ADVANCED SKIN CENTER

Dermatology & Skin Cancer Specialists

Spongiotic (Eczematous) Dermatitis

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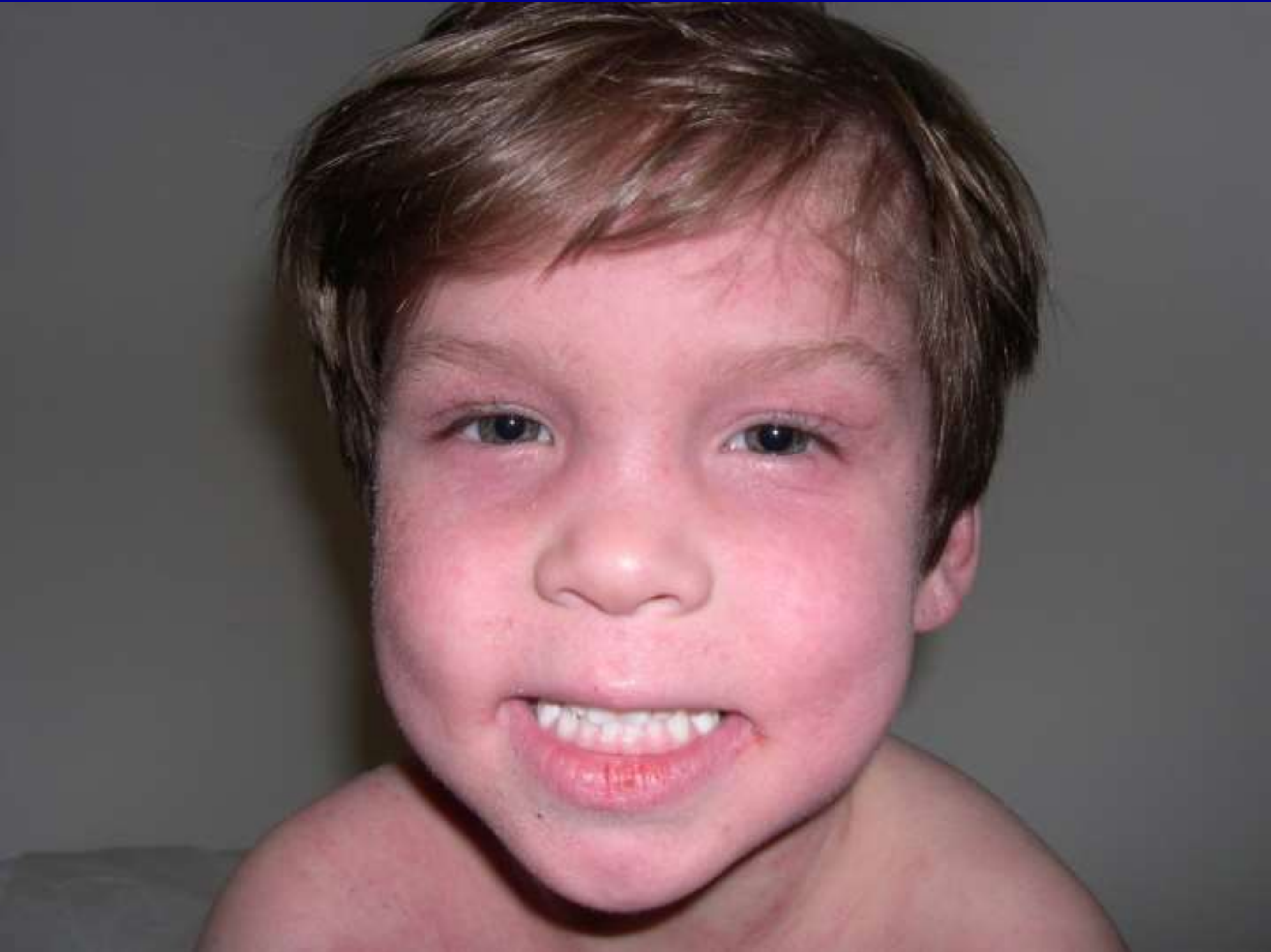
Learning Objectives

- Review the clinical findings in patients with eczema or hypersensitivity dermatitis
- Review the histological findings of eczematous (spongiotic) diseases and their diagnostic challenges
- Review the work up and helpful treatments

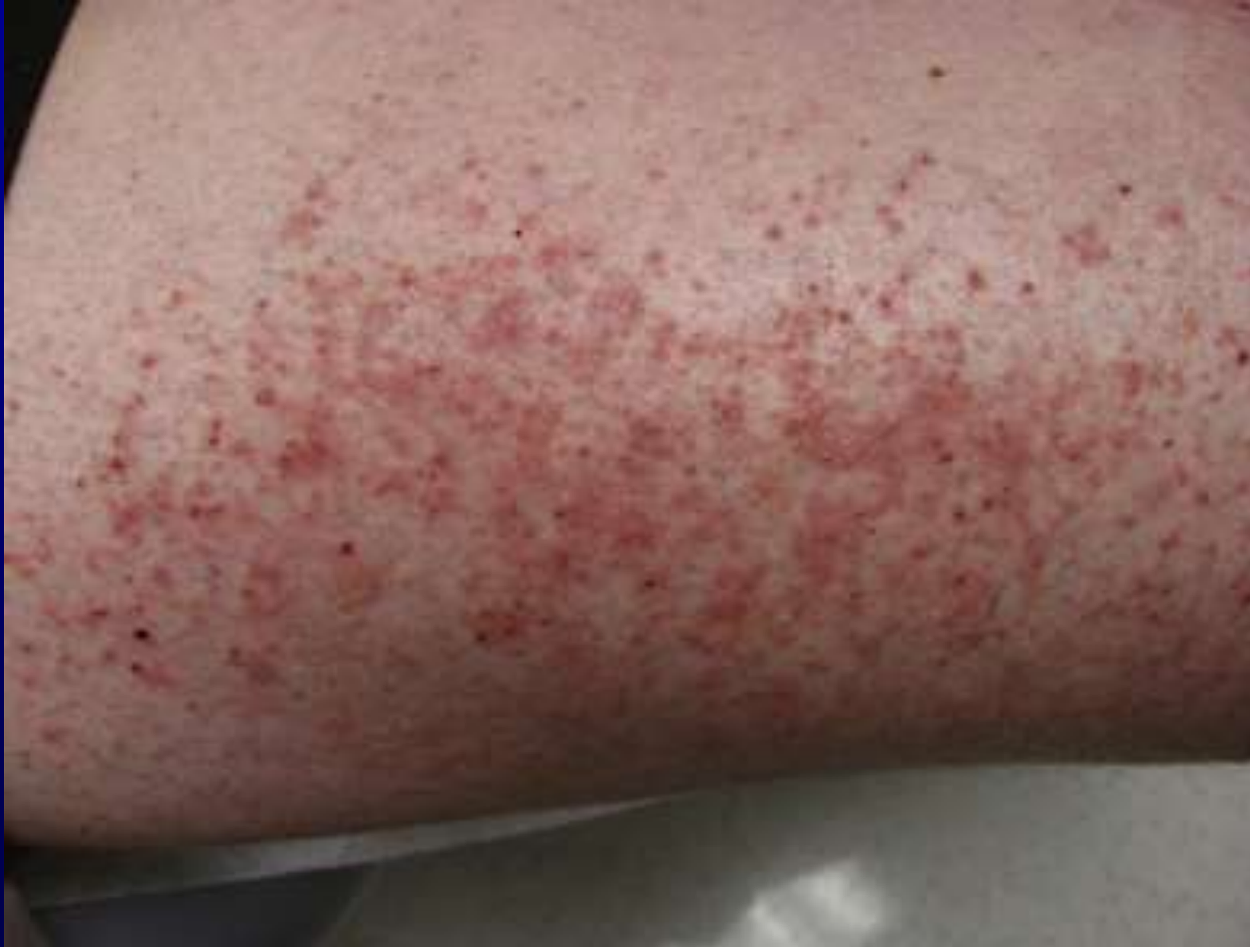
What information is essential to provide to the pathologist when performing a skin biopsy for a rash?

- A. Clinical description of the rash
- B. Duration of the lesion
- C. Previous therapy
- D. All of the above

Prototype



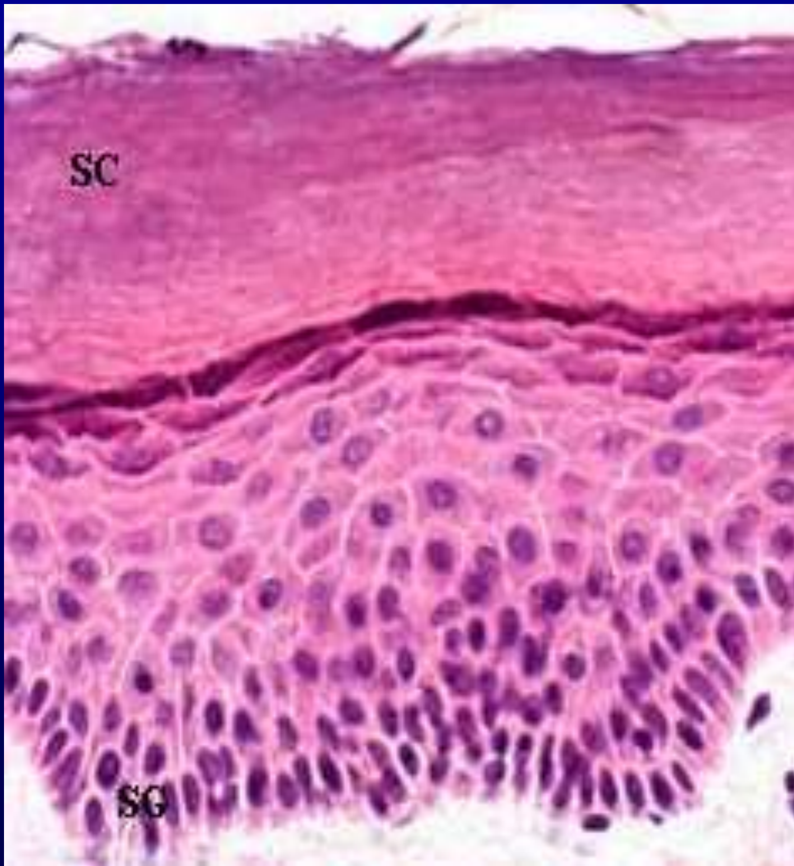
Atopic (Eczematous) Dermatitis



Histological Pattern

- Acute - microvesical formation
- Subacute – spongiosis where bridging between keratinocytes is conspicuous at low power
- Chronic – mild spongiosis

Stratum Corneum: The Permeability Barrier

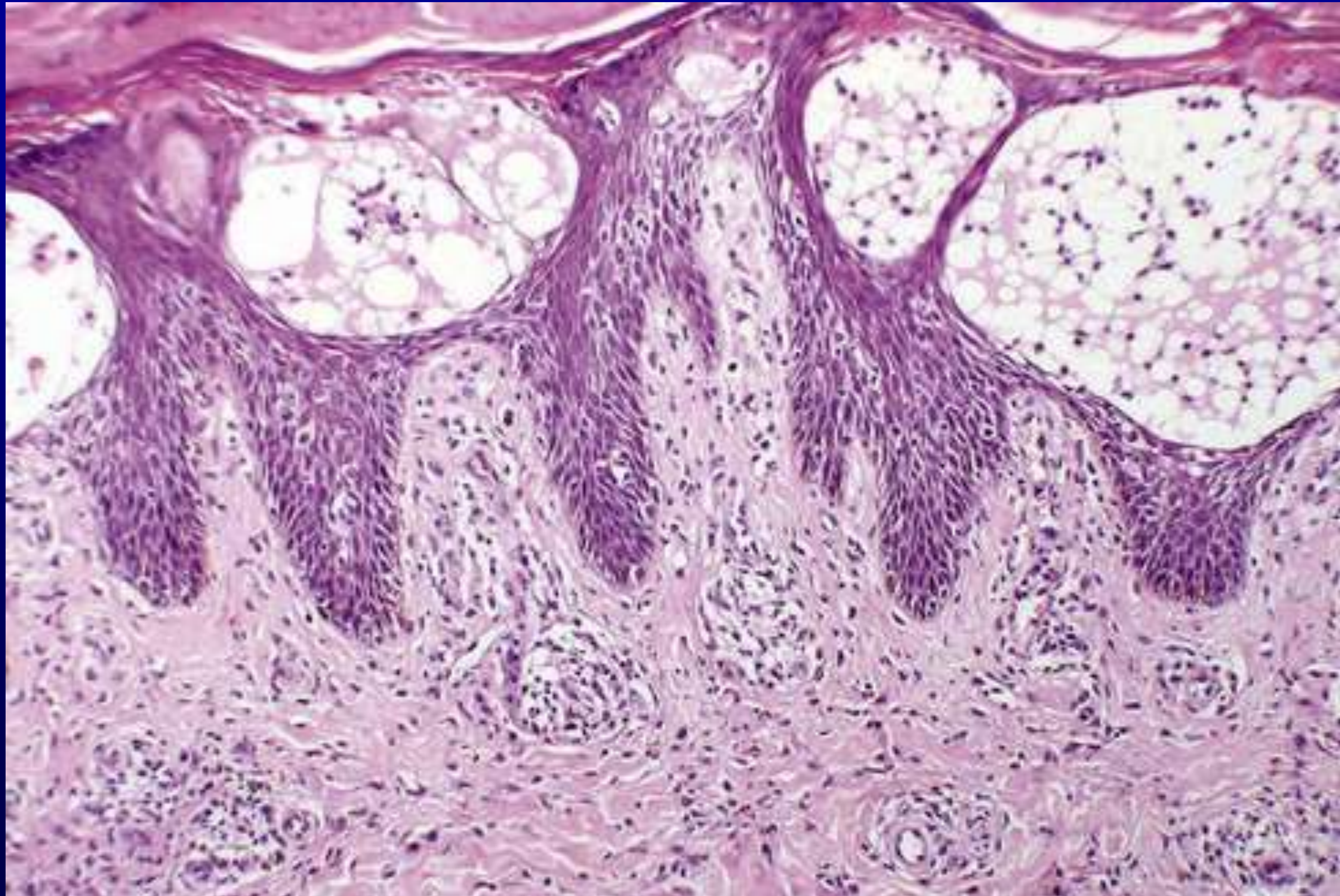


- Keeps the water in
- Keeps the world out

What is spongiosis?

What is spongiosis?

Acute Spongiotic Dermatitis



Chronic spongitotic dermatitis

Two Types of Classification

- Pathological – spongiosis under the microscope
- Clinical presentation
  - Endogenous dermatitis - related to major constitutional or hereditary factors
  - Exogenous dermatitis - involving environmental factors.

Important

- Provide clinical history
  - Description of the rash
  - Distribution
  - Associated medications and prior treatment
  - Differential diagnosis helps when possible

Pathological Classification (Spongiotic Dermatitis)

- Atopic Dermatitis (Eczema)
- Seborrheic Dermatitis
- Allergic Contact Dermatitis
- Dyshidrotic Eczema (Pompholyx)
- Stasis Dermatitis
- Drug Eruption
- Arthropod Bite Reaction
- Pityriasis Rosea
- Photosensitive (Phototoxic/Photoallergic) Dermatitis
- Incontinentia Pigmenti (Bloch-Sulzberger Syndrome)

Clinical Classification (Endogenous)

- Atopic dermatitis
- Seborrheic dermatitis
- Discoid dermatitis (nummular eczema)
- Hand eczema (dyshidrotic eczema, palmoplantar eczema, pompholyx)
- Autosensitization (Id reaction)

Clinical Classification (Exogenous)

- Allergic Contact dermatitis – poison ivy
- Irritant dermatitis – topical damage
- Infectious – ie. fungus
- Asteatotic dermatitis - elderly, in winter and in those with minor degrees of ichthyosis, asteatotic dermatitis (eczema craquelé)

Pathological Classification (Spongiotic Dermatitis)

- Atopic Dermatitis (Eczema)
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Establish the Diagnosis

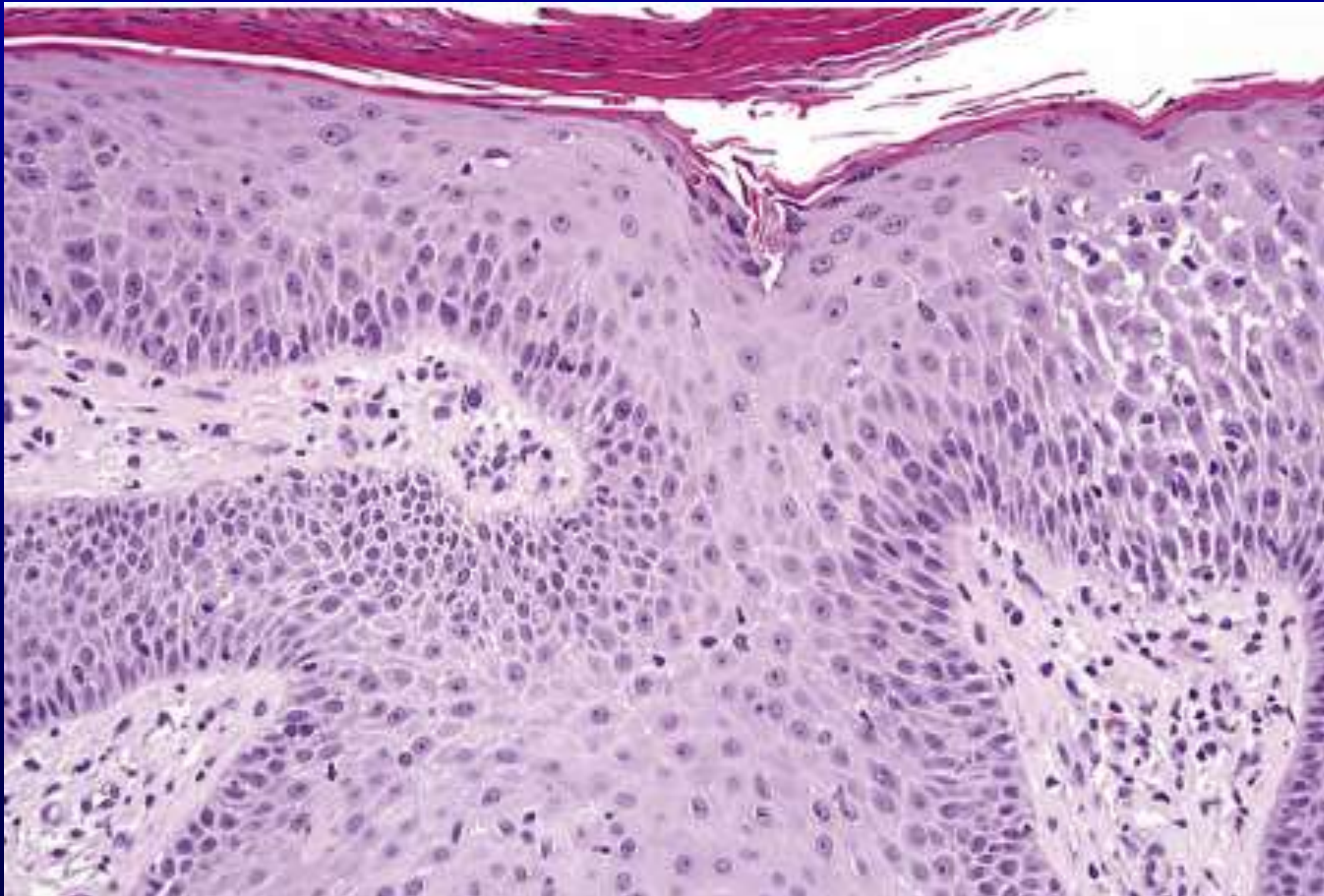
- No objective diagnostic lab test
- No specific histopathology
- Numerous clinical presentations
- Complex pathophysiology
- Multiple, often unknown triggers

