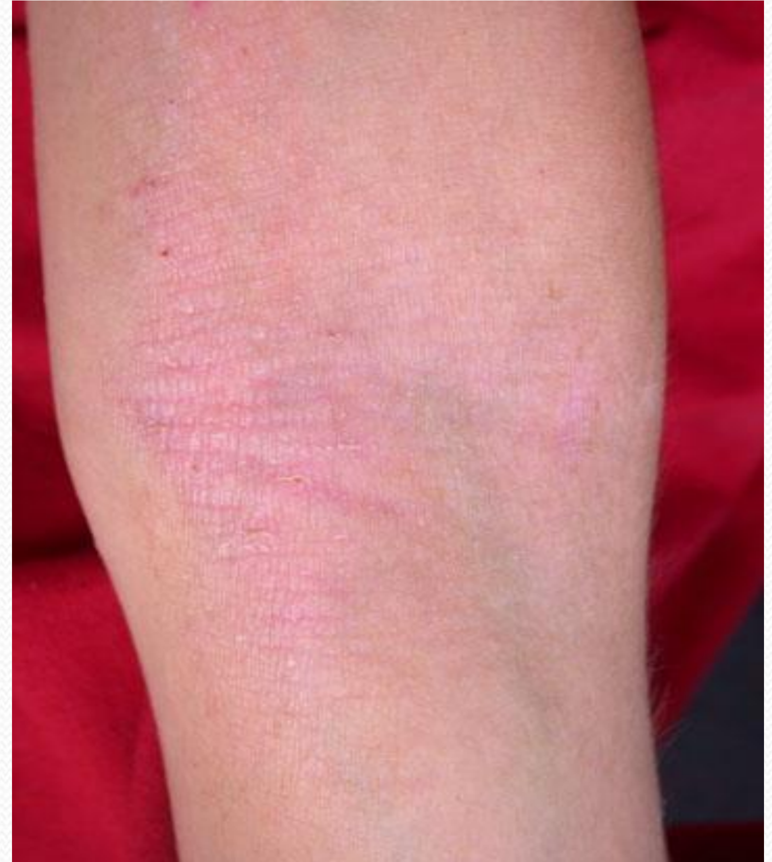




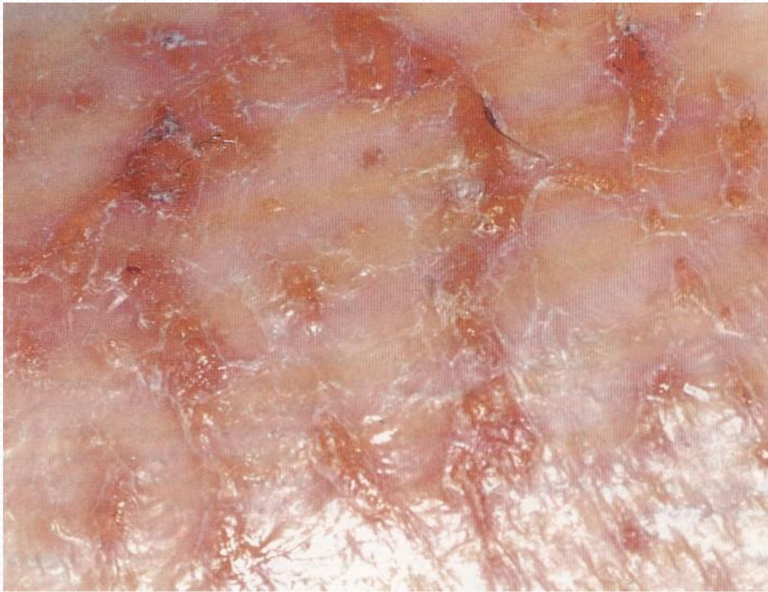
ECZEMATOUS DISEASES

