Dermatitis

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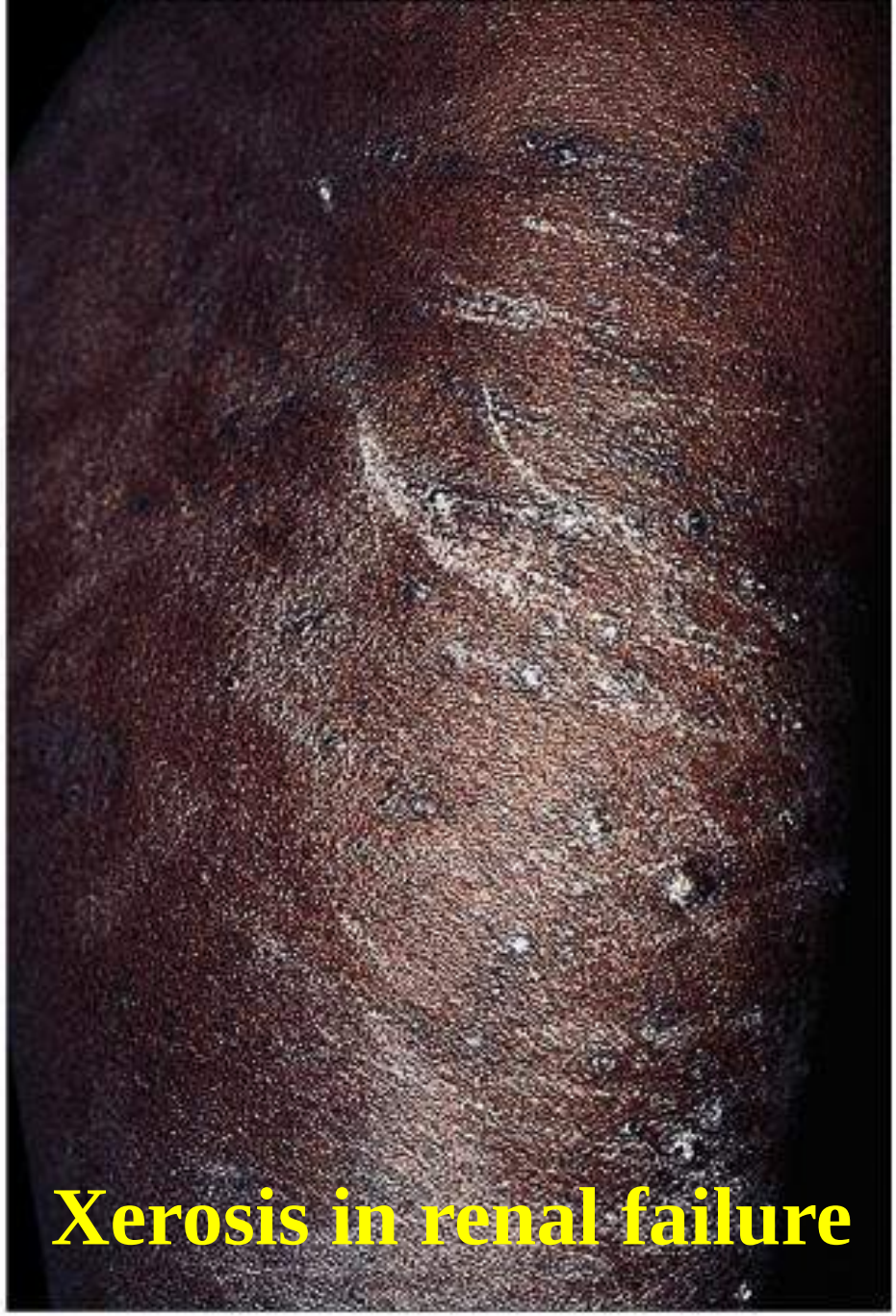
Learning Objectives

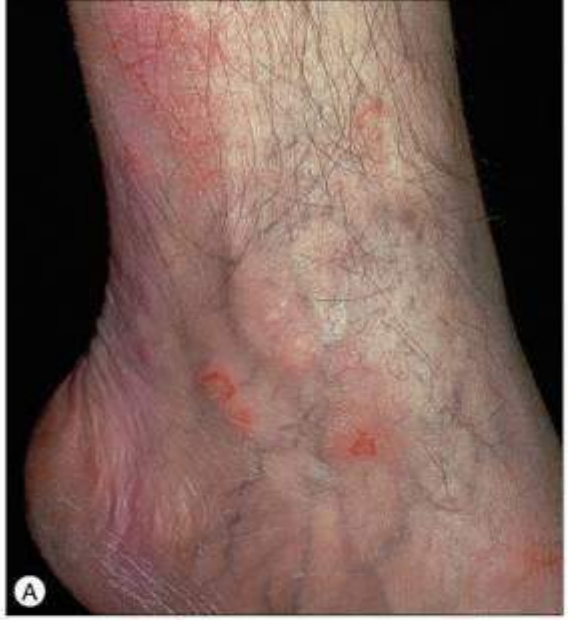
- Discuss variants of dermatitis
- Understand basic principles of treatment
  - Moisturization
  - Topical corticosteroids

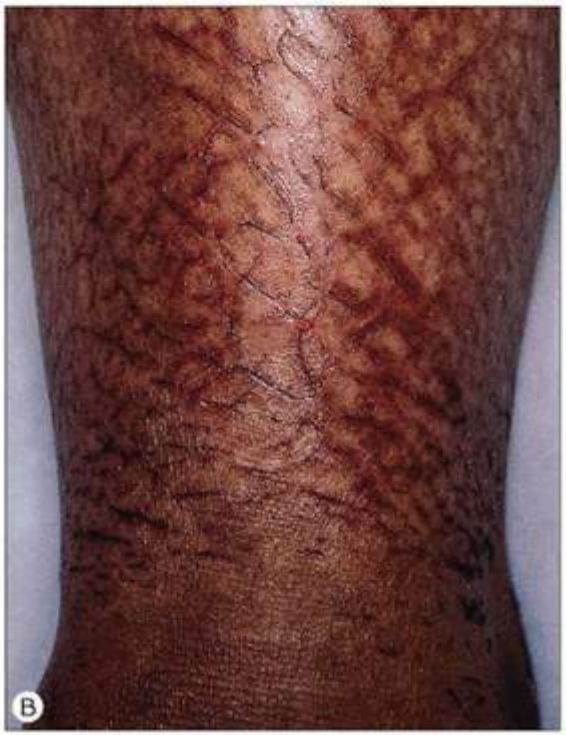
Xerosis (dry skin)

- Very common
- Many causes:
  - Dry environment (winter)
  - Age (common in elderly)
  - Overuse of soap
  - Prolonged, excessive exposure to water
  - Medical conditions (renal failure, HIV, etc.)
  - Medications (e.g. isotretinoin)
  - Most often combination of above and other factors



Xerosis in renal failure





Xerosis leading to eczema

(asteatotic eczema)

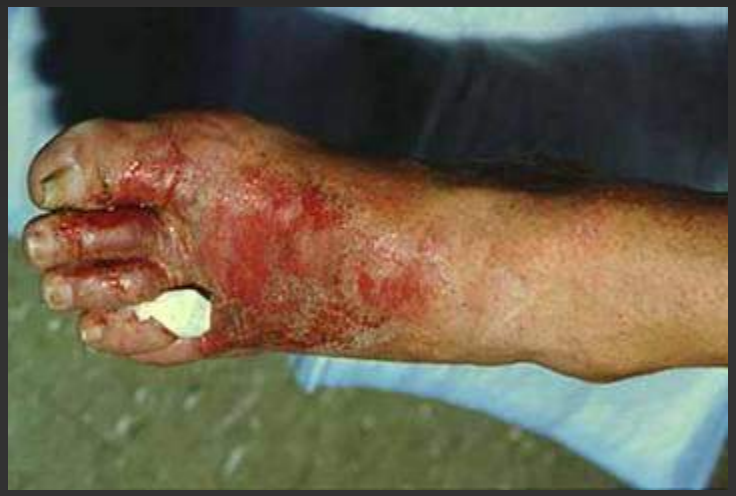
Eczema/Dermatitis

- Eczema = “to boil over”
- Dermatitis and eczema used interchangeably in practice
- Common way for skin to react
- Acute vs. chronic