Definitive diagnosis is difficult

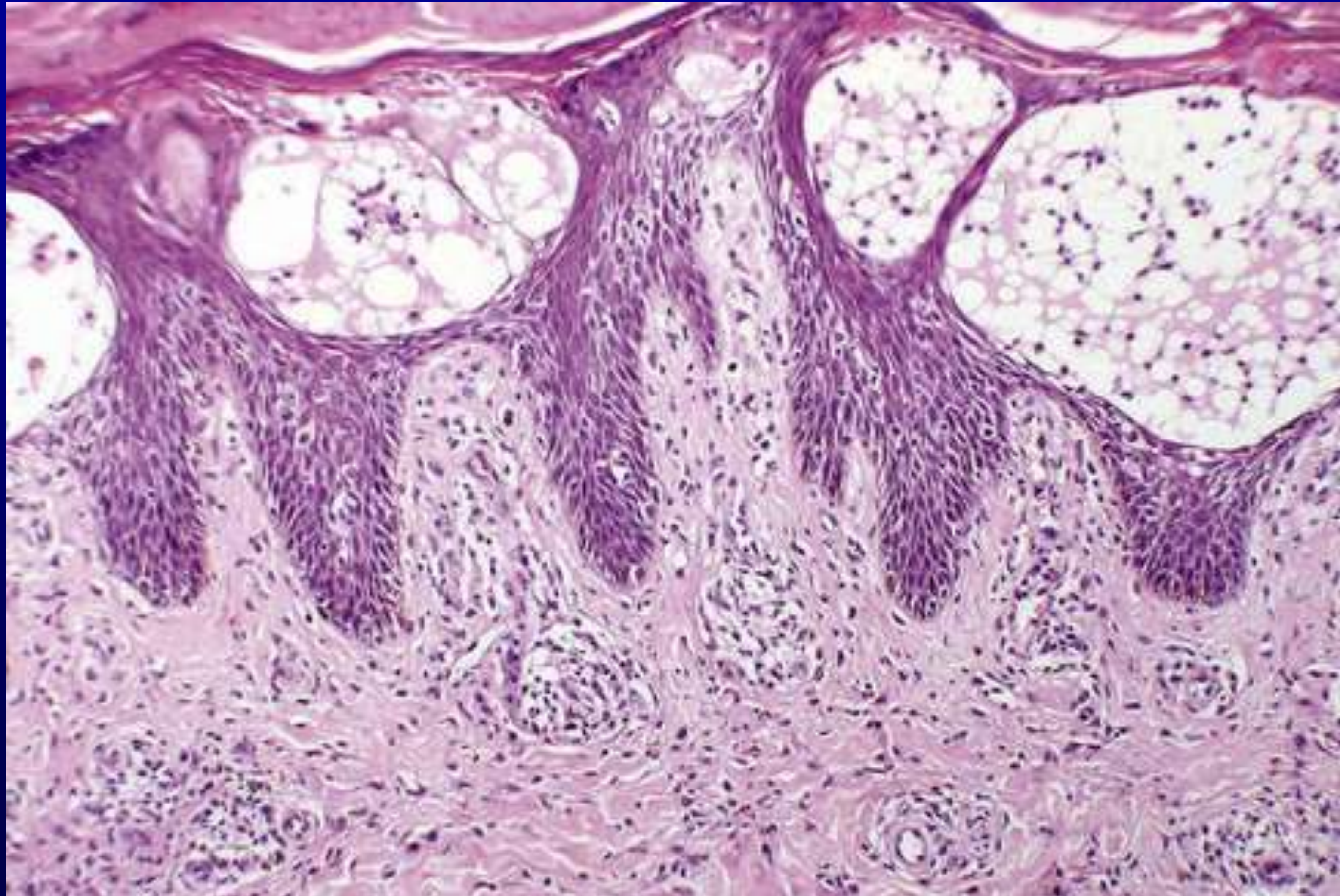
- Pathologists usually cannot render a more specific diagnosis other than
  - Spongiotic dermatitis consistent with eczematous dermatitis etc.
- Can offer a limited differential diagnosis when given some clinical information.

Chronic spongitotic dermatitis

Subacute spongiotic dermatitis

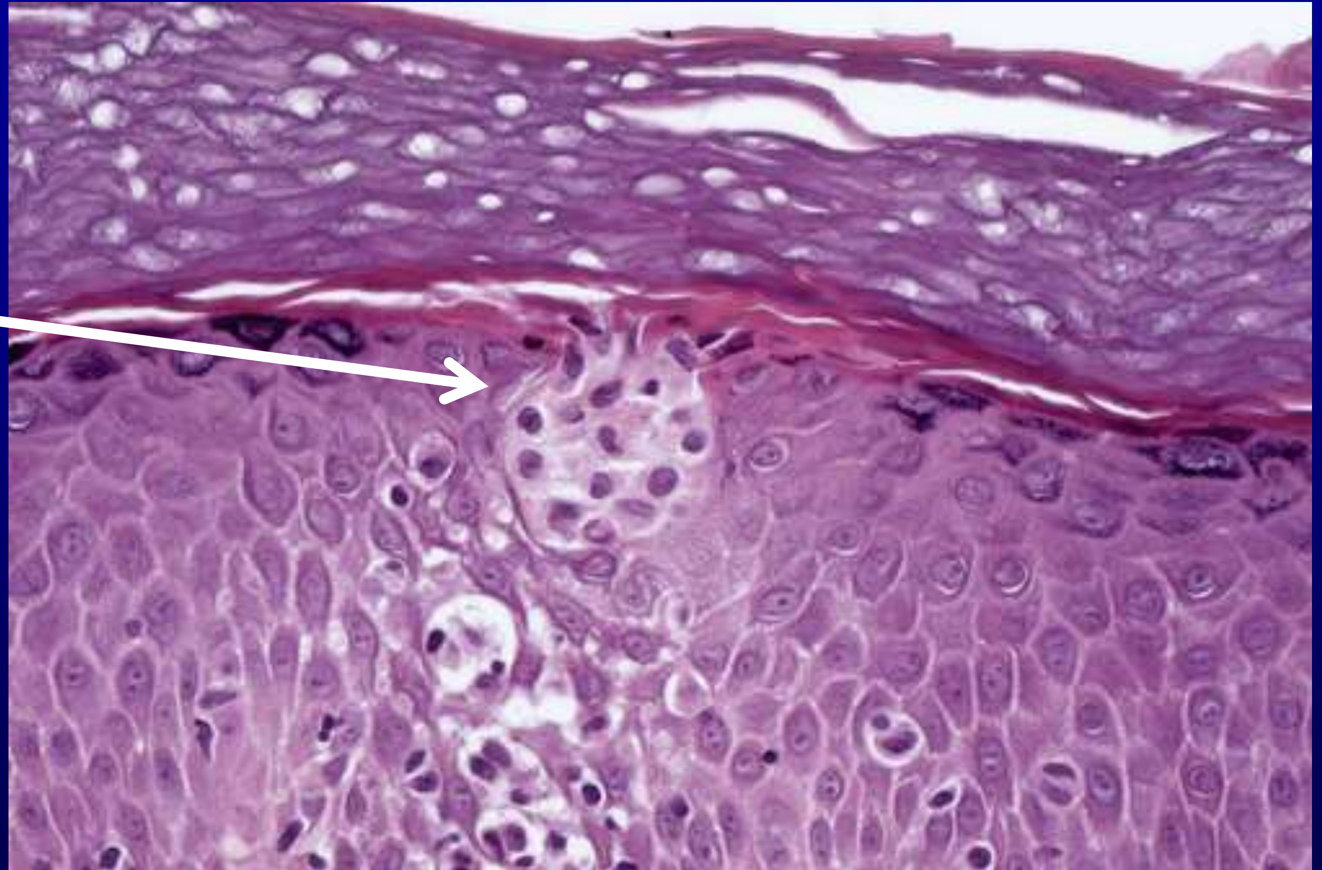


Acute Spongiotic Dermatitis

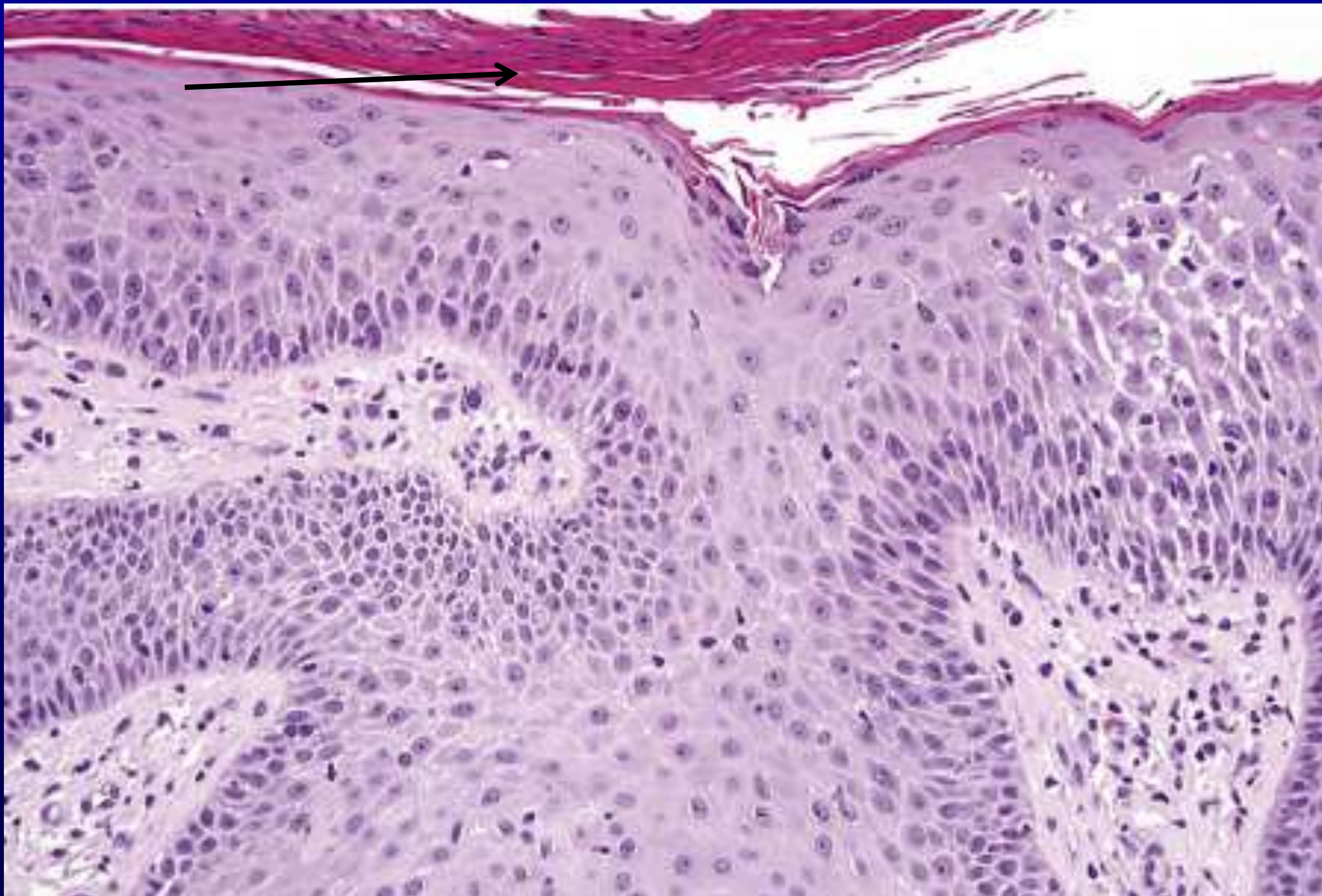


Pearl – Don’t be tricked

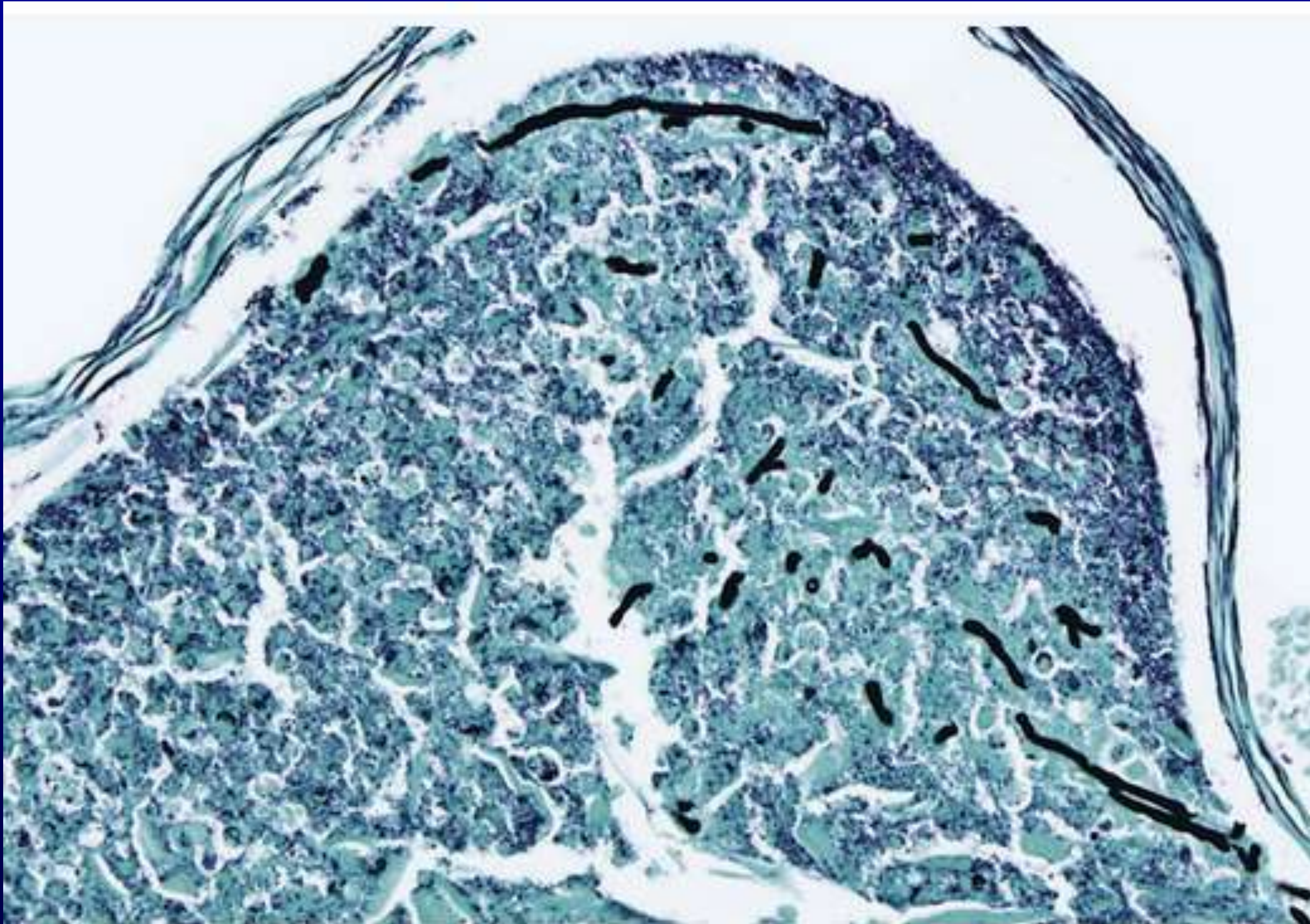
Langhan cells



If we see parakeratosis?