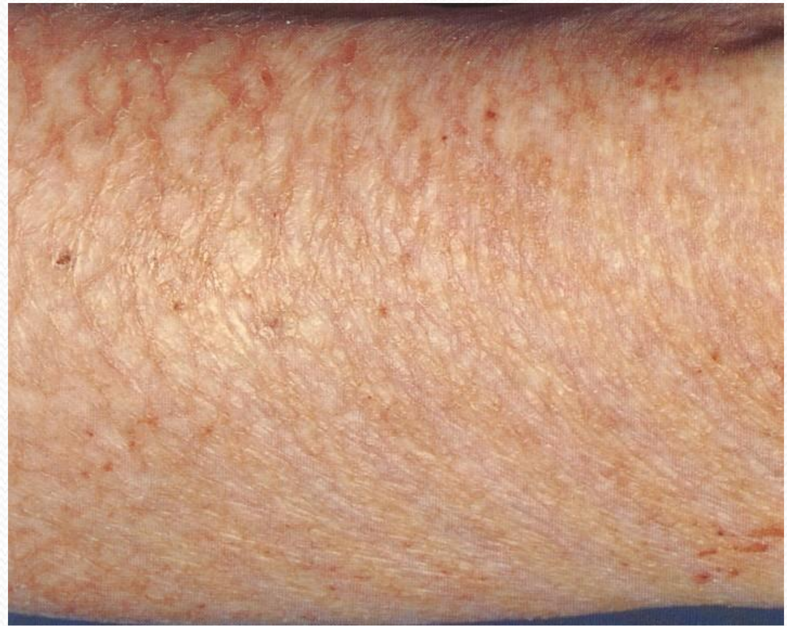
Atopic Dermatitis



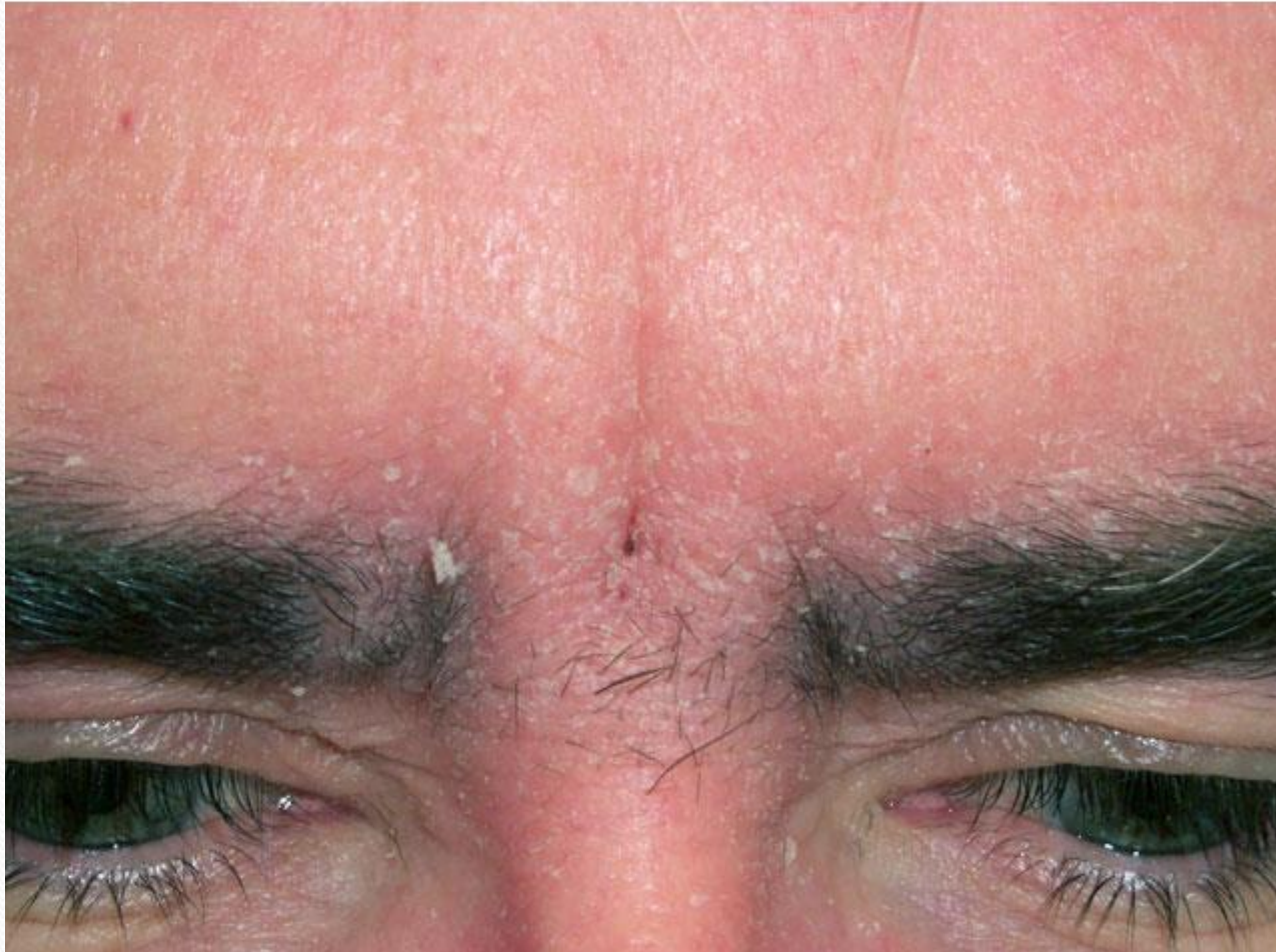


Asteatotic Dermatitis (Eczema Craquele)