Dermatitis classification

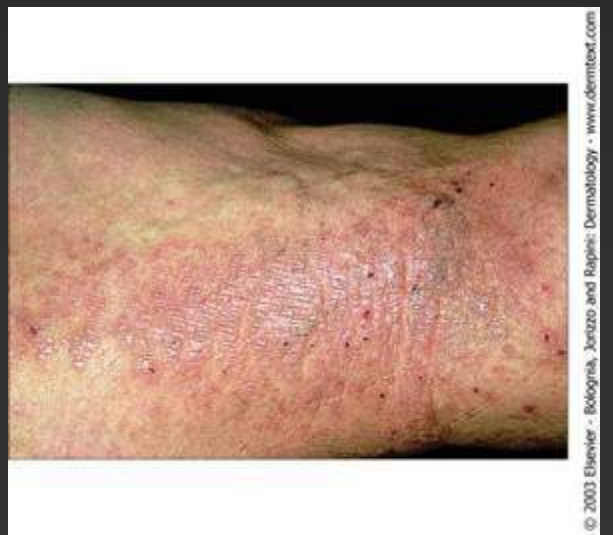
Acute

- Erythema
- Edema
- Papules
- Vesicles
- Crust



Chronic

- Lichenification
- Scaling
- Hyperpigmentation
- Fissures



Dermatitis

- Atopic Dermatitis
- Stasis Dermatitis
- Nummular Dermatitis
- Contact Dermatitis
  - Allergic vs. Irritant
- Seborrheic Dermatitis
- Rare forms

1. Atopic Dermatitis

- inherited, chronic, relapsing and pruritic skin condition
- 3 different forms:
  - infantile
  - childhood
  - adulthood
- often associated with xerosis and atopy

Atopy

- genetic predispositon to mucosal and cutaneous hyperreactivity
- “atopic triad” refers to atopic dermatitis, allergic rhinitis (hay fever) and asthma (up to 80% association)
- usually:
  - atopic dermatitis appears first
  - then asthma
  - then allergic rhinitis

DIAGNOSTIC FEATURES OF ATOPIC DERMATITIS

Major features (3 of 4 present)

- Pruritus
- Typical morphology and distribution of skin lesions (Figs 13.3 & 13.14)
- Chronic or chronically relapsing dermatitis
- Personal or family history of atopy

Minor features (3 of 23 present)

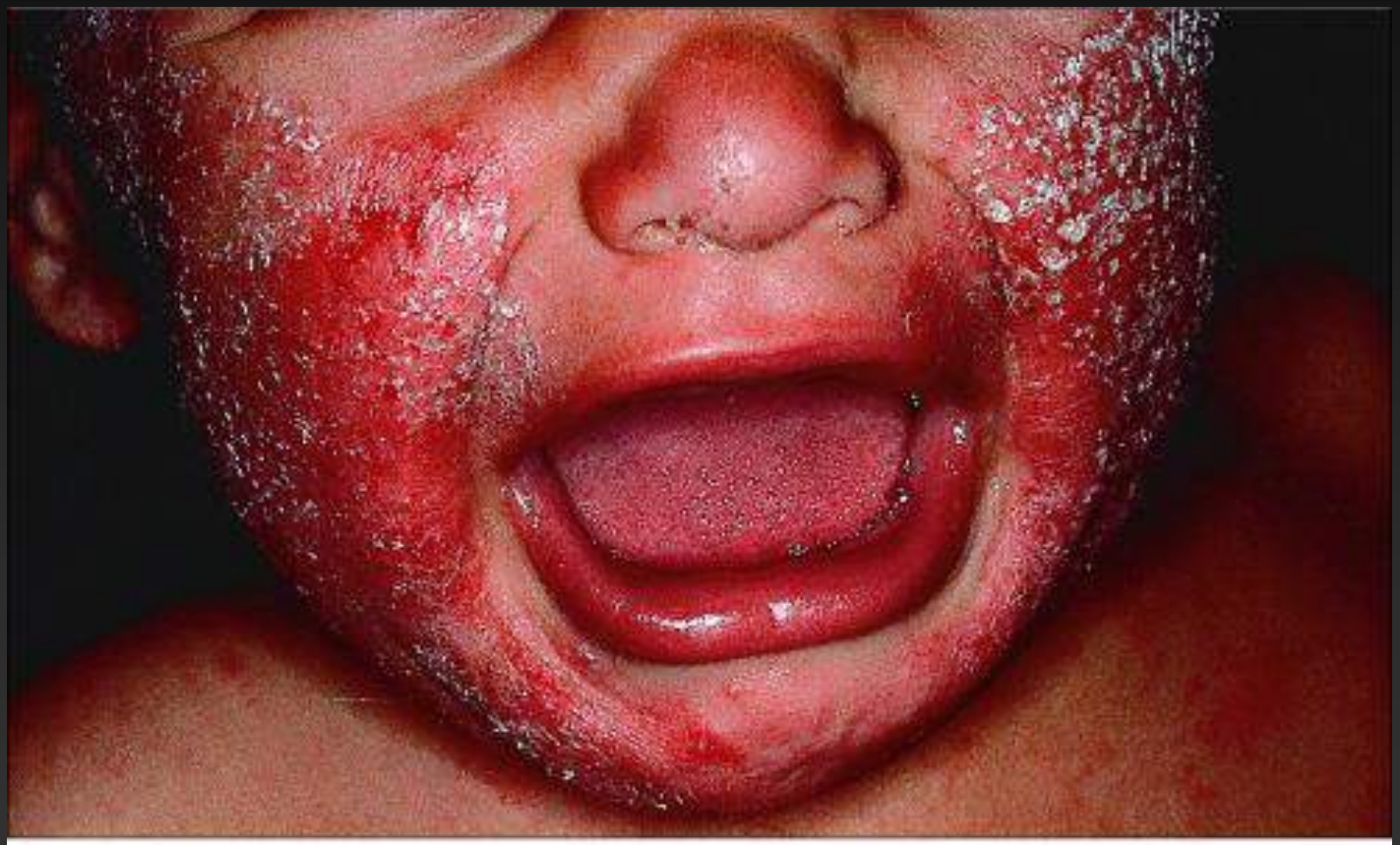
- Xerosis
- Ichthyosis/palmar hyperlinearity/keratosis pilaris (Figs 13.8 & 13.10)
- Immediate (type I) skin test reactivity
- Elevated serum IgE
- Early age of onset
- Tendency toward cutaneous infections/impaired cell-mediated immunity
- Tendency toward non-specific hand or foot dermatitis
- Nipple eczema
- Cheilitis (Fig. 13.12)
- Recurrent conjunctivitis
- Dennie–Morgan infraorbital fold (Fig. 13.9)
- Keratoconus
- Anterior subcapsular cataract
- Orbital darkening
- Facial pallor/erythema (Figs 13.6 & 13.9)
- Pityriasis alba (Fig. 13.11)
- Anterior neck folds
- Pruritus when sweating
- Intolerance to wool and lipid solvents
- Perifollicular accentuation (Fig. 13.4)
- Food intolerance
- Course influenced by environmental/emotional factors
- White dermographism/delayed blanch