Order a fungal stain



Atopic dermatitis

- Complex inflammatory skin disorder
  - intense pruritus
  - cutaneous hyperreactivity
  - immune dysregulation
- Exacerbations and remissions
- Affects all ages, but more common in kids

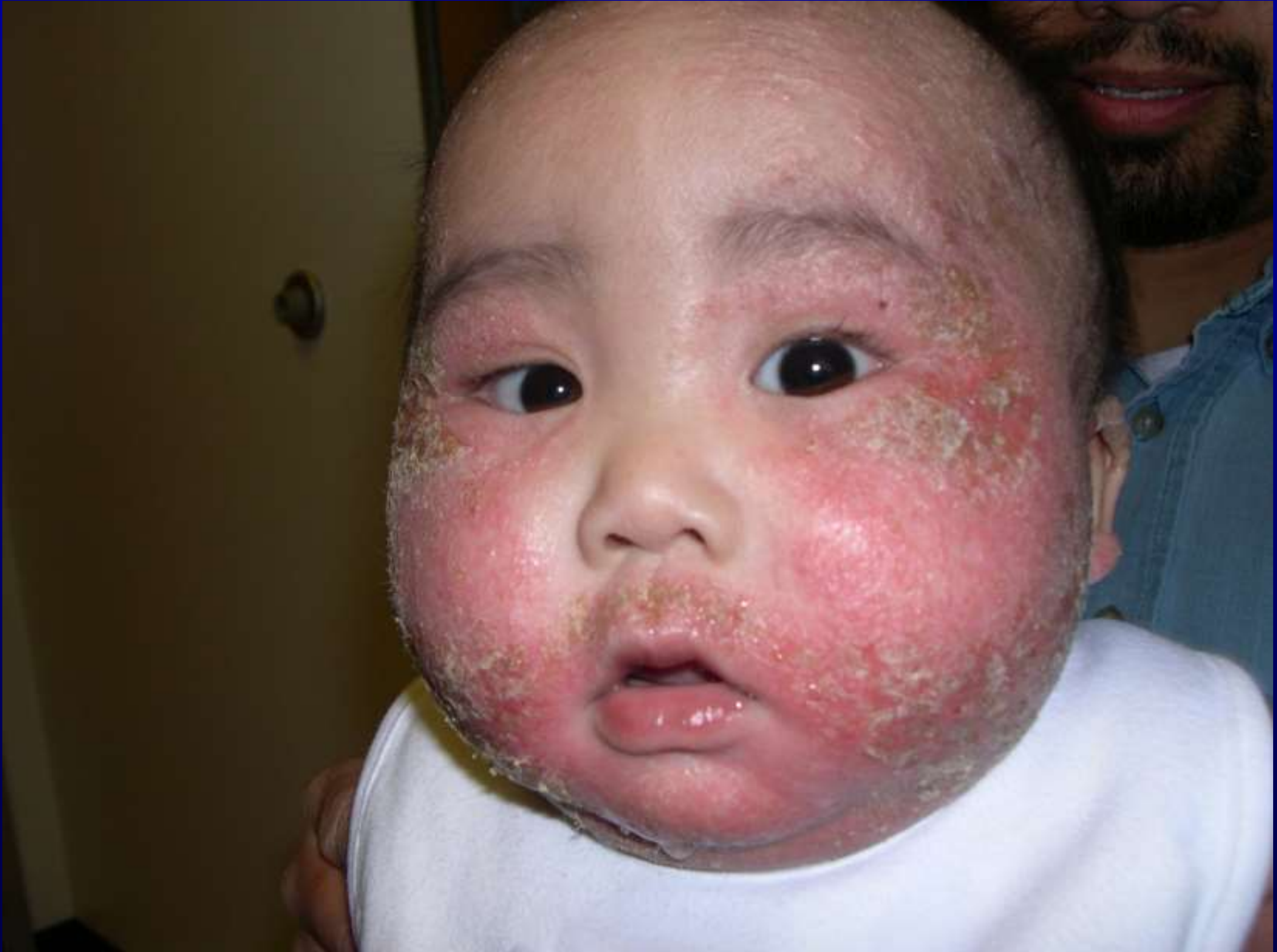
Atopic dermatitis

- Pathogenesis: immune mediated
- Epidemiology:
  – 10% of children
  – Most present before age 7
  – Atopic diathesis: 75% have a personal or family history of allergic disease

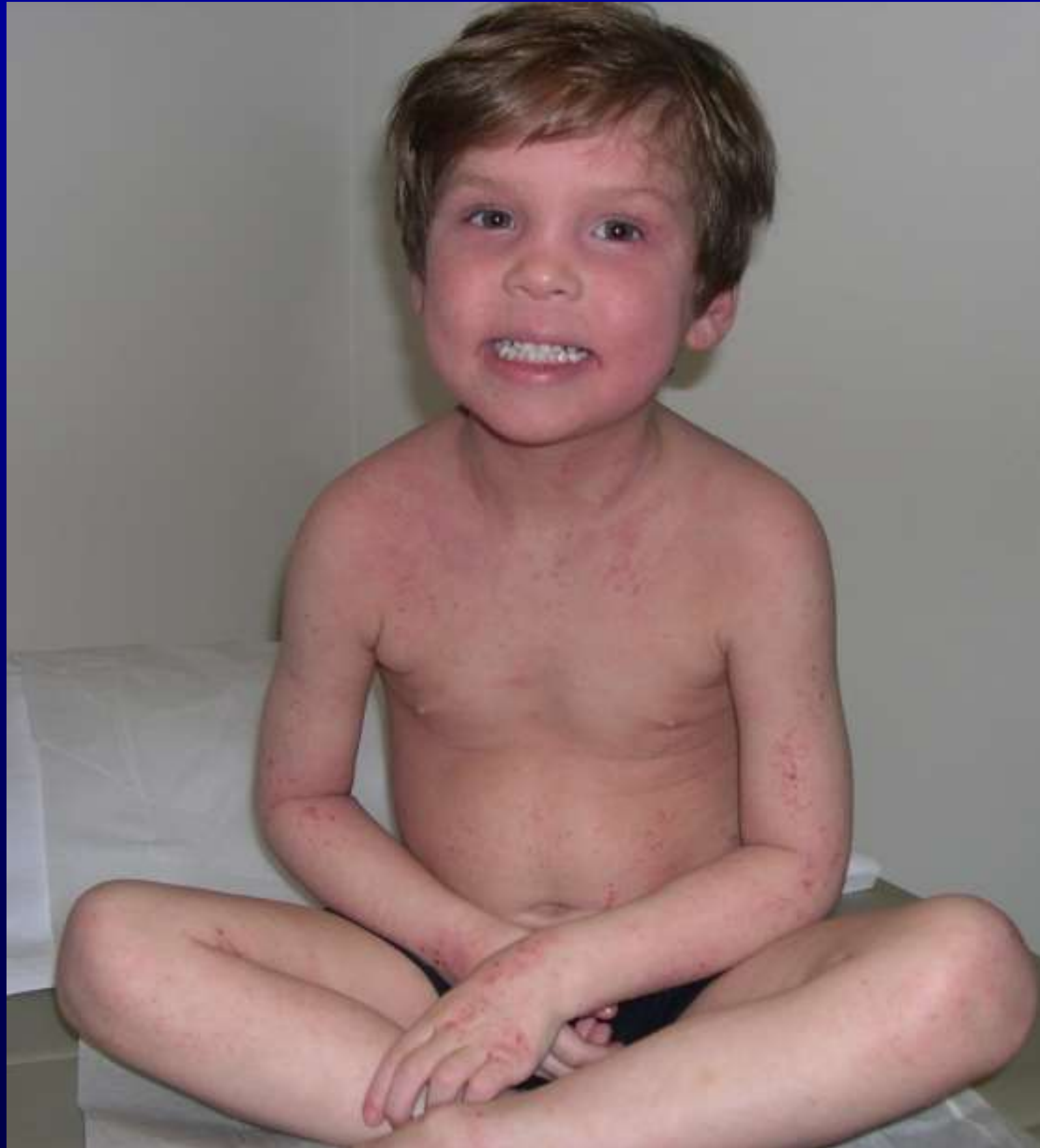
Atopic dermatitis

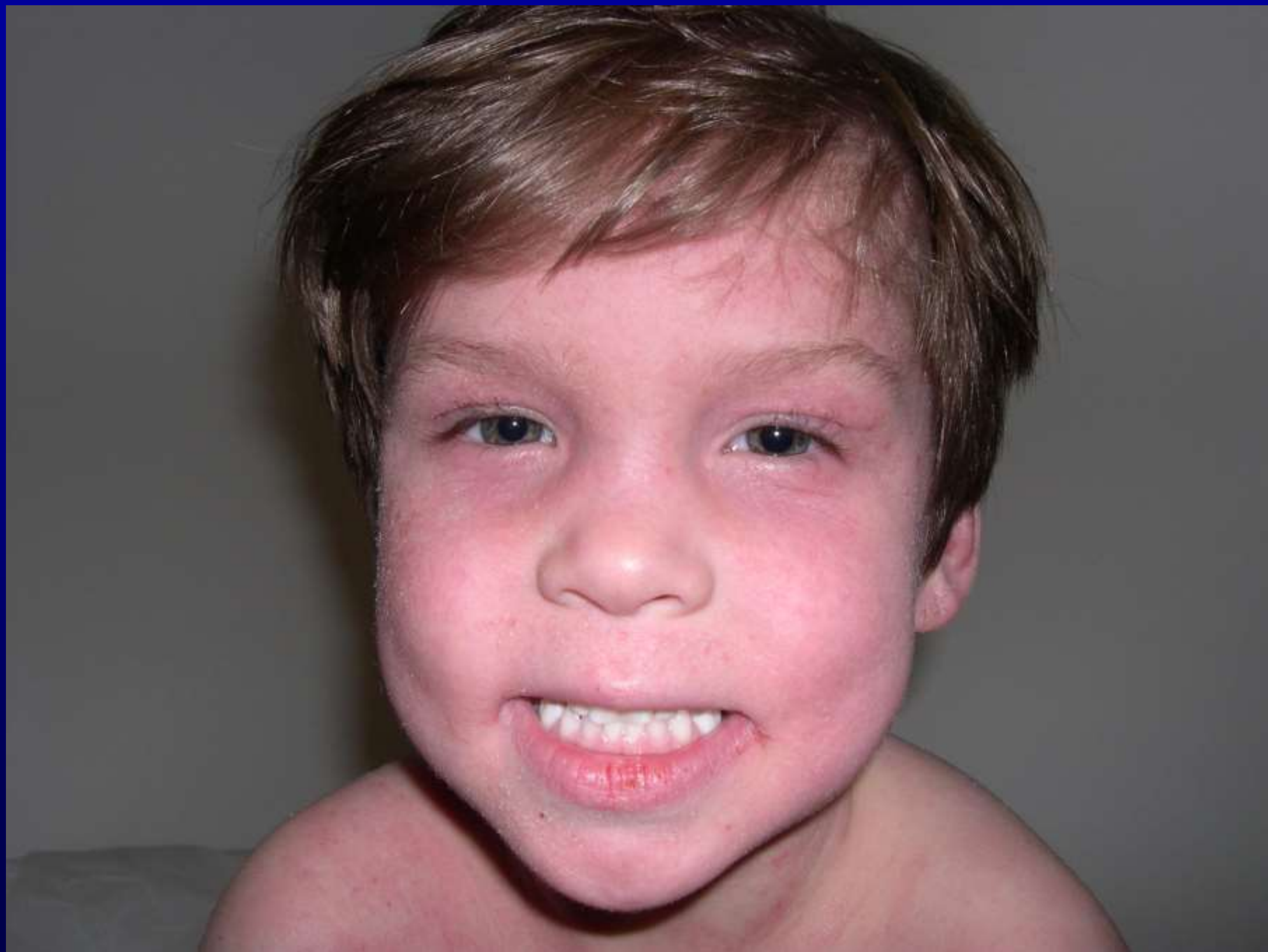
- Clinical: “the itch that rashes”
  - Lesions:
    - Acute: erythema and vesiculation
    - Subacute: papular
    - Chronic: brown/red, lichenification
  - Distribution:
    - Infancy: face, extensors of extremities
    - Childhood: neck, antecubital and popliteal fossae
    - Adulthood: fossae, hands/feet