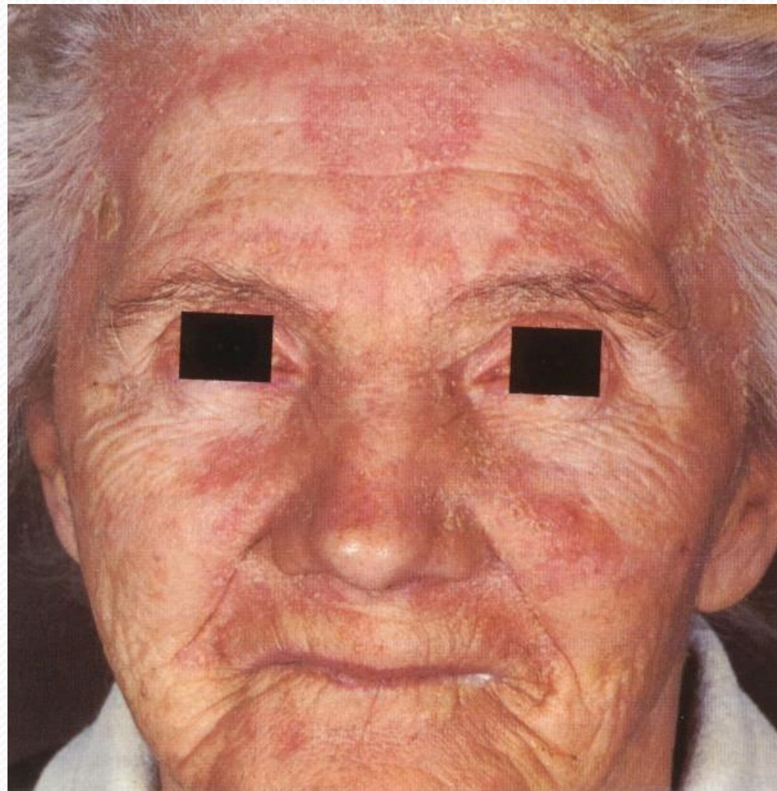




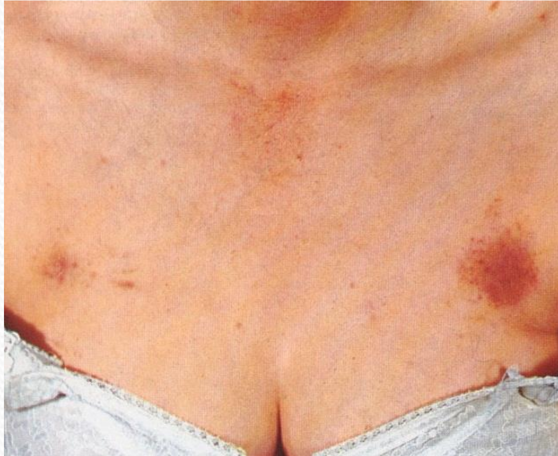
Seborrheic Dermatitis (Dandruff)

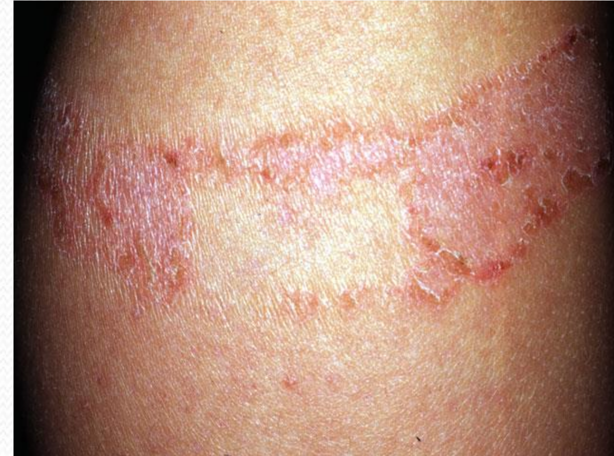


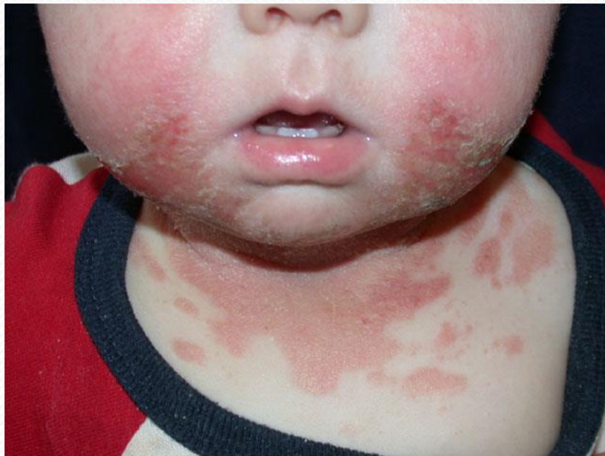
Seborrheic Dermatitis (Dandruff)

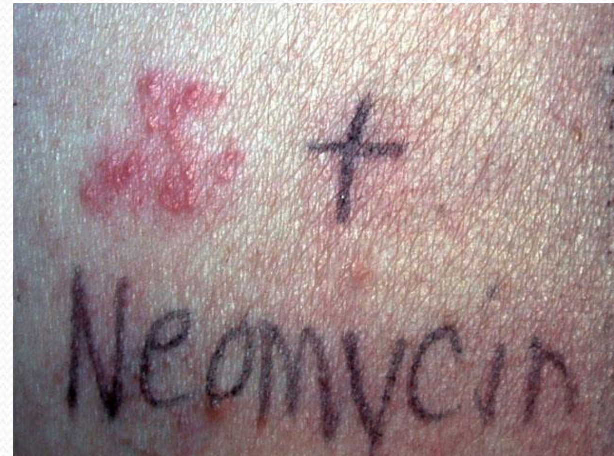


Contact Dermatitis









What kind of testing is this??
PATCH TESTING

Contact Dermatitis

- Allergic Contact
  - Nickel
  - Neomycin
  - Tape
- Irritant Contact
  - Lip-lickers
  - Dribble
  - Chemicals

Eczematous Diseases

- Atopic dermatitis
- Eczema craquelatum (asteatotic)
- Nummular eczema
- Seborrheic dermaitis
- Contact dermatitis
- Scabies