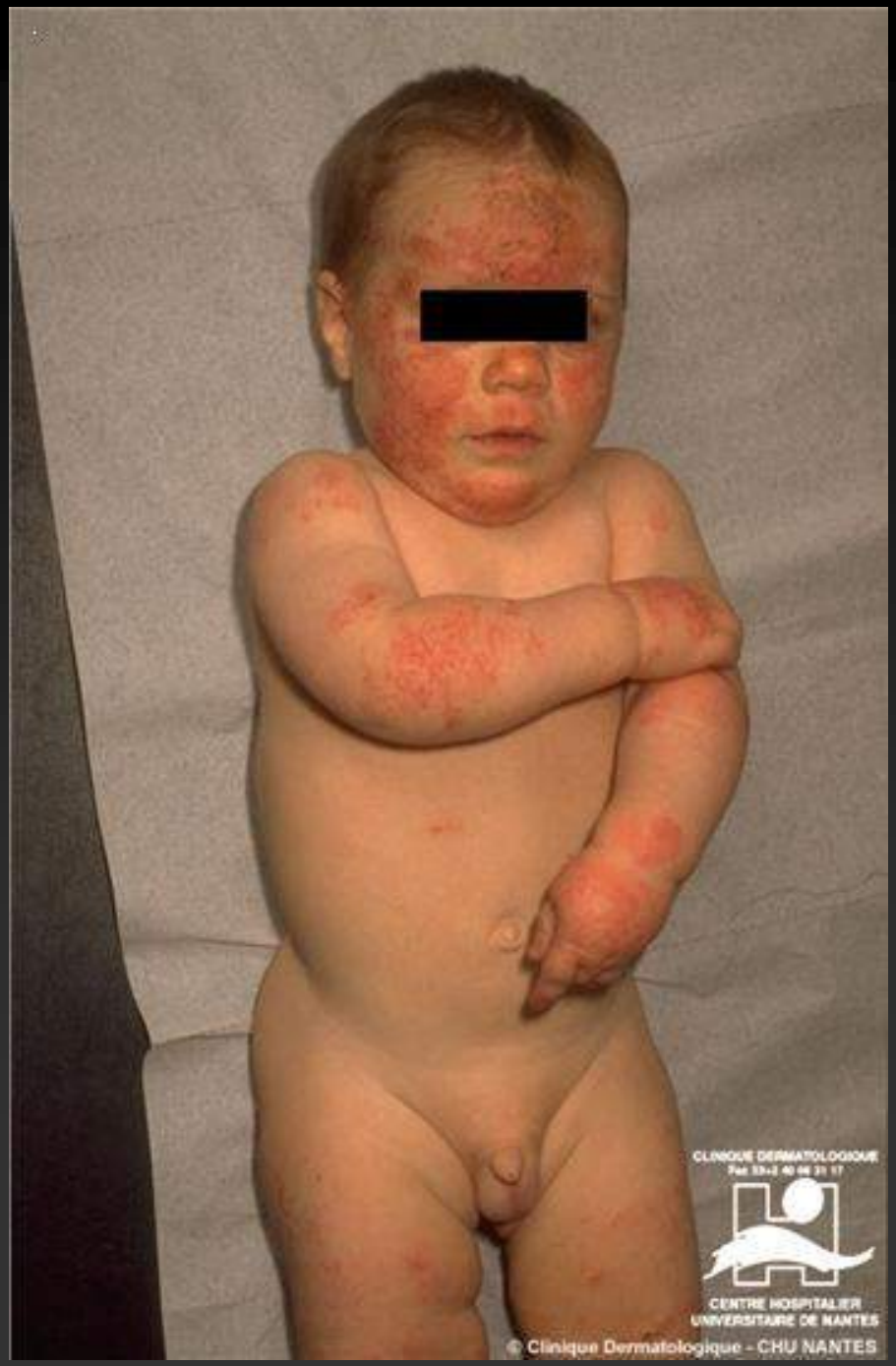
Table 13.1 Diagnostic features of atopic dermatitis.

Atopic Dermatitis

- Many children present before 3 month of age
  - most (85%) within first year of life
  - uncommon (<5%) to develop AD after 5
- of patients affected:
  - 50% clear by grade I and
  - 75% by junior high
  - if AD persists, it usually decreases in severity

Atopic Dermatitis – Infantile

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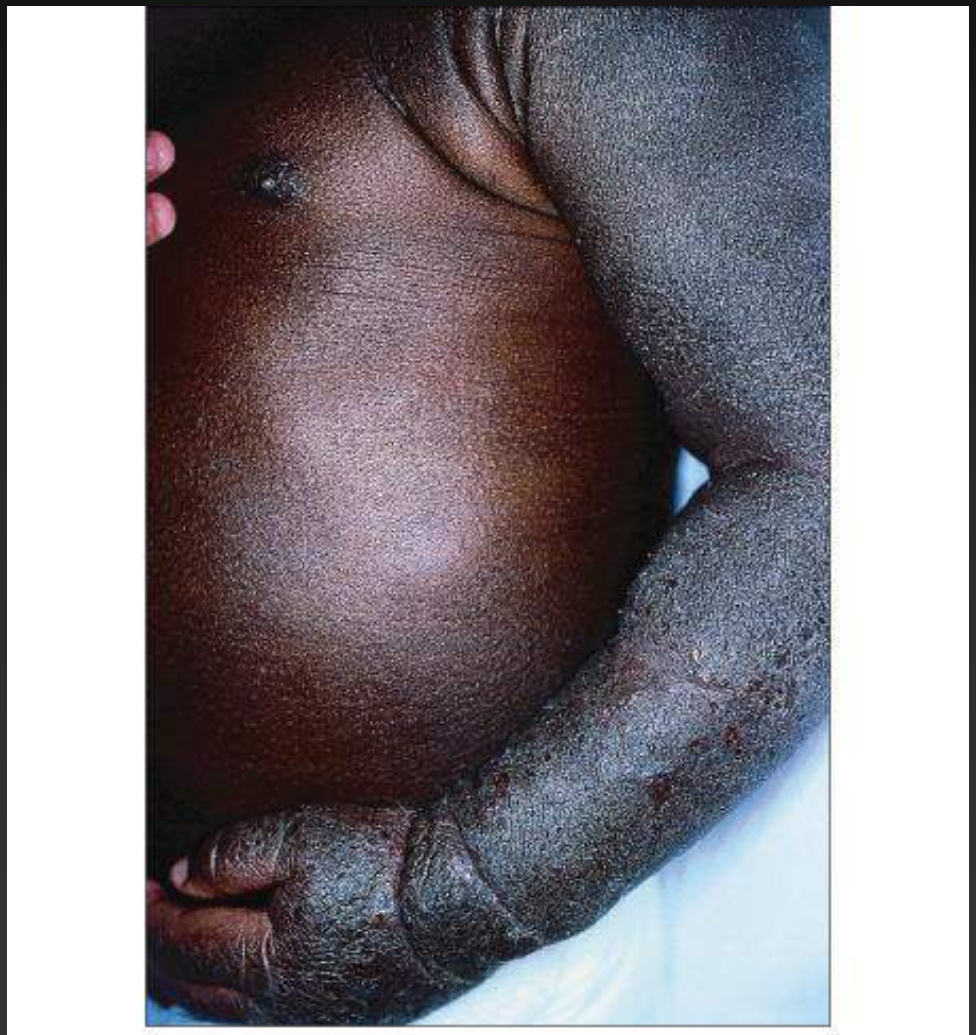
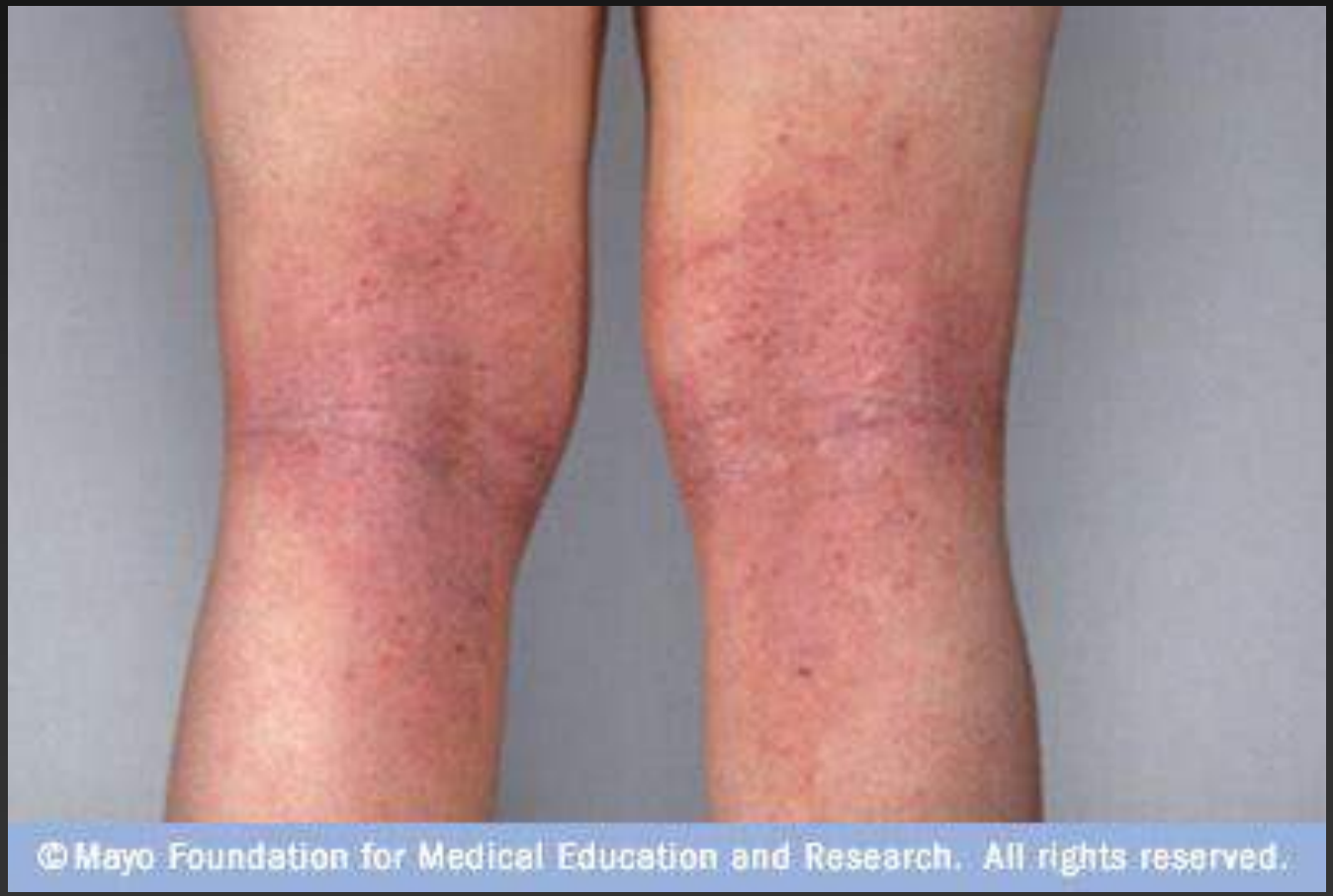
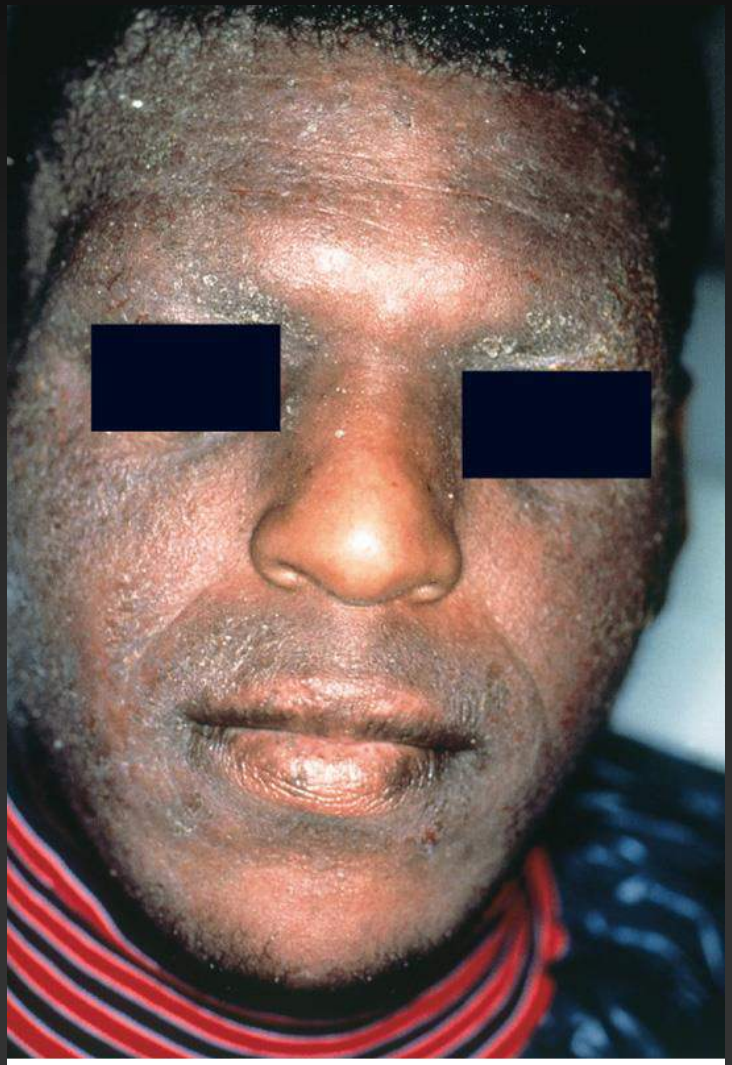
Atopic Dermatitis – Infantile