Acute



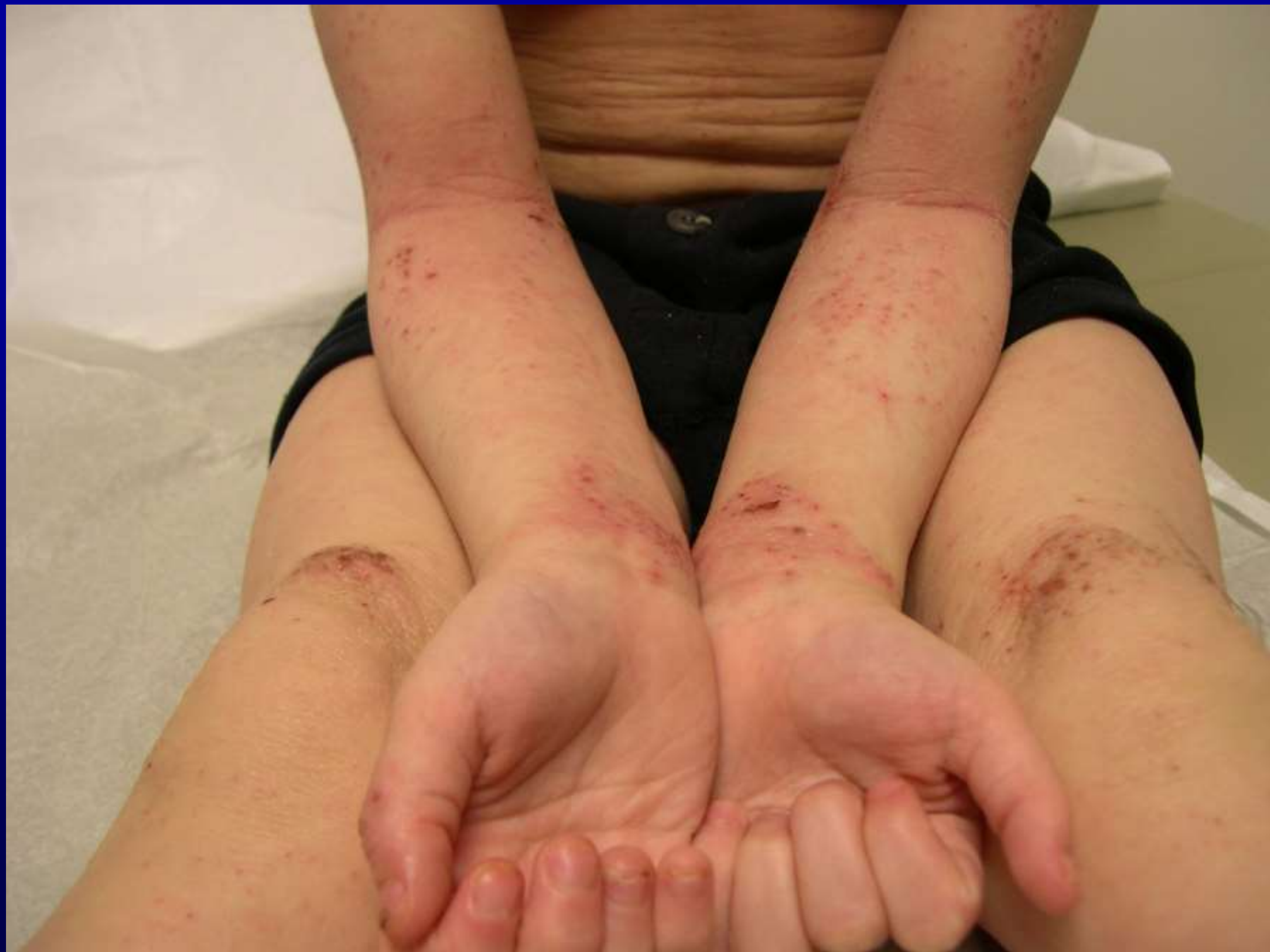
Subacute / Chronic





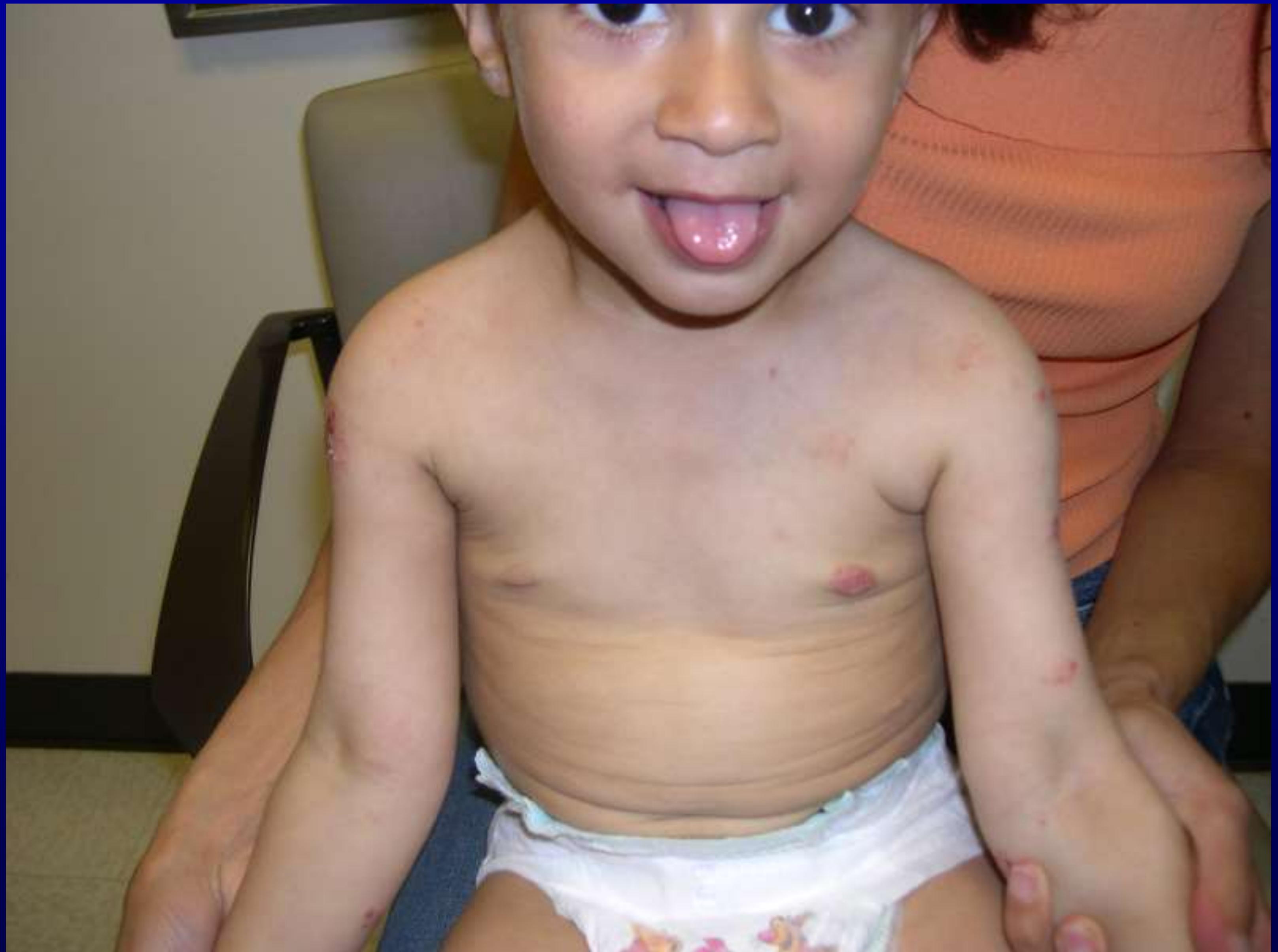
Atopic dermatitis

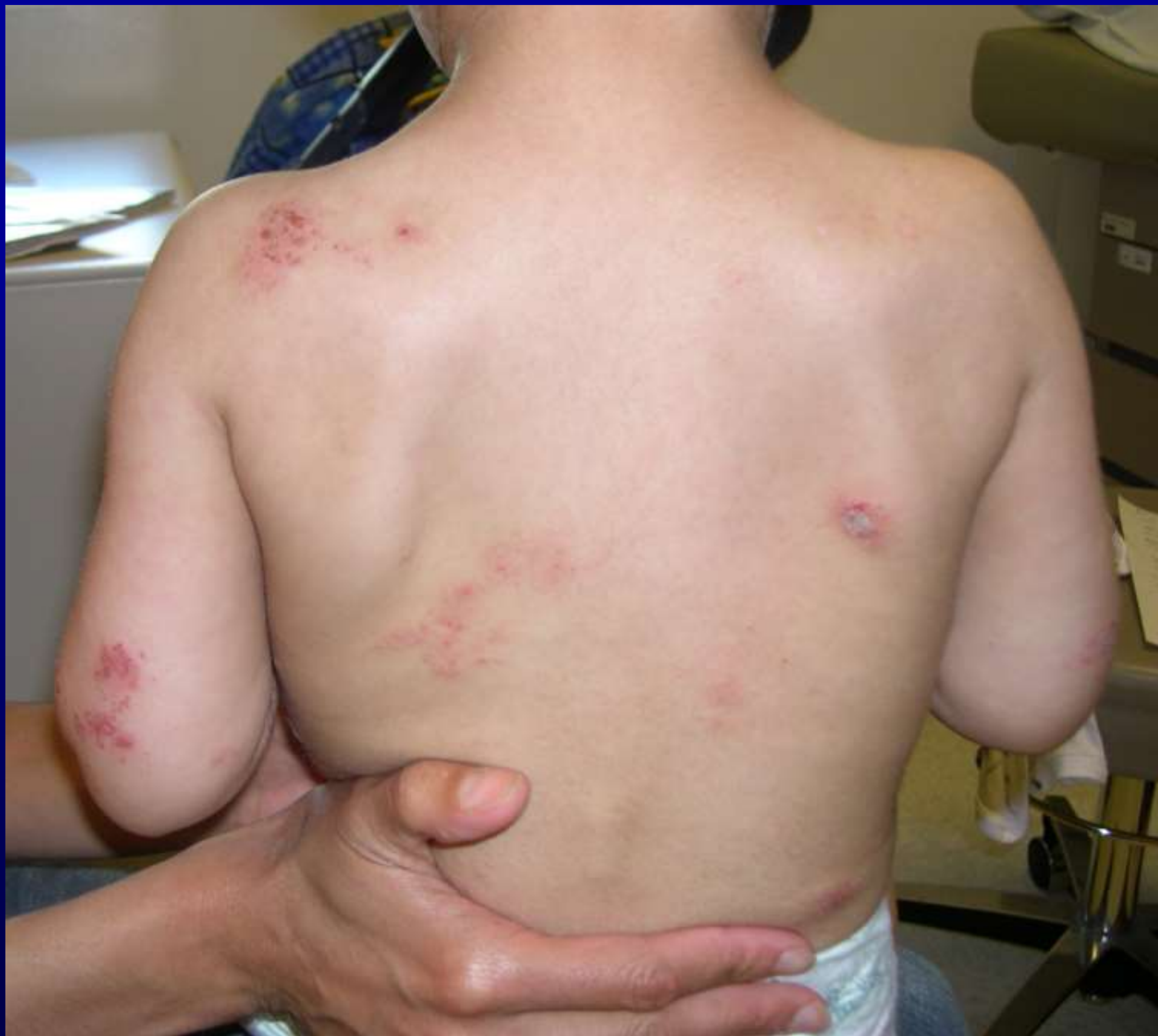
- Clinical:
  - Other findings:
    - Pityriasis alba
    - Dennie-Morgan lines, allergic shiners
    - Keratosis Pilaris
    - Icthyosis Vulgaris
    - Hyperlinear palms



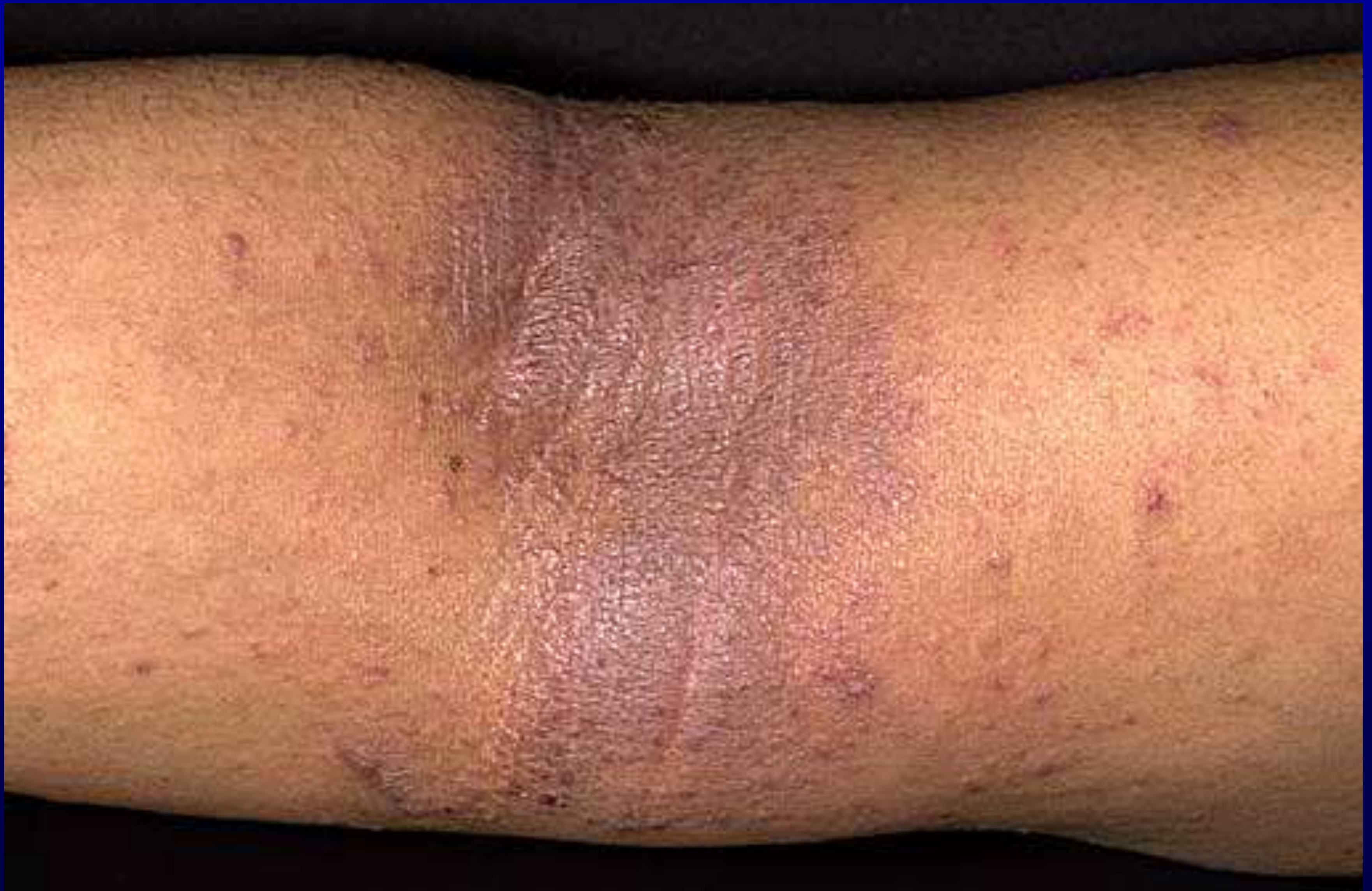
Infantile Distribution

- Face
- Elbows
- Knees





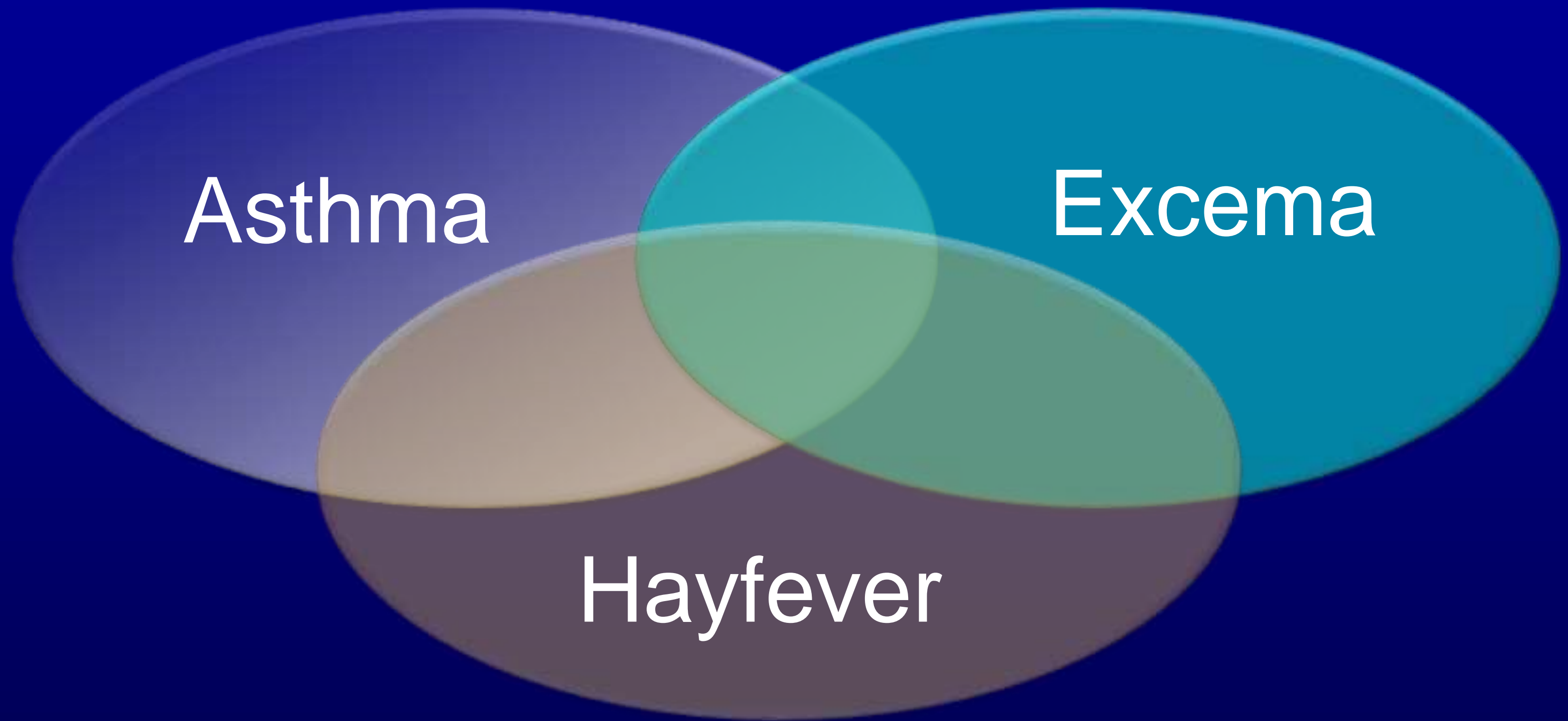
Chronic



Important Features of Atopic Dermatitis

1. Early age at onset:
   - 70-90% by age 5
   - 95% by age 15
2. Atopy
   - personal or family history
   - IgE reactivity
3. Xerosis

Common overlapping features



stress/anxiety

aeroallergens

genetics

immune system

heat/humidity

Atopic Dermatitis

infectious agents

neural mediators

food

irritants

immune system stress/anxiety

aeroallergens

genetics

immune system

heat/humidity

infectious agents

Atopic Dermatitis

neural mediators

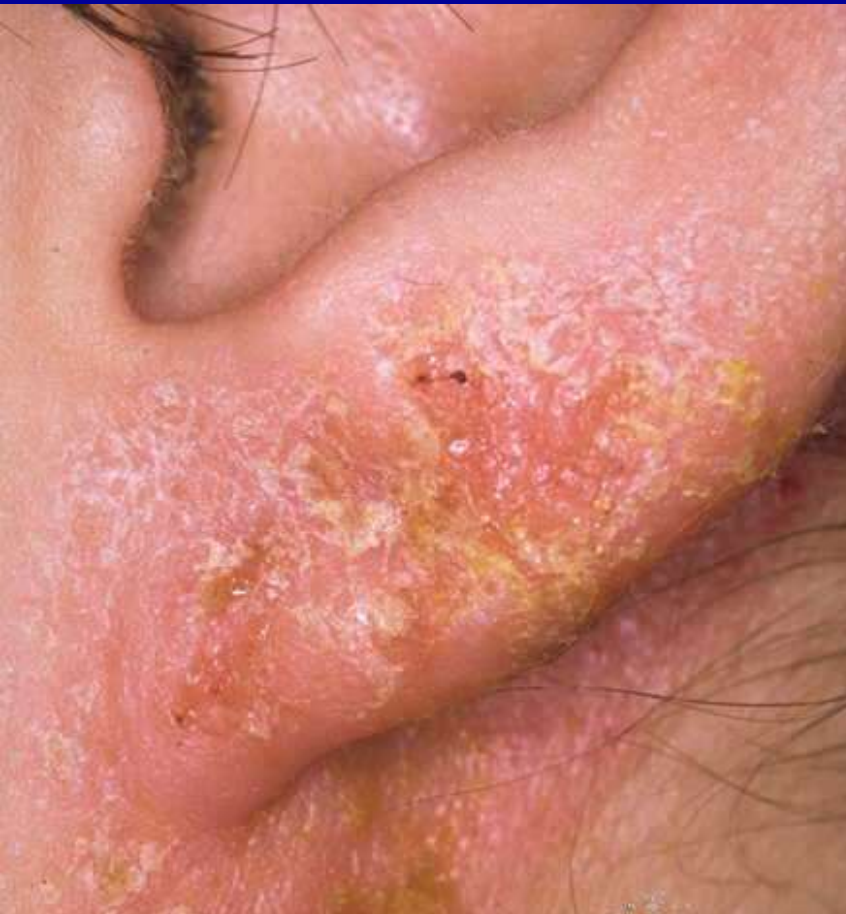
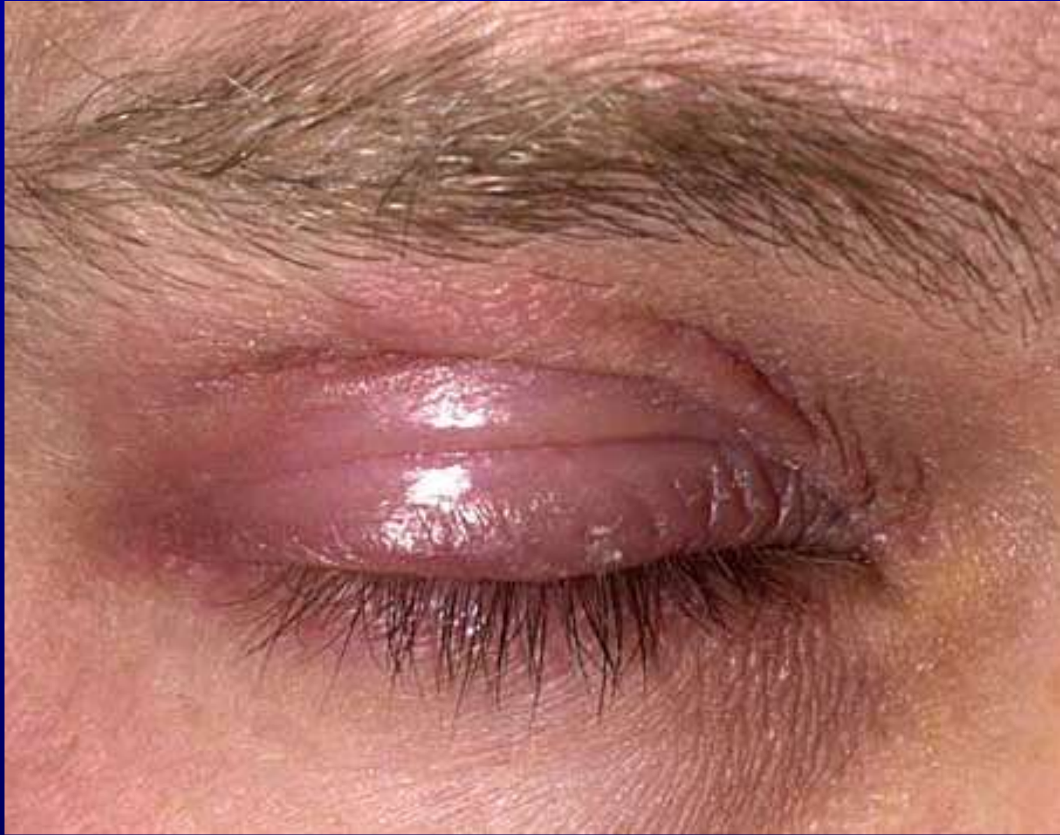
food

irritants

barrier function

The bottom line…

the diagnosis is clinical

Exclusionary Conditions

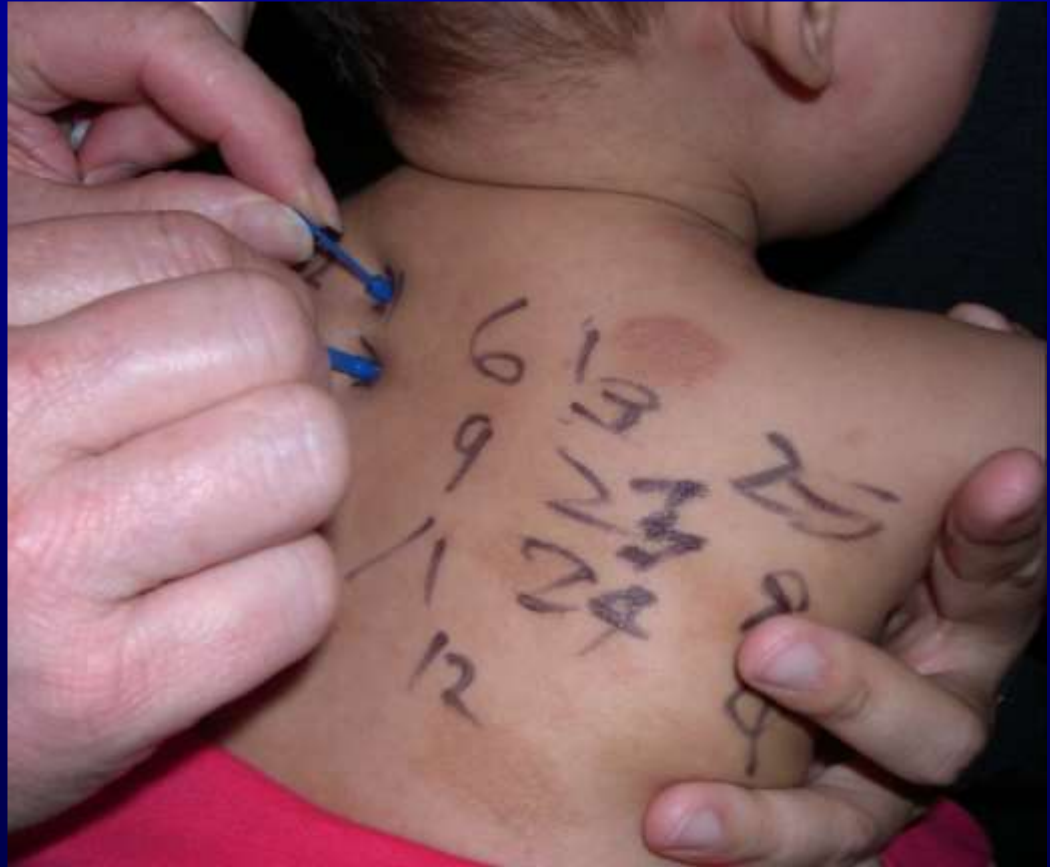
- Scabies
- Psoriasis
- Seborrheic dermatitis
- Allergic contact dermatitis
- Cutaneous lymphoma
- Immunodeficiency diseases