Atopic Dermatitis – Childhood



Atopic Dermatitis – Adult



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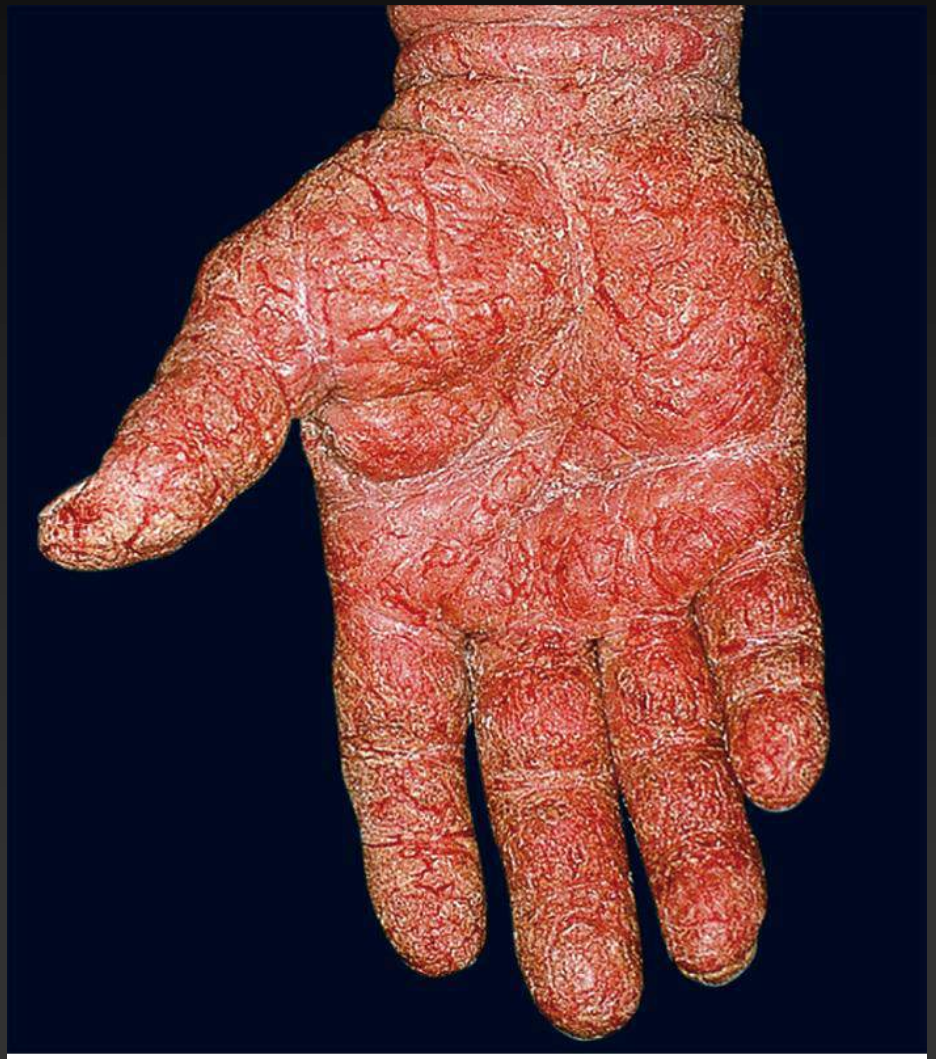