Food Allergy

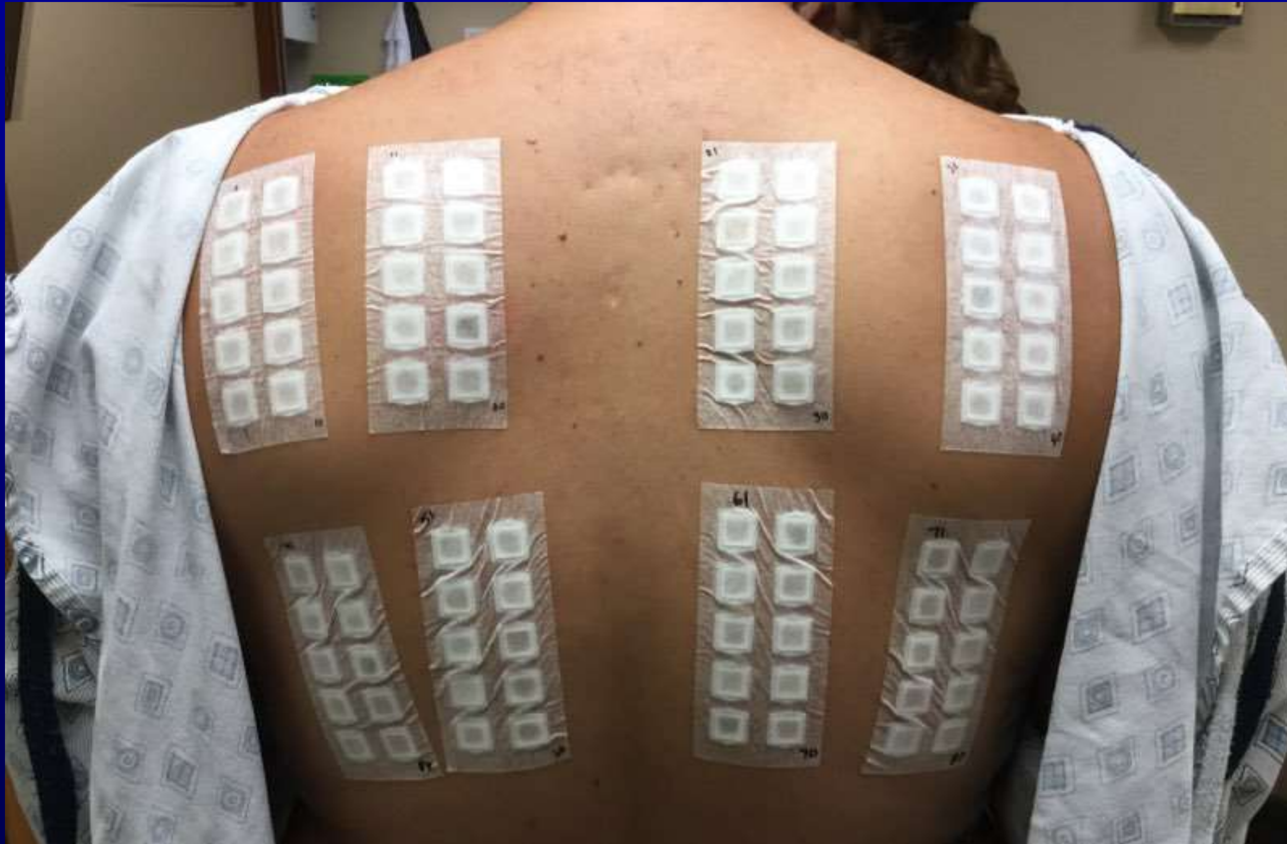
- Food allergens can induce eczema
- 90%: milk, egg, peanut, soy, wheat, fish
- 80% outgrow by age 5
  - except peanut and shellfish

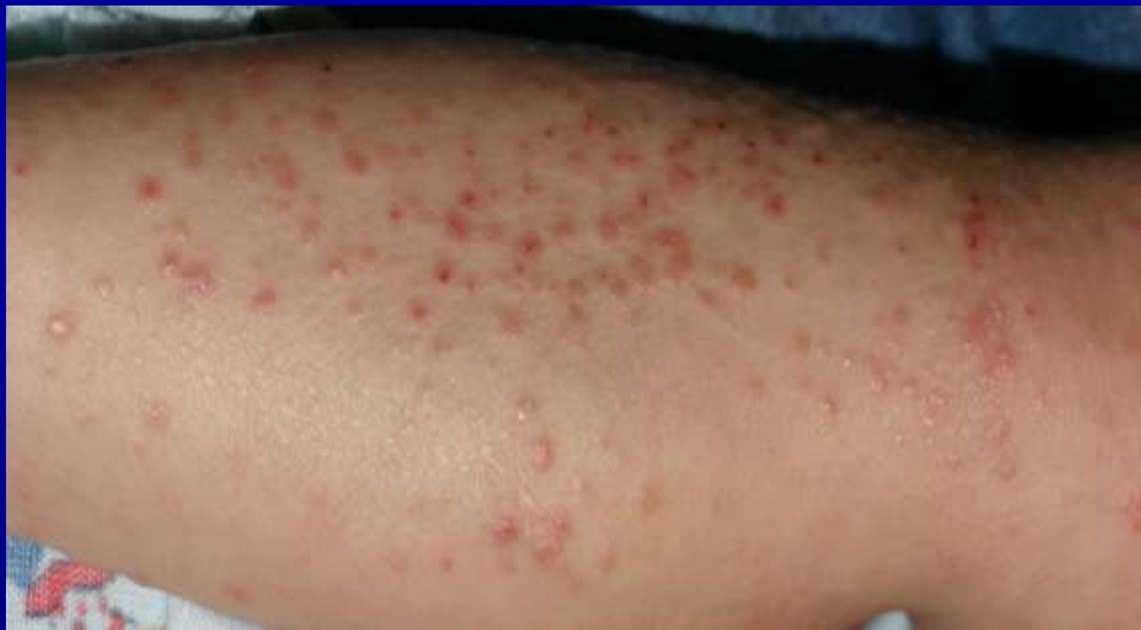
- Food allergy correlates with increased severity and younger age of onset of AD