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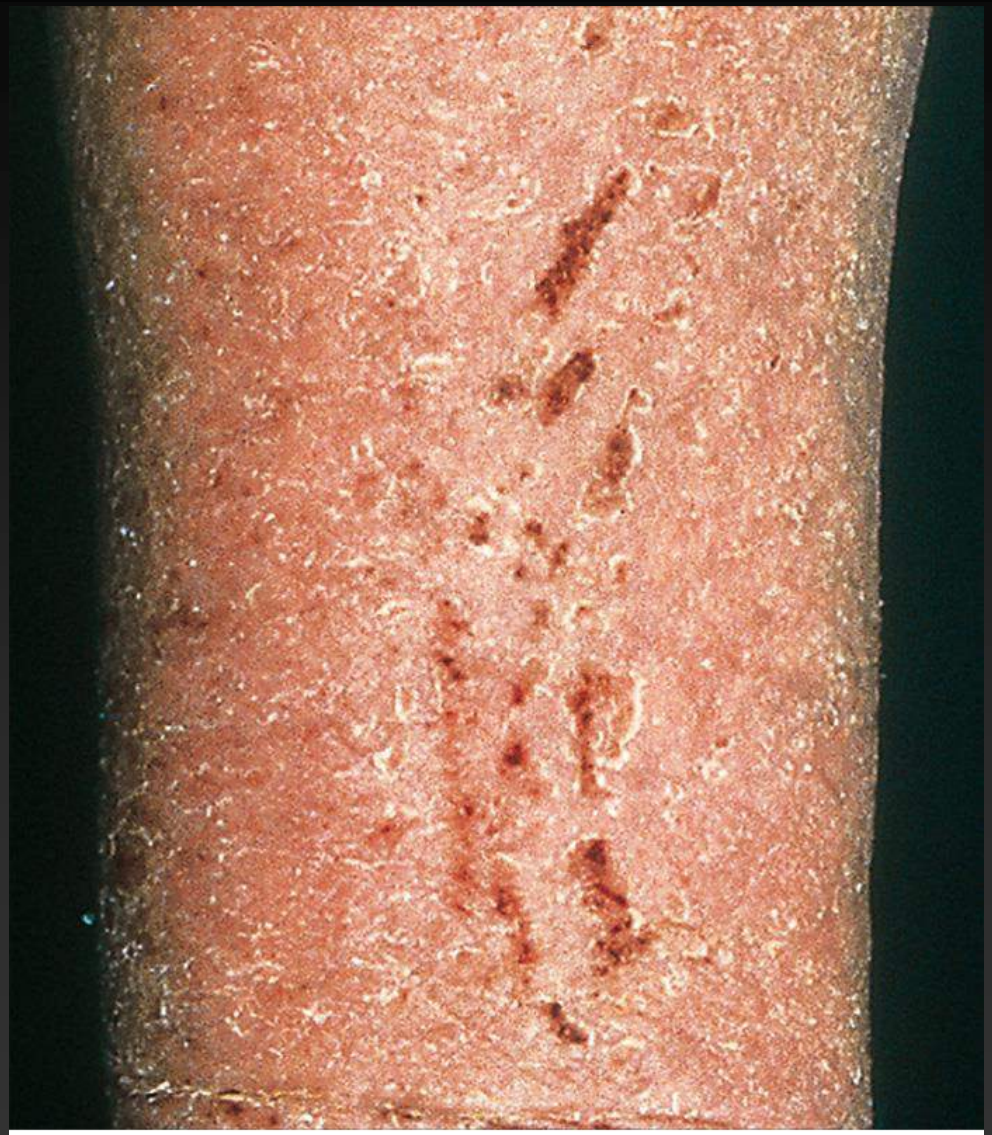
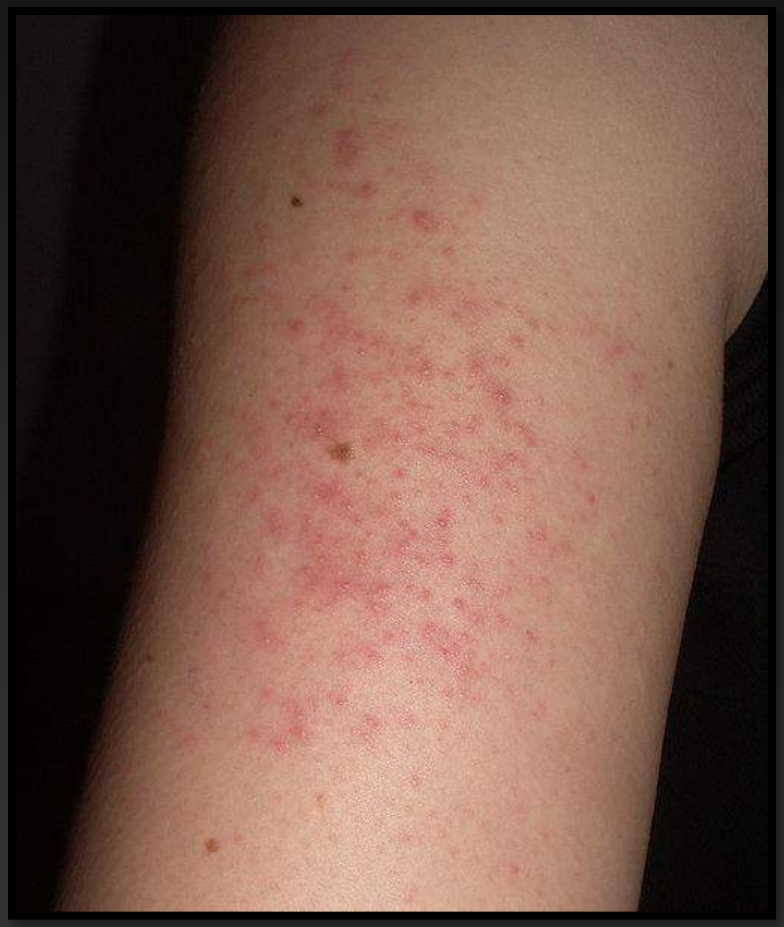
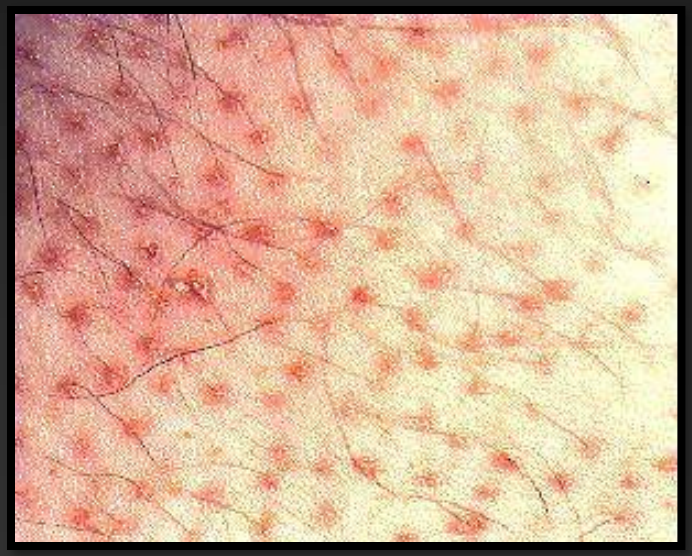


Associated Clinical Features

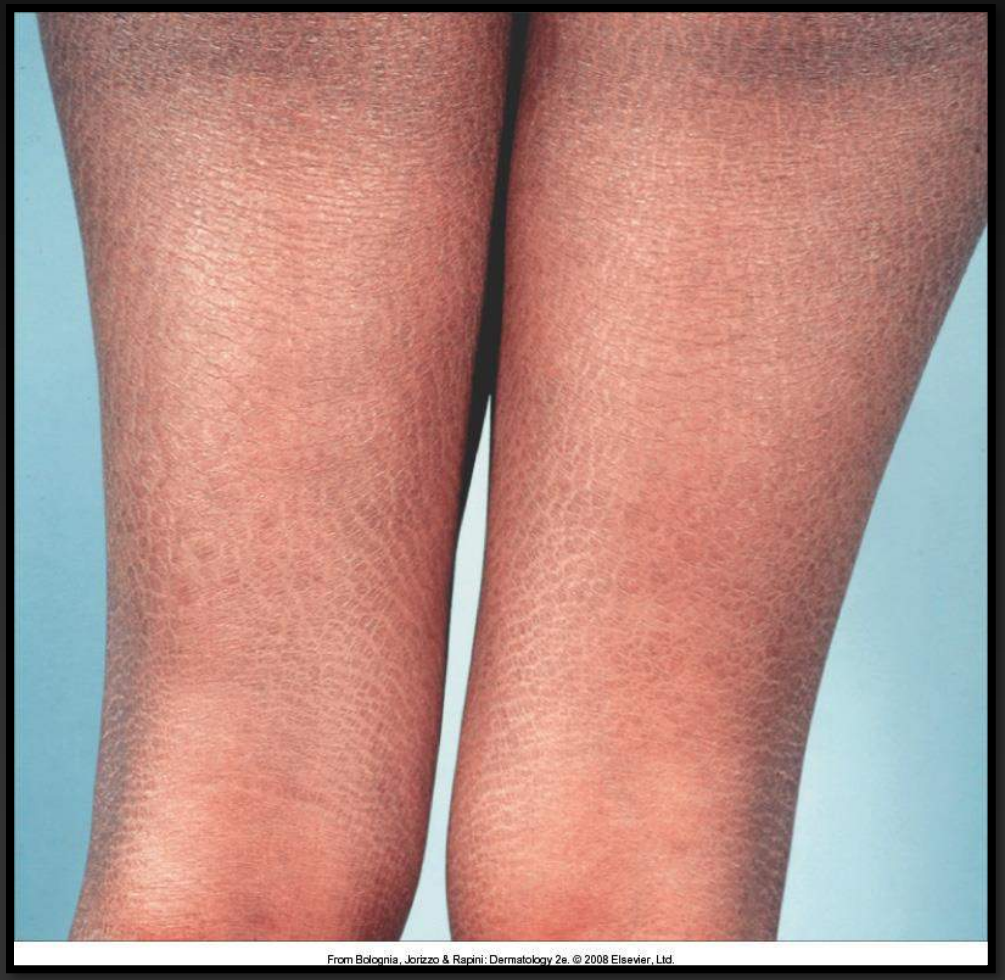
- Pruritus
- Xerosis
- Keratosis Pilaris
- Ichthyosis Vulgaris
- Post-inflammatory hypopigmentation

Keratosis Pilaris





Ichthyosis Vulgaris



Atopic Dermatitis - Treatment

- i) avoidance of trigger factors:
  - wool and abrasive clothing
  - soaps and detergents,
  - heat, perspiration
  - stress, alcohol
  - foods (if food allergy implicated in a given patient)
  - dust mites (if implicated)

Atopic Dermatitis - Treatment

- ii) Dryness:
  - Moisturization routine:
    - Bathing in pure lukewarm water for 5-20 minutes
    - Follow immediately with :
      - petroleum jelly, thick bland moisturizers;
      - if less severe – lighter moisturizing creams
    - This “traps” water in the skin
  - Advanced Moisturizers:
    - Ceramide-based creams

Atopic Dermatitis - Treatment

- iii) Inflammation – anti-inflammatories:
  - topical steroids:
    - preferably ointments (sting less, better efficacy)
    - too strong and too long may cause thinning of the skin and other side effects
    - too weak or too short – no result, frustration
  - topical immunosuppressives (pimecrolimus – Elidel and tacrolimus – Protopic);
    - not as effective as steroids but safer in the long run
  - systemic steroids and other immunosuppressives may be necessary in occasional patients (e.g. methotrexate, cyclosporine, azathioprine)
  - light therapy (e.g. nUVB) can also be used for its effect on the skin immune system

Atopic Dermatitis - Treatment

- iv) Pruritus – oral antihistamines:
  - hydroxyzine (Atarax) and
  - diphenhydramine (Benadryl)
    - likely working through their sedative effect and breaking the itch-scratch cycle
  - newer antihistamines (e.g. cetirizine, loratadine) are not usually effective for skin except for some individual cases

Atopic Dermatitis - Treatment

- v) superinfection – *S. aureus*:
  - skin of patients with atopic dermatitis is especially hospitable to *S. aureus*
  - *S. aureus*, in turn, worsens eczema through release of superantigents.
  - “vicious cycle”
  - “impetiginization”

Atopic Dermatitis - Treatment

Often need antibacterial treatment

- topical: mupirocin or fucidin
- systemic: cloxacillin, cephalexin, erythromycin
- “decontamination” with bleach baths: about 1/3 cup per 40 liters bath (2 teaspoons per gallon)

Atopic Dermatitis - Treatment

- vi) Keratosis Pilaris or Ichthyosis
  - Consider using keratolytics

  (e.g Uremol -10 or Uremol-20)

Typical Regiment for Moderate Dermatitis

- Bathing daily
- Moisturization bid
- Topical corticosteroid (e.g. hydrocortisone 1% cream – face, betamethasone 0.1% valerate cream - body) bid +/- fucidin
  - "3 weeks on / 1+ week off" to avoid skin thinning
  - stop once clear; start at first sign of it coming back
- Atarax qhs
- Consider a course of oral antibiotics

Dupilumab (Dupixent)

- 2017 FDA and subsequent Health Canada
- Human monoclonal antibody inhibitor of IL4
- Inhibits IL4 and IL13 signaling (TH2)
- Adult patients with moderate-to- severe atopic dermatitis whose disease is not adequately controlled with topical therapies

Dupilumab Dosing

- 600 mg sq initial dose followed by 300 mg SQ q2 weeks

Adverse Reactions

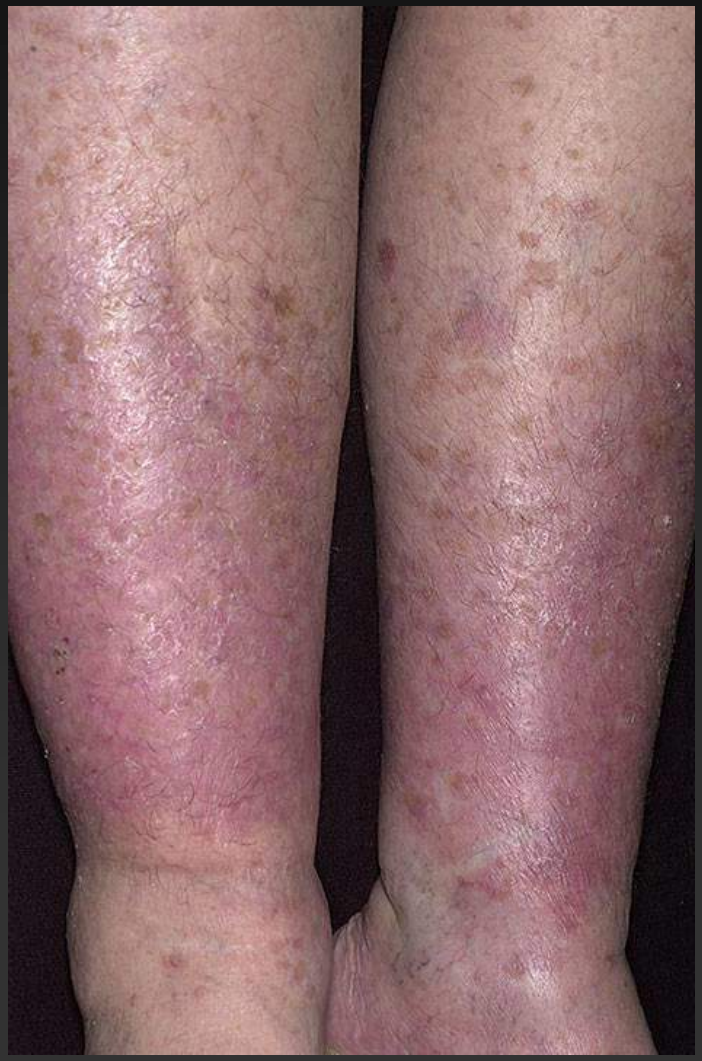
Adverse Reaction	DUPIXENT Monotherapy [a]	
	Placebo N=517 n (%)	DUPIXENT 300 mg Q2W N=529 n (%)
Injection site reaction	28 (5.4%)	51 (9.6%)
Conjunctivitis[c]	12(2.3%)	51(9.6%)
Blepharitis	1 (0.2%)	2 (0.4%)
Oral herpes	8 (1.5%)	20 (3.8%)
Eye pruritus	1 (0.2%)	3 (0.6%)
Dry eye	0	1 (0.2%)
Herpes simplex[c]	4 (0.8%)	9 (1.7%)
Keritits[e]	0	1 (0.2%)
Eosinophilia	2 (0.4%)	9 (1.7%)

2. Stasis Dermatitis

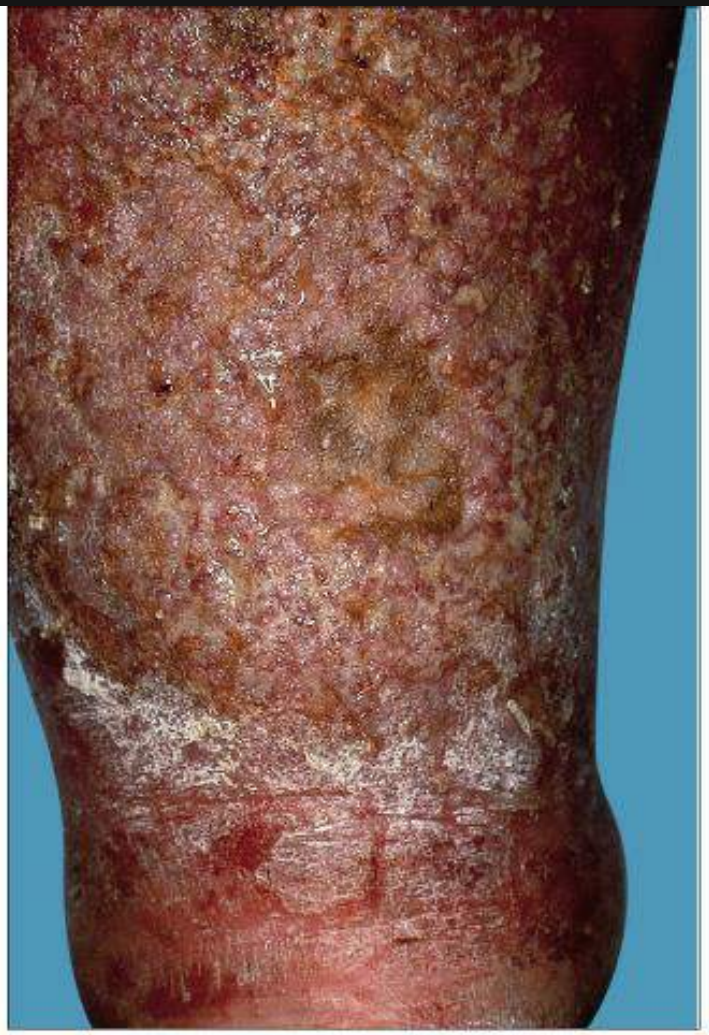
Stasis Dermatitis

- fairly common in elderly
- often bilateral
  - around lower part of calf and shin
  - background of swelling.
- commonly confused with cellulitis
- pruritic, therefore subject to scratching
  - which makes it worse
- ulceration is a common complication

2. Stasis Dermatitis



Stasis Dermatitis



Stasis Dermatitis - Treatment

- relieve the swelling
  - compression stockings, if safe
  - elevation
- moderate or potent topical steroids
  - e.g amcinonide ungt bid
- beware of complications:
  - patients with stasis dermatitis are particularly prone to developing allergic contact dermatitis (e.g. to neomycin, lanolin, herbals, etc.)