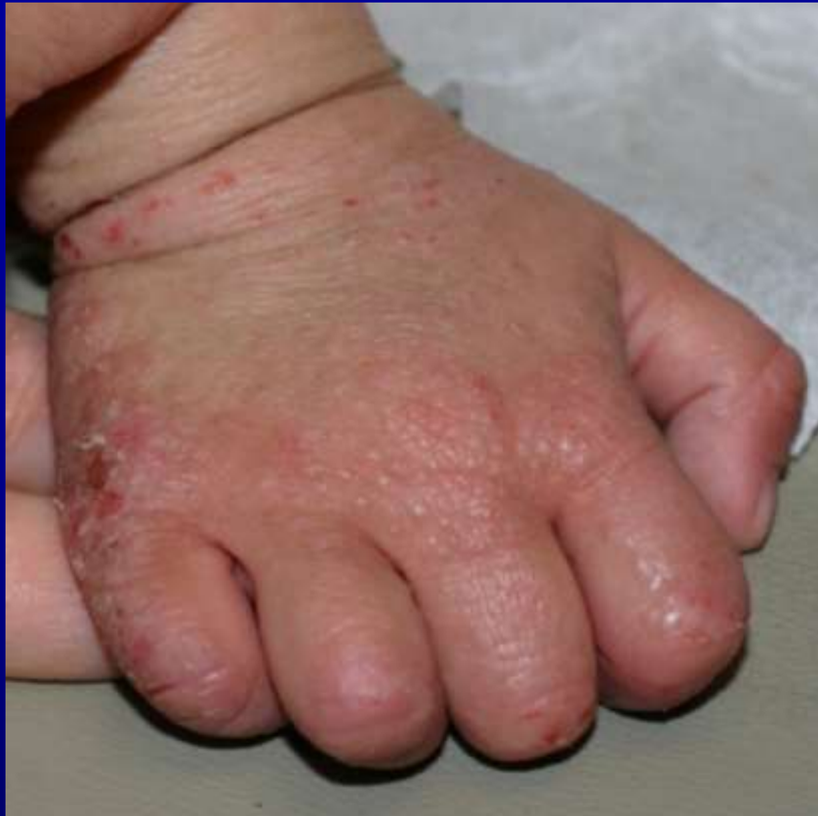
Scratch testing

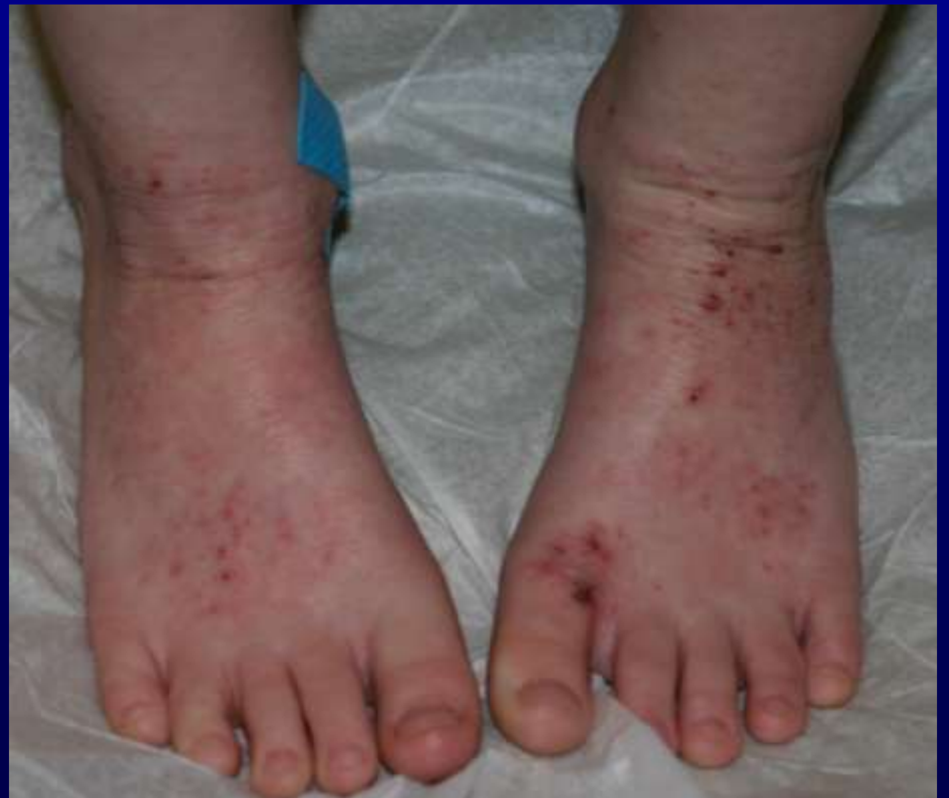


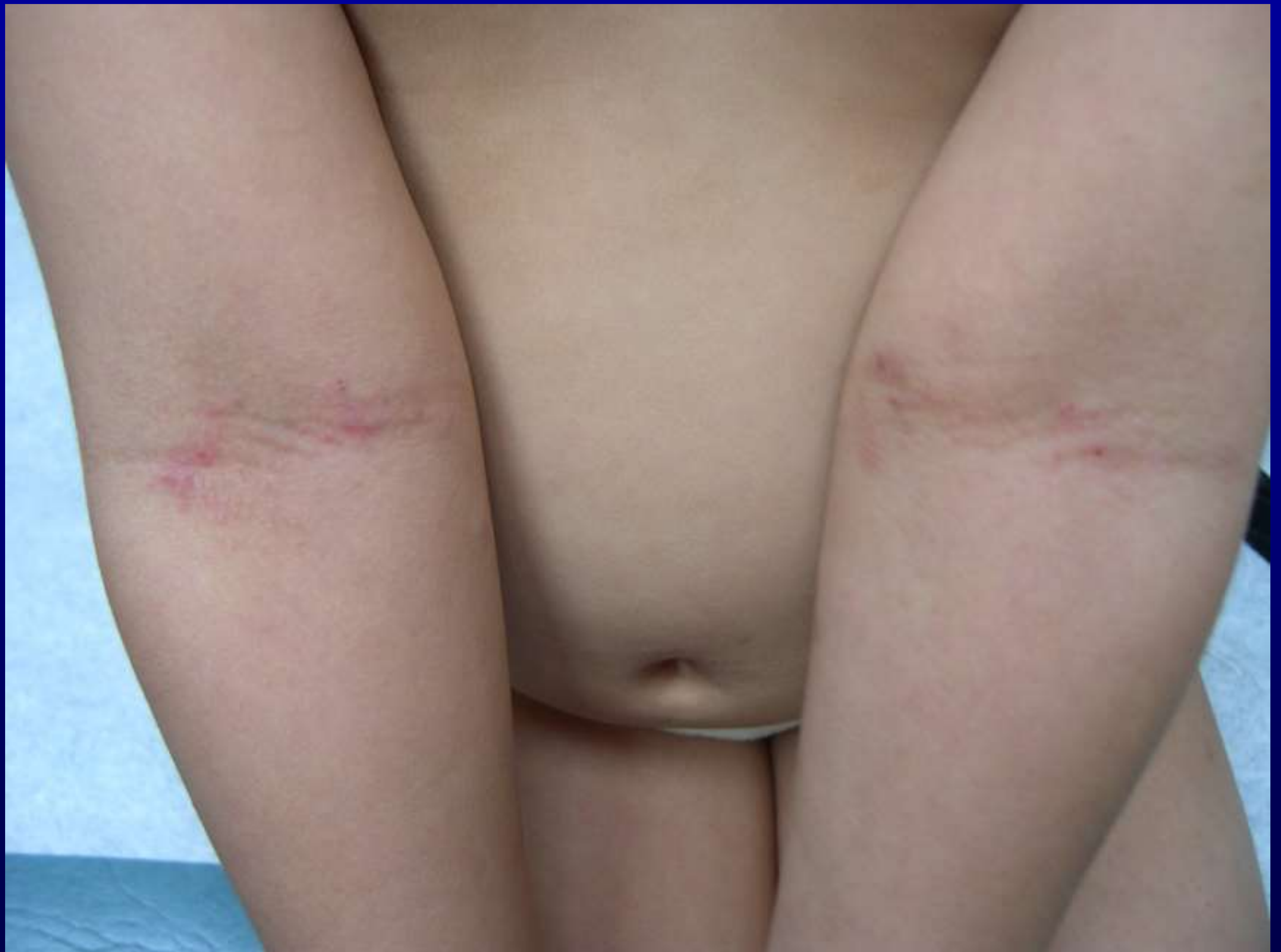
Patch testing



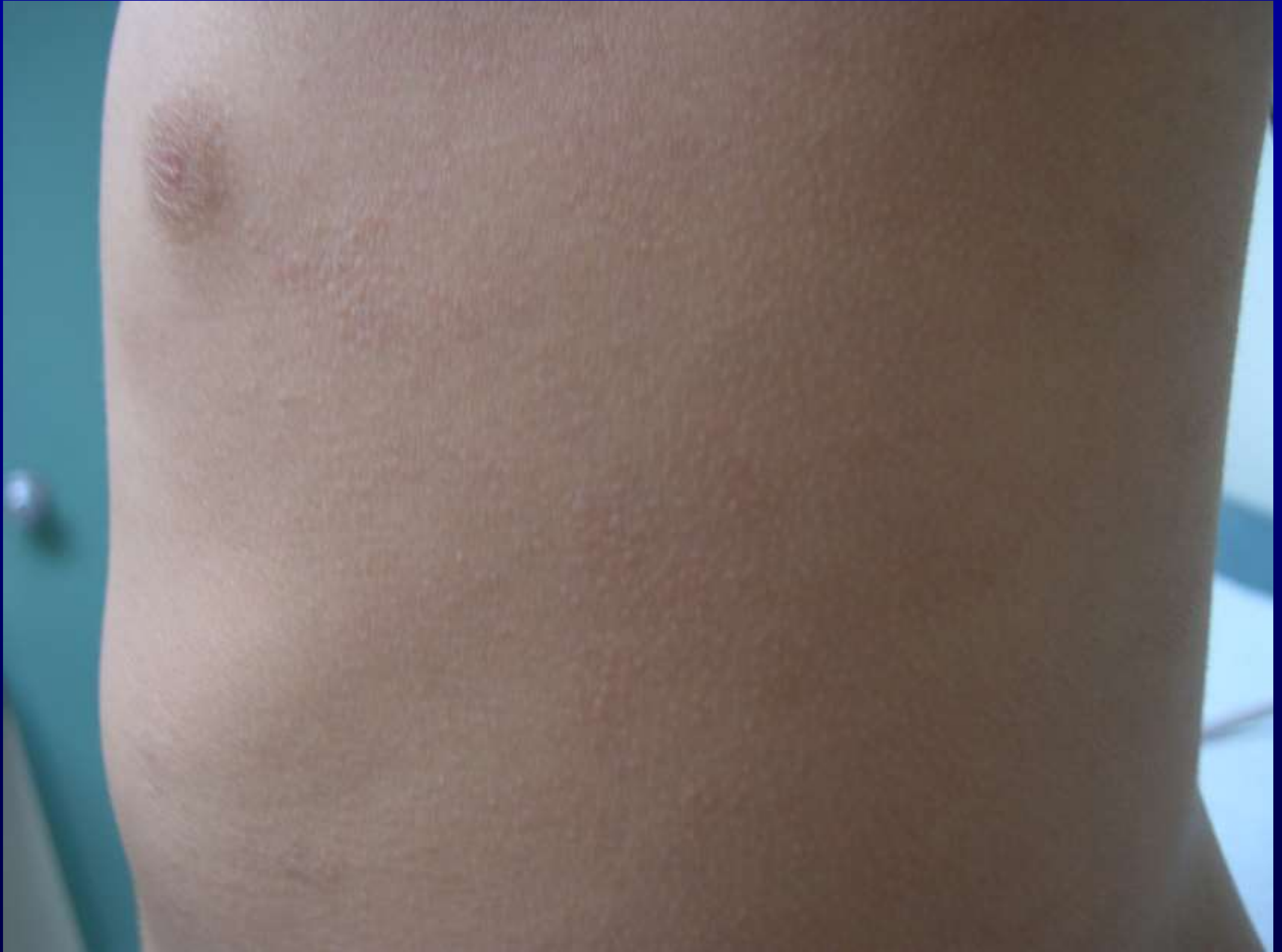








Follicular Eczema



Treatment

- Topical steroids
  - Class 6-7 topical steroids can be used on the face
  - Safe for eyes (Desonide gel 0.05%, aclovate cream or ointment 0.05%)
- Oral steroids
- Emollients
  - Lansinoh ointment
  - Eucerin, Aquaphor, vasaline, Cetaphil or Vanicream

Treatment

- Anithistamines
  - Sedating – diphenhydramine, hydroxyzine, cyprohepatine
  - Nonsedating fexofenadine, cetirizine, loratadine - useful, especially when there is an urticarial component (doxepin topical or 10mg QD -tricyclic antidepressant with potent H1 and H2 blocking properties) or concurrent allergic rhinoconjunctivitis

Treatment

- Topical calcineurin inhibitors
  - pimecrolimus1% cream or tacrolimus 0.03% to 0.1% ointment
- Crisaborole – expensive, helpful in children
- Phototherapy– helpful in dyshidrotic eczema in adults and severe cases
- Cyclosporin – moderate to severe cases
- Methotrexate – once a week dosing, monitor LFTs, CBC
- Mycophenolate mofetil (Cellcept) - immunosuppression
- Dupixent – IL-4 alpha antagonist, expensive, moderate to severe cases

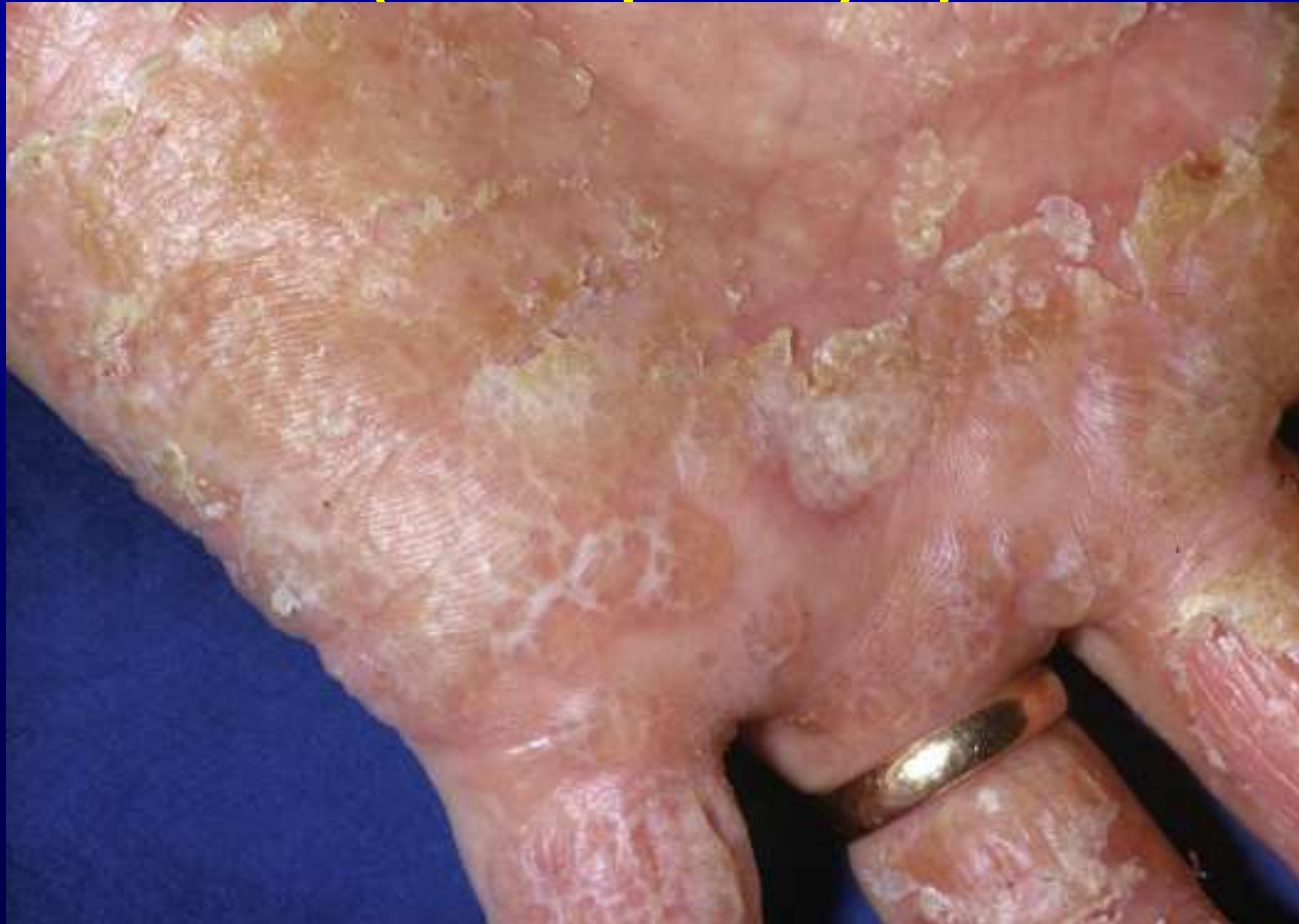
Selected Spongiotic Dermatidites

- Dyshidrotic Eczema (Pompholyx)
- Asteatotic Eczema (Craquele)
- Guttate Parapsoriasis
- Nummular Eczema
- Id reaction (Autoeczematization)
- Pityriasis Alba
- Keratosis pilaris
- Chelitis
- Seborrheic Dermatitis
- Allergic Contact Dermatitis
- Stasis Dermatitis
- Drug Eruption
- Arthropod Bite Reaction
- Pityriasis Rosea
- Photosensitive (Phototoxic/Photoallergic) Dermatitis
- Tinea (fungal) infection
- Incontinentia Pigmenti (Bloch-Sulzberger Syndrome)

Dyshydrotic Eczema (Pompholyx)

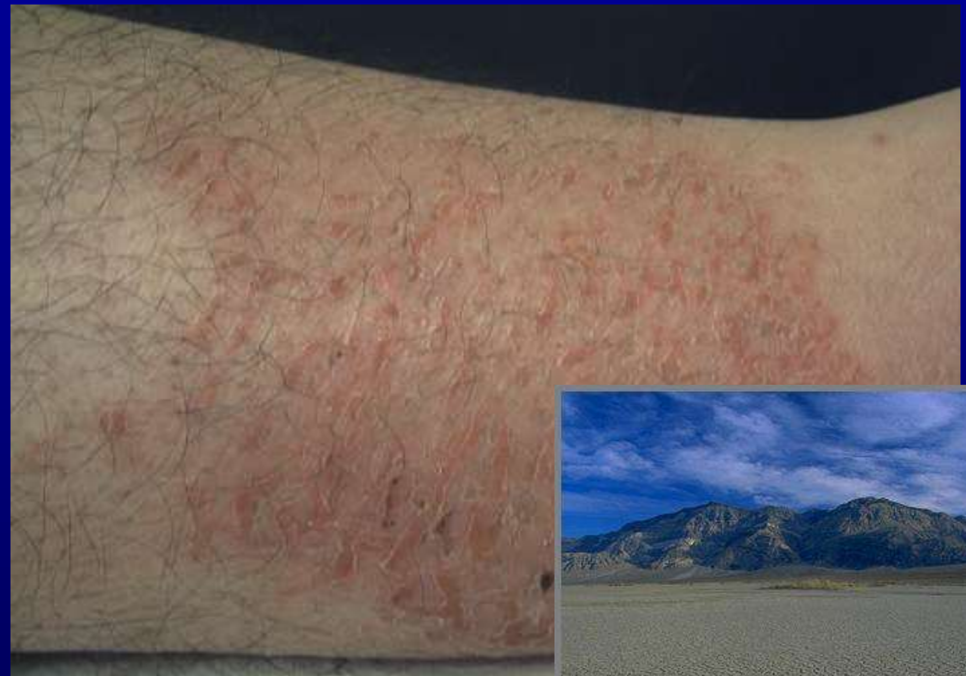
- More common in adults in the 3rd to 5th decade of life
- Females > Males
- May be associated with hyperhydrosis
- Usually lasts 2-4 weeks, but recurrent episodes not uncommon

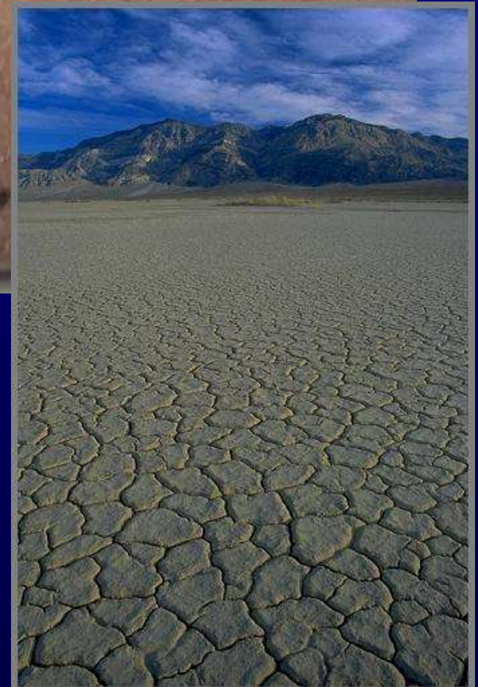
Dyshydrotic Eczema (Pompholyx)



Asteatotic Eczema (Craquelé)

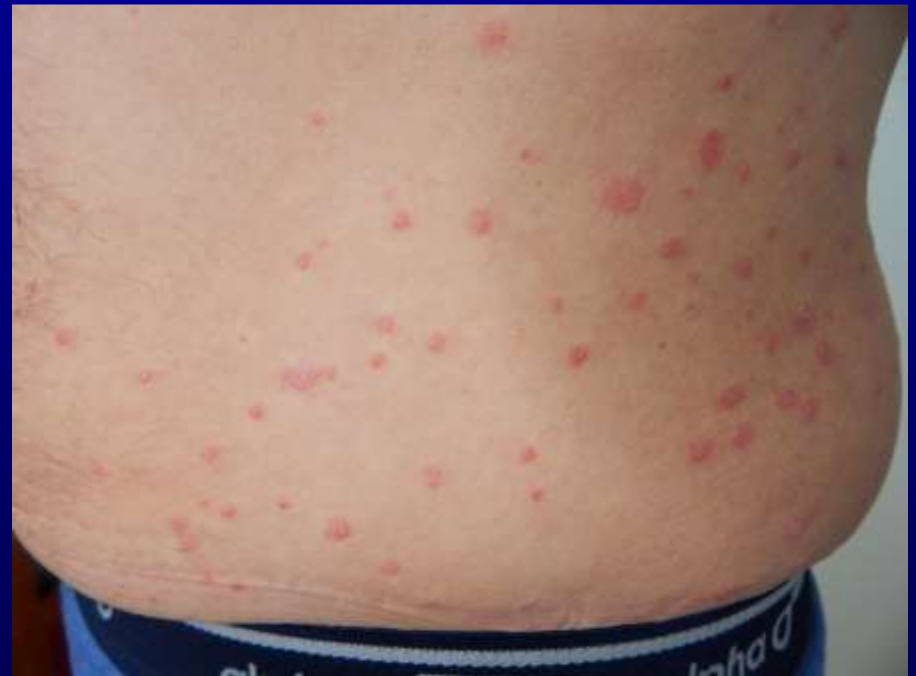
- Elderly, bilateral, winter months
- Can be associated with an underlying malignancy





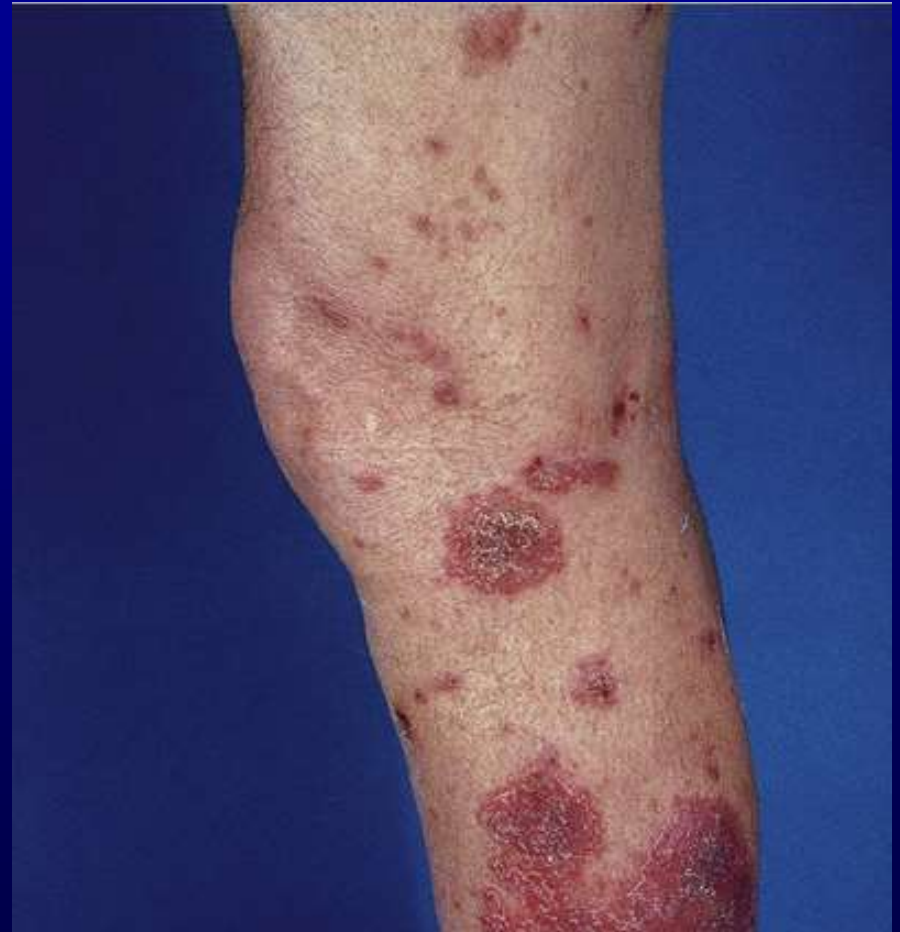
Guttate Parapsoriasis

- Often follows streptococcal infection
- Drop-like lesions on the trunk and extremities
- Thought to lead to mycosis fungoides 1% of large plaque parapsoriasis