Beware of Complications

- Patients are prone to developing allergic contact dermatitis (e.g. to neomycin, lanolin, herbals, etc.)

3. Nummular Dermatitis

- Coin-shaped disseminated eczematous lesions
  - Mainly extremities
- Usually very pruritic
- Chronic course

Treatment

- Medium- to high-potency topical corticosteroids
- Topical calcineurin inhibitors
- +/- phototherapy

4. Allergic Contact Dermatitis

- Pruritic eczematous reaction
- Usually localized to the site of contact with the allergen
  - May have diffuse distribution
- Prototypic reactions are due to poison ivy and nickel
- Patch testing is gold standard
  - Used to detect culprit allergen
- Topical corticosteroids for acute flares

5. Irritant Contact Dermatitis

- Acids
- Alkalis
- Metal Salts
- Solvents
- Alcohols
- Detergents
- Disinfectants
- Plastics

ACD/ICD treatment

- Identify causative allergen or irritant and avoid it
- Barrier creams (e.g Prevex)
- Potent topical corticosteroids
- +/- Systemic corticosteroids
- May take 6 weeks or more to see complete and prolonged clearing!

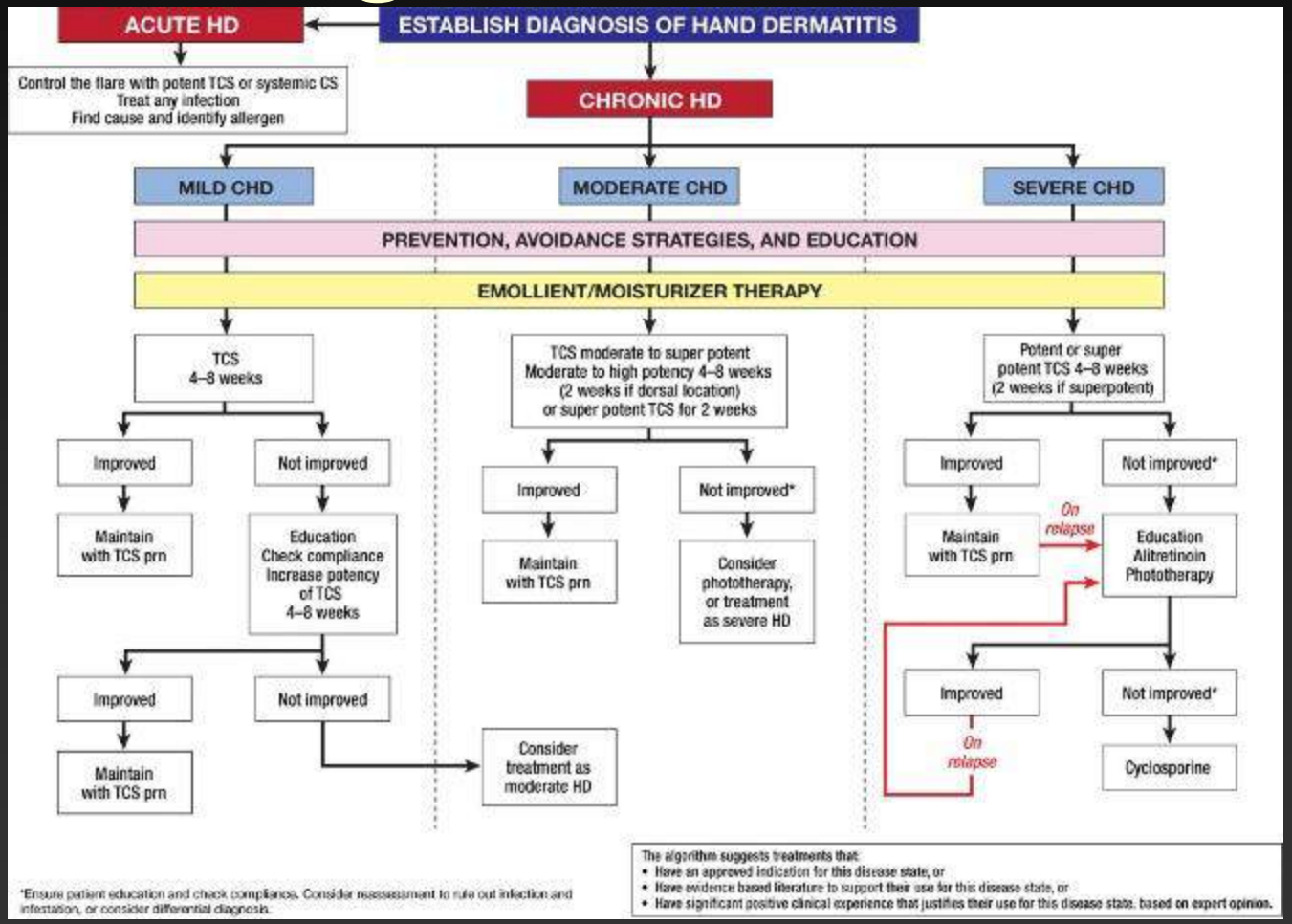
Alitretinoin (Toctino)

- The first and only treatment approved in Canada to treat severe CHD refractory to high-potency TCS in adults
- 10 and 30 mg oral capsules, taken at least for 3 months
- Safe tolerability profile, positive impact on quality of life
- Teratogenic: pregnancy prevention is essential

Toctino

- Headache: most frequently reported AE
  - more common in the 30 mg group (21.6%) vs the 10 mg group (11.3%) [29]
- Flushing, erythema, dry lip also observed, and were dose-dependent [29]
- The most common lab changes: [29]
  - Increased triglycerides
  - Increased cholesterol
  - Decreased TSH and T4 free thyroxine

Canadian Hand Dermatitis Management Guidelines



Adapted from the 2010 Canadian Hand Dermatitis Management Guidelines [1]

Topical Corticosteroids

- Most inflammatory skin conditions respond to topical corticosteroids
- Various potencies
  - strongest are approx. 1,800 times stronger than OTC hydrocortisone
- Various formulations
  - ointments, oil-based solutions, creams, lotions, gels, alcohol-based solutions, foams, sprays, powders, etc.

Topical Corticosteroids

- Potency depends on: chemical structure of the steroid molecule, concentration, and formulation/vehicle
- Clinical effect depends on frequency and mode of application (e.g. under occlusion), skin characteristics, etc.
- Potency translates into therapeutic effect but also likelihood of side effects
- There is no perfect measure for potency

Potency Chart

POTENCY RANKING OF SOME COMMONLY USED TOPICAL GLUCOCORTICOSTEROIDS

Class 1 (Superpotent)

- Clobetasol propionate gel, ointment, cream and foam 0.05%
- Betamethasone dipropionate gel* and ointment* 0.05%
- Diflorasone diacetate ointment* 0.05%
- Fluocinonide cream 0.1%
- Flurandrenolide tape 4 $\mu g/cm^2$
- Halobetasol propionate ointment and cream 0.05%

Class 2 (High Potency)

- Amcinonide ointment 0.1%
- Betamethasone dipropionate cream* and ointment 0.05%
- Clobetasol propionate solution ('scalp application') 0.05%
- Desoximetasone ointment and cream 0.25% and gel 0.05%
- Diflorasone diacetate ointment and cream* 0.05%
- Fluocinonide gel, ointment, cream and solution 0.05%
- Halcinonide ointment and cream 0.1%
- Mometasone furoate ointment 0.1%

Class 3 (High Potency)