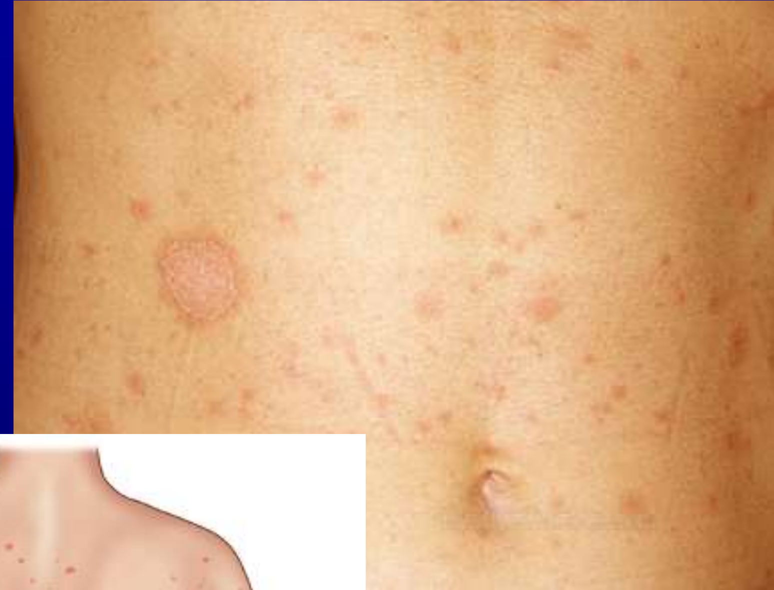
Nummular Eczema

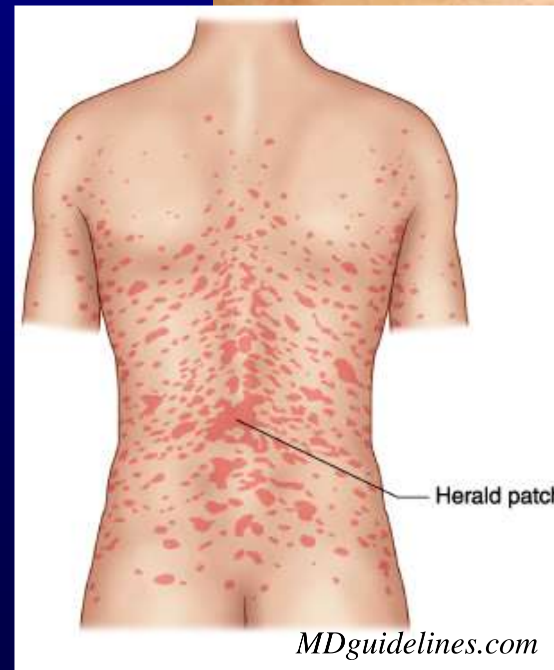
- Coin shaped tiny papules and papulovesicles that become confluent
- Not related to atopic dermatitis
- Associated with cold dry weather, infection, predisposing medication



Pityriasis Rosea

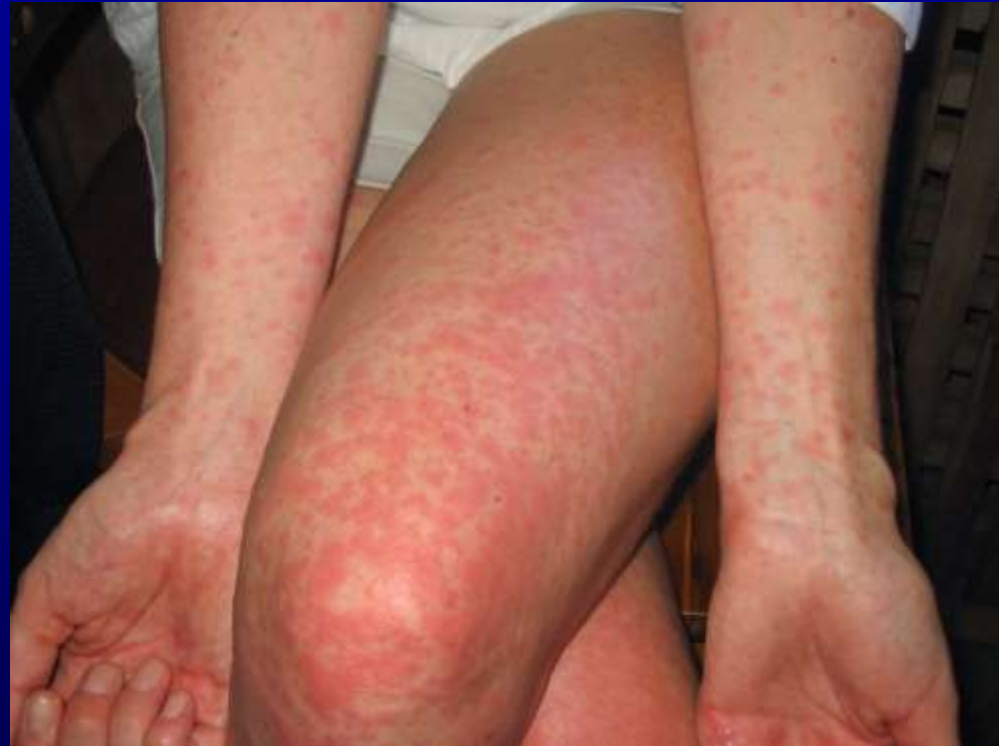
- Young adults, initial "Herald patch" followed by "Christmas tree" pattern rash on trunk
- More common in spring or autumn
- Can take up to 6mo to clear





Id reaction (Autoeczematization)

- Dissemination of a previously localized ‘eczematous’ process such as fungal infection or stasis dermatitis
- Commonly seen as a reaction to foods, look at the feet and nails for fungus

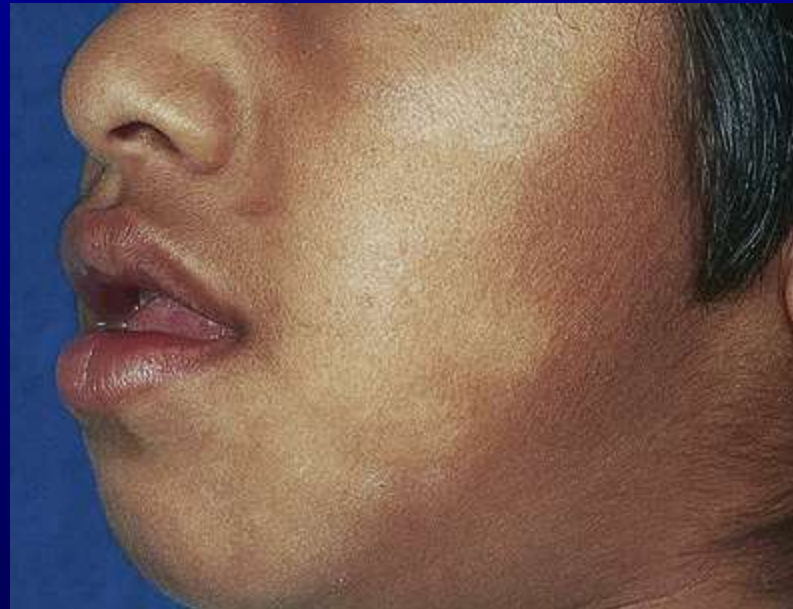


An id reaction is an eczematous skin reaction that develops in response to a distant unknown antigen. Which of the following is a known and common cause of “id reaction”?

- A. Tinea pedis
- B. Food allergens
- C. Stasis dermatitis
- D. All of the above

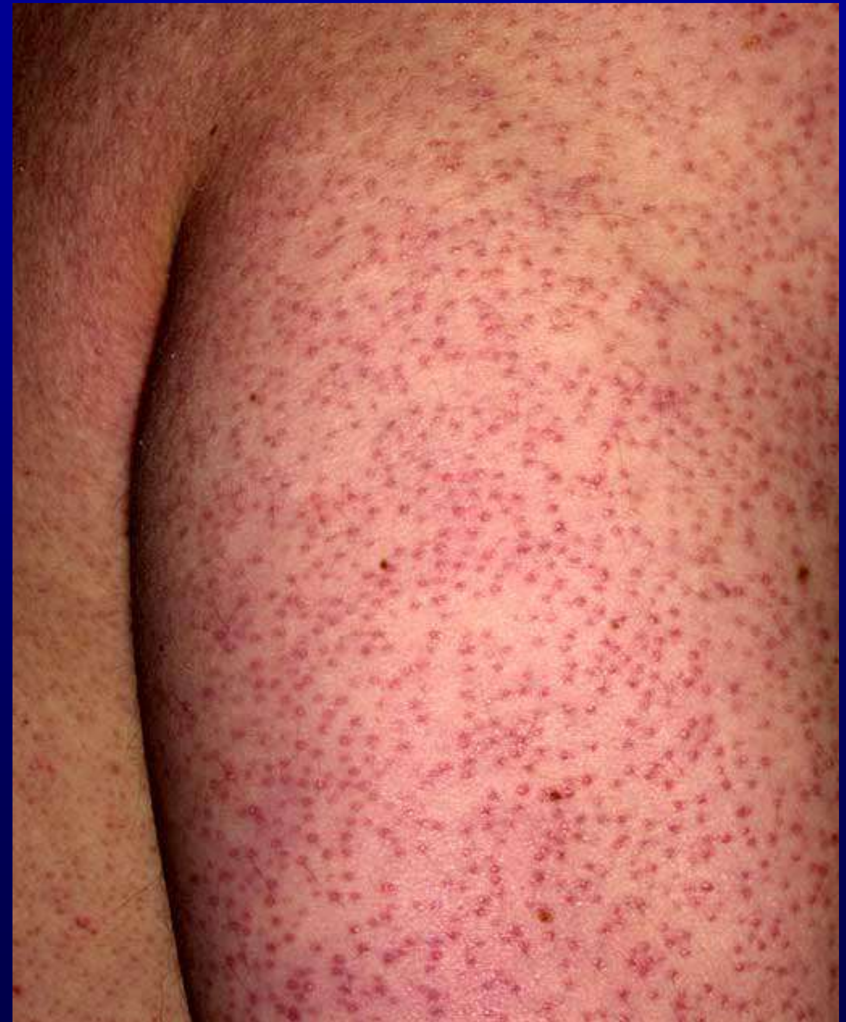
Pityriasis Alba

- Hypopigmented scaly patches with predilection for face, neck and shoulders of darker skinned atopic individuals
- Usually between 6-16 years
- Topical 1% hydrocortisone (or other low-potency steroid cream or ointment) may be used sparingly for 3-7 days to abate any ongoing inflammation.



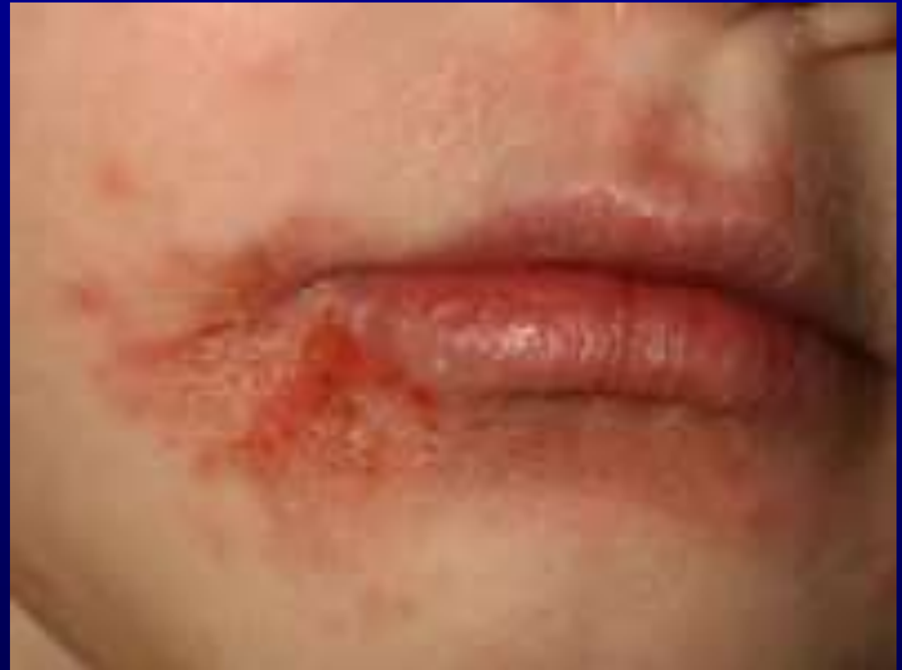
Keratosis Pilaris

- Bilateral upper arms and thighs, sometimes face
- Usually a childhood onset
- Keratolytics such as lactic acid, salicylic acid, or urea-based lotions (Urealac, Keratol) or creams applied twice daily
- Topical retinoids such as tazarotene cream (0.05%) or tretinoin cream (0.1%) applied daily



Atopic Chelitis

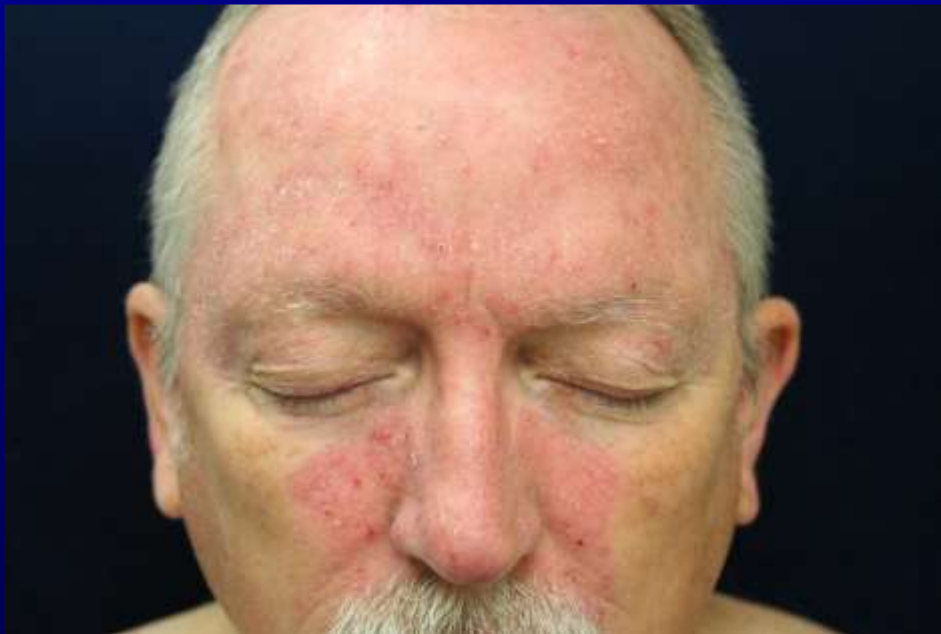
- Inflammation of the lips
- Contact (toothpaste), irritant dermatitis, atopic patients, vitamin deficiency
- AKA - Angular chelitis
- Candidiasis treat with Nystatin, ketoconazole 2% cream covers yeast and dermatophytes, topical mupirocin ointment for bacterial coverage if suspect impetigo

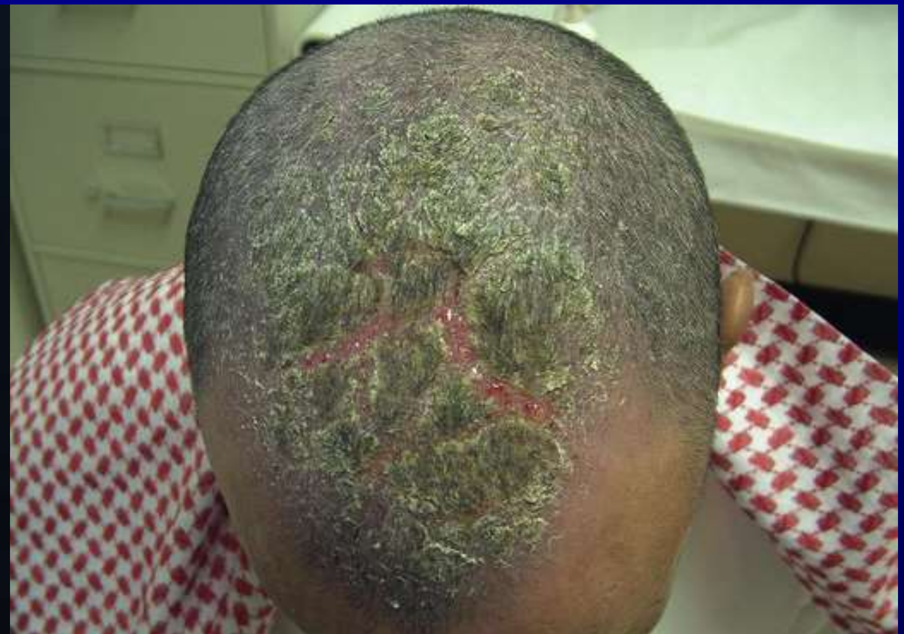


Seborrheic Dermatitis

- Affects sebum rich areas of the skin
- Adult, caucasian, male prediliction, AIDS, neurological disorders
- Scalp, eyebrows, perinasal, beard, presternal
- OTC treatment – alternate over the counter shampoos
  - Demodex mites – selenium sulfide 1% shampoo
  - Yeast-like species – Nizoral 1% shampoo

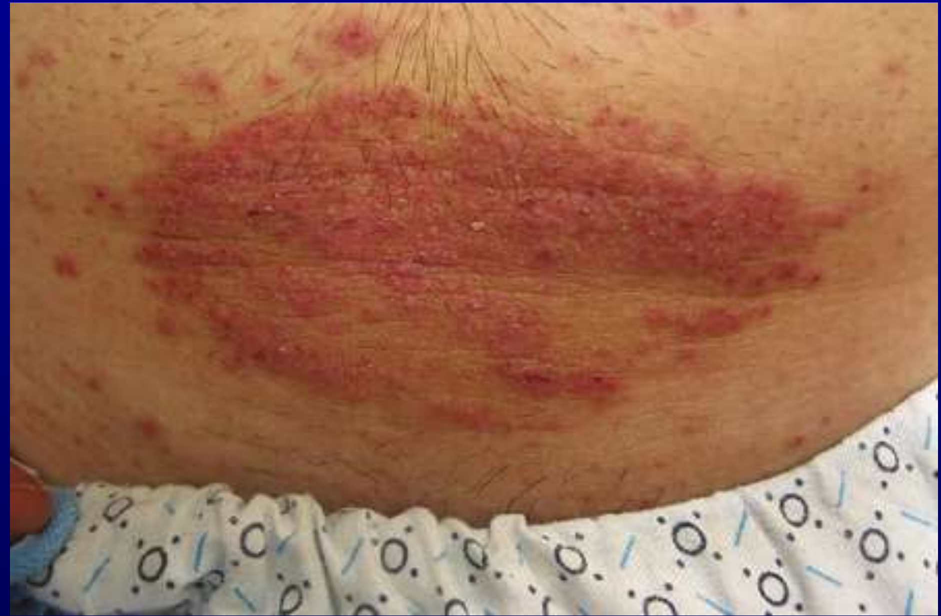
Seborrheic Dermatitis



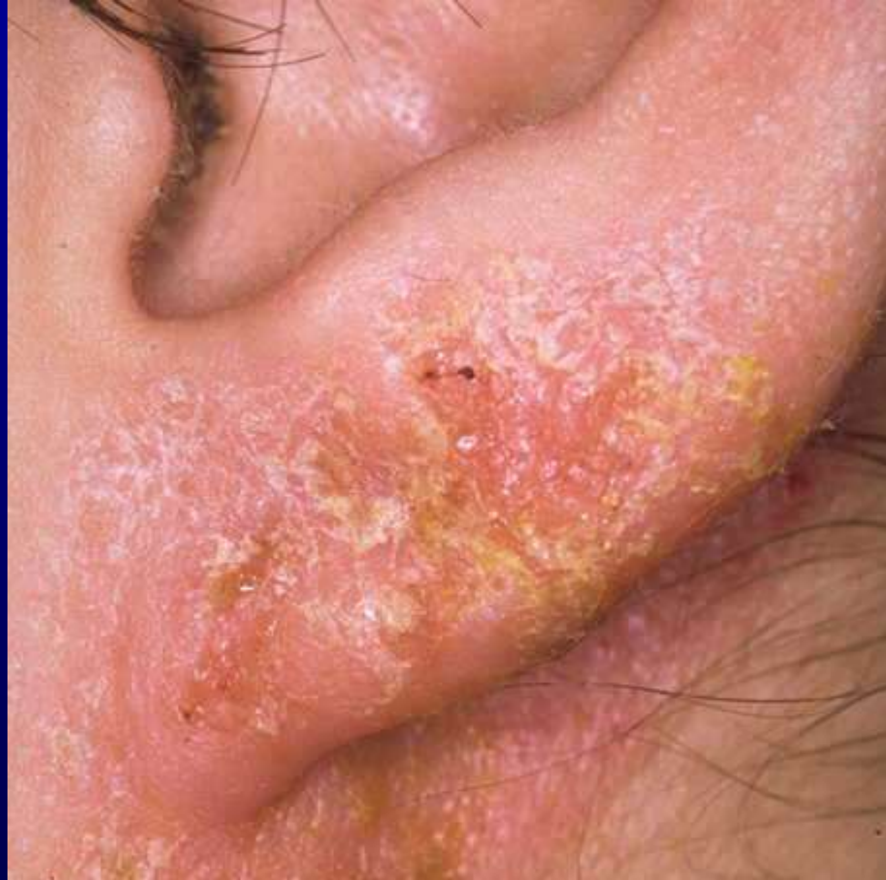


Allergic Contact Dermatitis

- Delayed hypersensitivity reaction to exogenous antigen
- Any age
- Nickel, fragrance (Rhus, uroshiol), neomycin/bacitracin
- Short course of topical or oral steroids

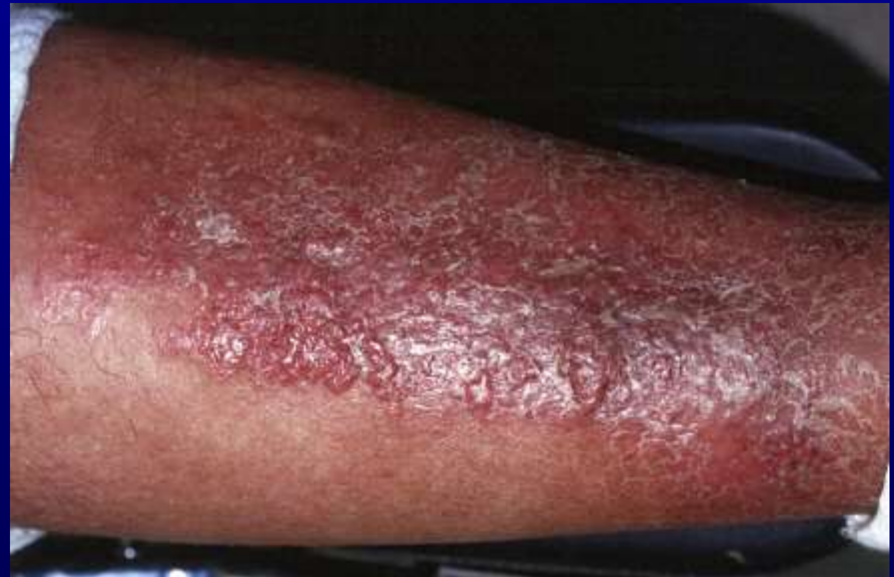


Allergic Contact Dermatitis



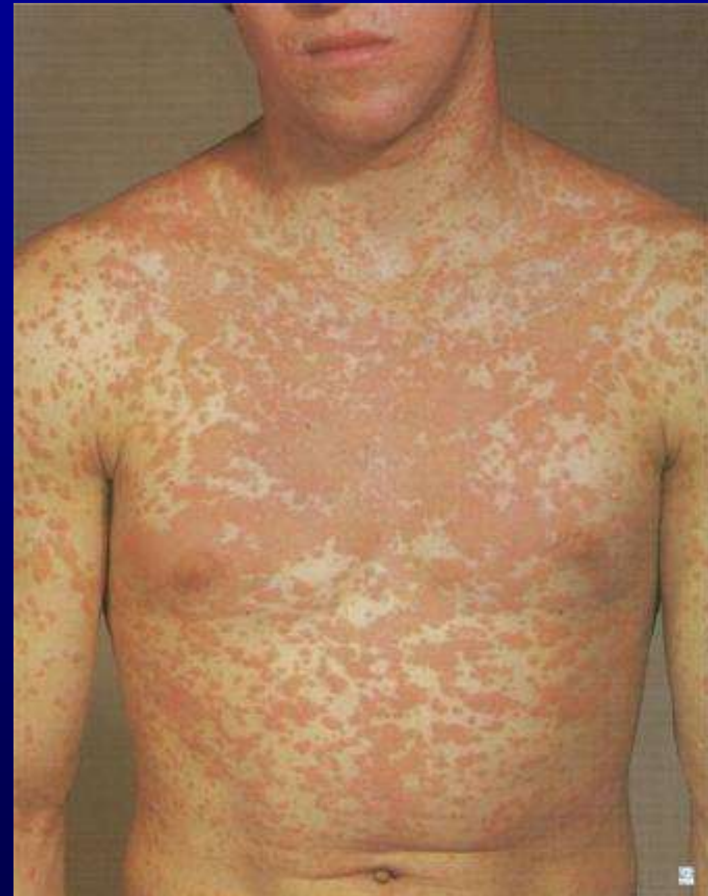
Stasis Dermatitis

- Associated with venous stasis, chronic CHF, s/p surgery to lower legs
- Bilateral lower legs
- Elderly
- Pruritic, painful, weeping
- Steroids, topical antifungal, compression stockings, elevation, increase diruetic, culture when necessary



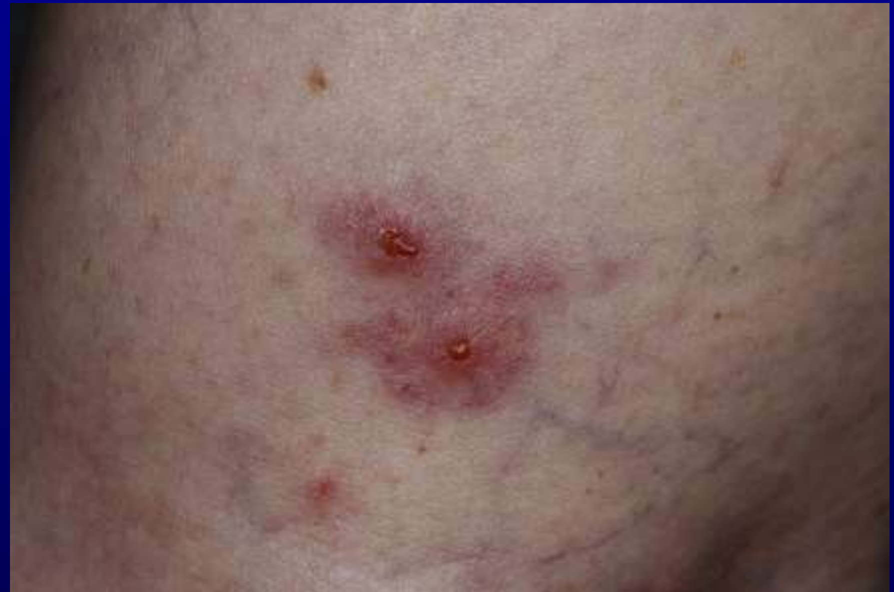
Drug Eruption

- Antibiotics
- Exposure to initial presentation of drug or re-exposure to a medication where the patient was previously sensitized
- Can take up to 3 to 6 months to develop after medication onset
- Remove one medication at a time for 3 to 4 weeks



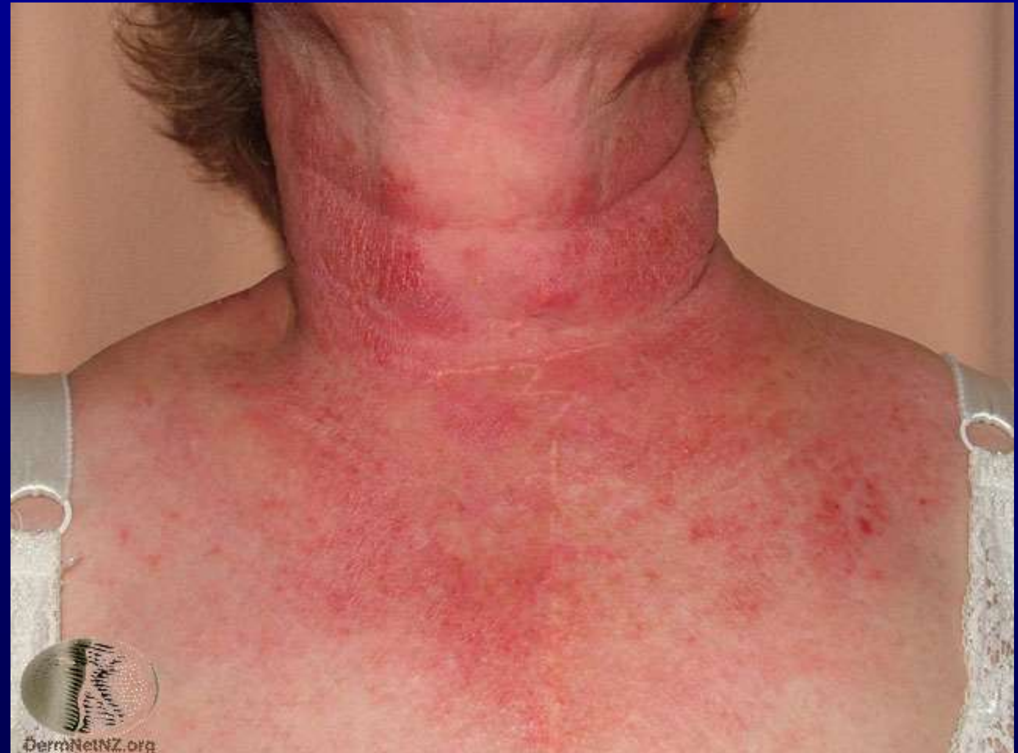
Arthropod Bite Reaction

- Solitary or mulitiple papules, often clustered
- Punctum centrally may be evident
- Pruritic
- Topical steroids, topical lidocaine 2.5%/ prilocaine 2.5%



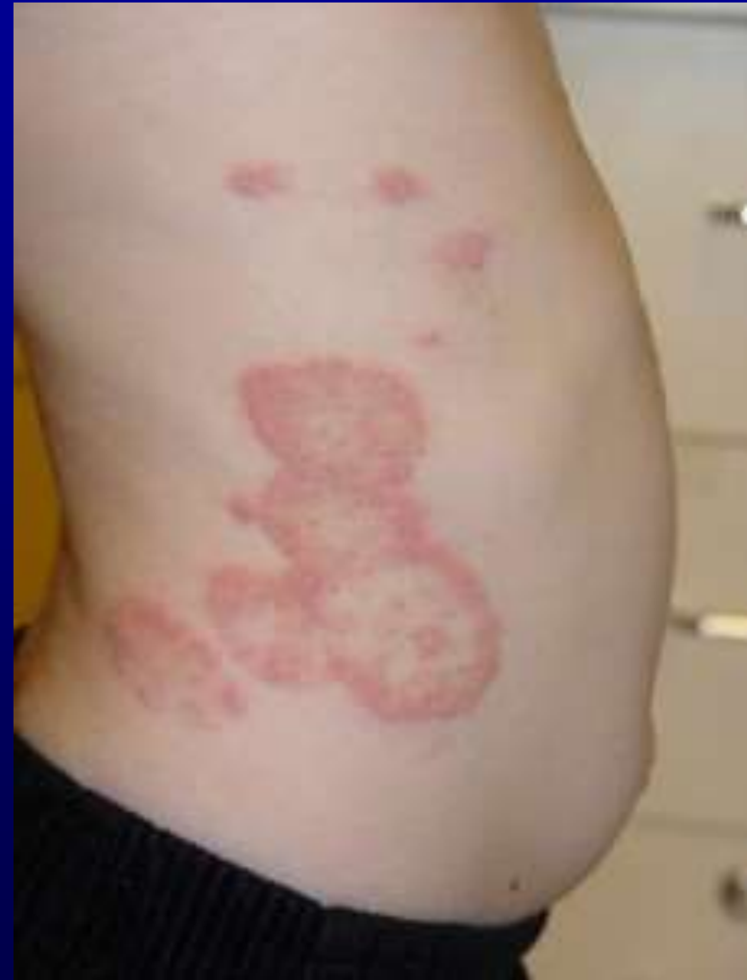
Photosensitive (Phototoxic/Photoallergic) Dermatitis

- Can begin within minutes of light exposure
- Tender macular erythema and edema in sun exposed areas
- r/o photo drug, dermatomyositis, lupus



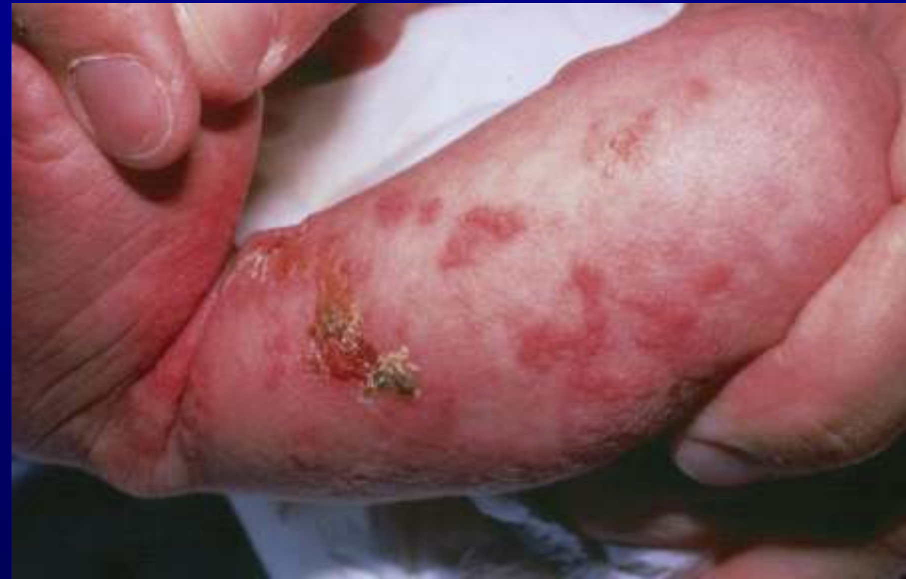
Tinea (fungal) infection

- Infectious organisms Trichophyton, Microsporum, Epidermophyton species
- Children or adults
- Mimics eczema, psoriasis, gyrate erythemas
- Topical azole creams (ketoconazole 2%, econazole 1%)
- Oral for severe reactions lamisil 250mg QD x 14 days, oral sporonox 100mg BID x 14 days



Incontinentia Pigmenti (Bloch-Sulzberger Syndrome)

- Genodermatosis noted at birth
- Progressive cutaneous blistering along the lines of Blaschko
- Mutation in the NEMO gene
- X-linked dominant nearly exclusively in females



When spongiosis and parakeratosis are present, what histochemical stain should be ordered"?

- A. AFB
- B. GMS or PAS
- C. Gram
- D. All of the above

If eosinophils are present in the dermis

- A. the diagnosis is eczema.
- B. the diagnosis is a medication reaction.
- C. the diagnosis is arthropod insult.
- D. a hypersensitivity dermatitis cannot be excluded.

When eosinophils are found in association with neutrophils, fibrin thrombi and leukocytoclasis, which of the following should be considered?

- A. mastocytosis
- B. bullous pemphigoid
- C. leukocytoclastic vasculitis
- D. sarcoidosis

Treatment Summary

- Elimination of exacerbating factors
  - Avoid trigger factors such as heat, low humidity
  - Treat skin infections such as *Staphylococcus aureus* and herpes simplex Use antihistamines for sedation and control of itching
  - Treat stress and anxiety
- Elimination of aeroallergens and food allergens
- Elimination of contact allergens
- Maintaining skin hydration
  - Emollients and moisturizers
  - Bathing practices
- Controling pruritus
- Topical/Oral steroids

Treatment Summary

- Topical calcineurin inhibitors
  - pimecrolimus1% cream or tacrolimus 0.03% to 0.1% ointment
- Crisaborole – expensive, helpful in children
- Phototherapy– helpful in dyshidrotic eczema in adults and severe cases
- Cyclosporin – moderate to severe cases
- Methotrexate – once a week dosing, monitor LFTs, CBC
- Mycophenolate mofetil (Cellcept) - immunosuppression
- Dupixent – IL-4 alpha antagonist, expensive, moderate to severe cases

Selected Spongiotic Dermatidites

- Dyshidrotic Eczema (Pompholyx)
- Asteatotic Eczema (Craquele)
- Guttate Parapsoriasis
- Nummular Eczema
- Id reaction (Autoeczematization)
- Pityriasis Alba
- Keratosis pilaris
- Chelitis
- Seborrheic Dermatitis
- Allergic Contact Dermatitis
- Stasis Dermatitis
- Drug Eruption
- Arthropod Bite Reaction
- Pityriasis Rosea
- Photosensitive (Phototoxic/Photoallergic) Dermatitis
- Tinea (fungal) infection
- Incontinentia Pigmenti (Bloch-Sulzberger Syndrome)

Pathology Report

- Chronic/subacute/acute spongiotic dermatitis with eosinophils, see note
- NOTE:
  - Discribe histological features from the top down
  - The findings are not diagnostic for a specific disease process but can be identified in a variety of forms of eczematous (hypersensitivity) dermatidites.
  - Offer a differential if possible
  - Answer the clinician's question

Thank you!

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