- Amcinonide cream and lotion 0.1%
- Betamethasone dipropionate cream and lotion 0.05%
- Betamethasone valerate ointment 0.1%
- Desoximetasone cream 0.05%
- Diflorasone diacetate cream 0.05%
- Fluticasone propionate ointment 0.005%
- Triamcinolone acetonide ointment 0.1% and cream 0.5%

Class 4 (Medium Potency)

- Betamethasone valerate foam 0.12%
- Fluocinolone acetonide ointment 0.025%
- Flurandrenolide ointment 0.05%
- Hydrocortisone valerate ointment 0.2%
- Mometasone furoate cream and lotion 0.1%
- Triamcinolone acetonide ointment (Kenalog®) and cream 0.1%

Class 5 (Medium Potency)

- Betamethasone dipropionate lotion 0.05%
- Betamethasone valerate cream and lotion 0.1%
- Clocortolone pivalate cream 0.1%
- Fluocinolone acetonide cream 0.025% and oil 0.01%
- Fluticasone propionate cream and lotion 0.05%
- Flurandrenolide cream and lotion 0.05%
- Hydrocortisone butyrate ointment, cream and lotion 0.1%
- Hydrocortisone probutate cream 0.1%
- Hydrocortisone valerate cream 0.2%
- Prednicarbate ointment and cream 0.1%
- Triamcinolone acetonide lotion 0.1%

Class 6 (Low Potency)

- Aclometasone dipropionate ointment and cream 0.05%
- Triamcinolone acetonide cream 0.1% (Aristocort®)
- Betamethasone valerate lotion 0.1%
- Desonide gel, ointment, cream, lotion and foam 0.05%
- Fluocinolone acetonide cream 0.01% and solution 0.05%
- Triamcinolone acetonide cream and lotion 0.025%

Class 7 (Low Potency)

- Topicals with hydrocortisone, dexamethasone and prednisolone

**Optimized vehicle.*

Simplified Potency Chart

- Low potency: hydrocortisone
  (e.g Hydroval)
- Medium potency: betamethasone 0.1% valerate
  (e.g. Betaderm cream)
- High potency: amcinonide cream
  (e.g. Cyclocort)
- Super potent: clobetasol propionate
  (e.g. Dermovate ungt)

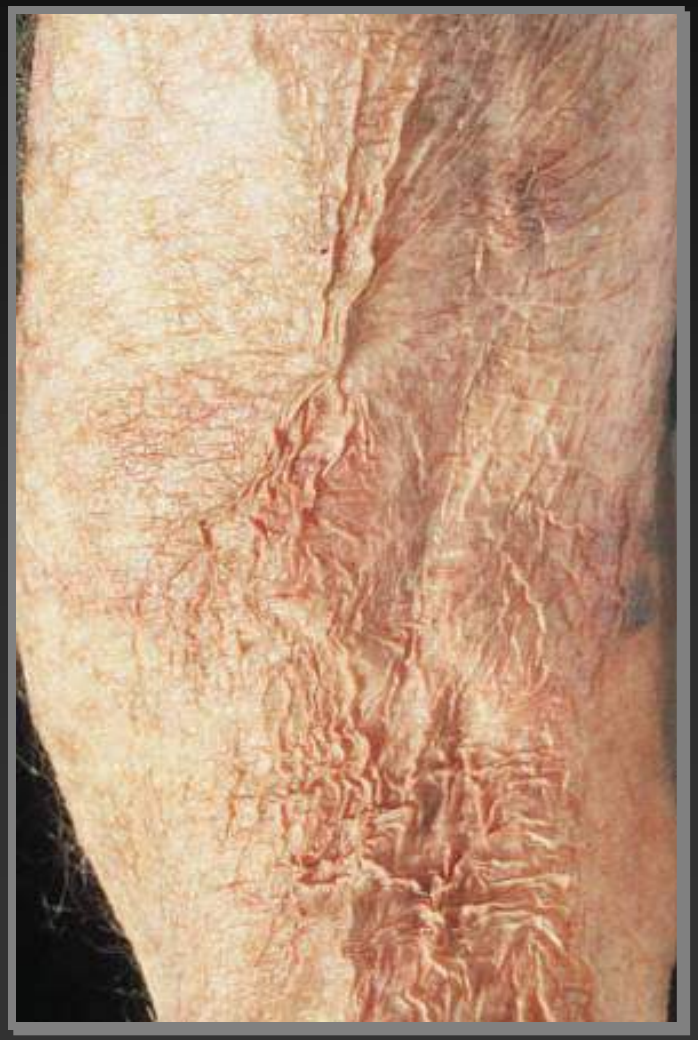
Topical Corticosteroids

- choice of topical corticosteroid preparation depends on:
  - the condition under treatment
  - body site
  - body surface area
  - patient age
  - etc.

Topical Corticosteroids

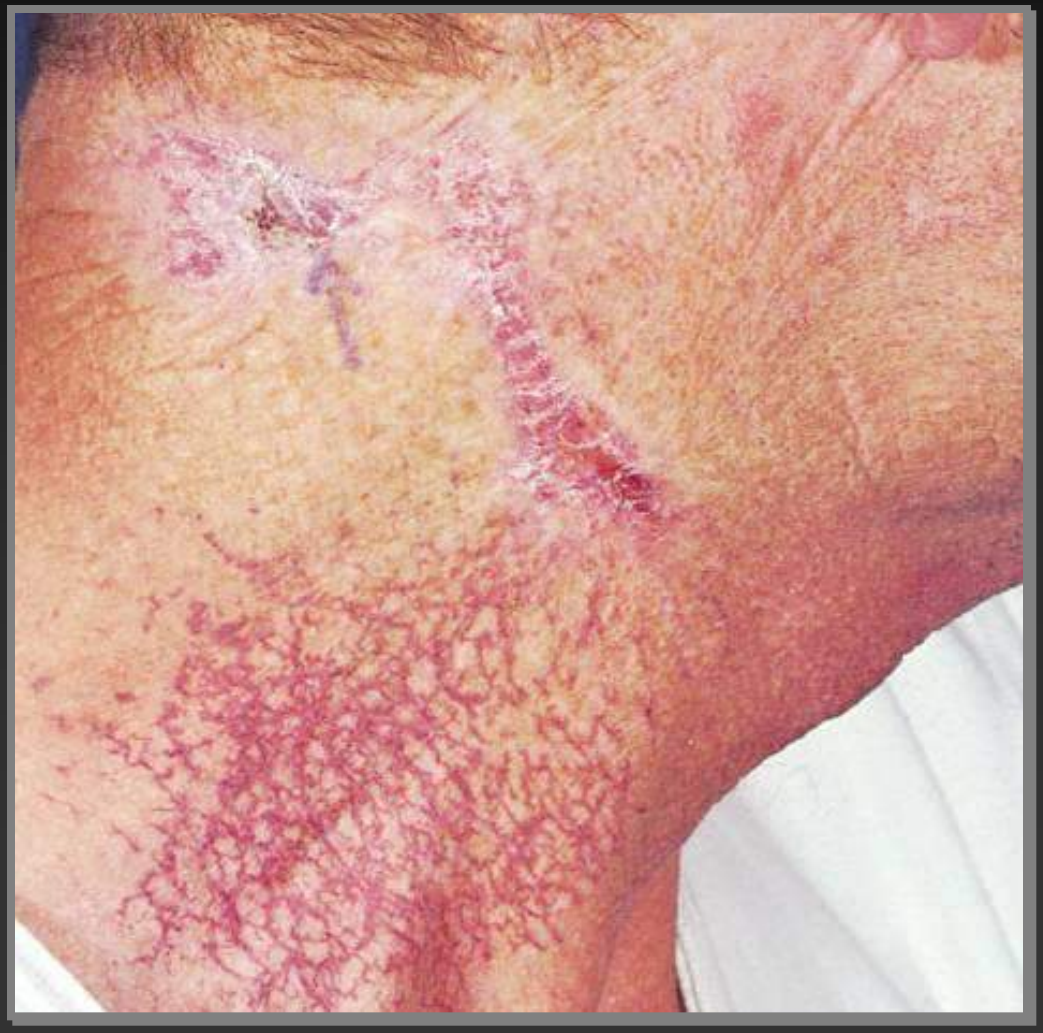
- differences in vehicle/formulation strongly affect potency
  - differences of two or three classes between preparations with the same corticosteroid molecule
  - ointments are generally more potent than creams
- substitution with generics is not straightforward
  - some generics are significantly less potent than brand names
- application under occlusion can increase efficacy by up to 100-fold but also increases side effects
- hydration will aid greatly in penetration and efficacy

Steroid Atrophy

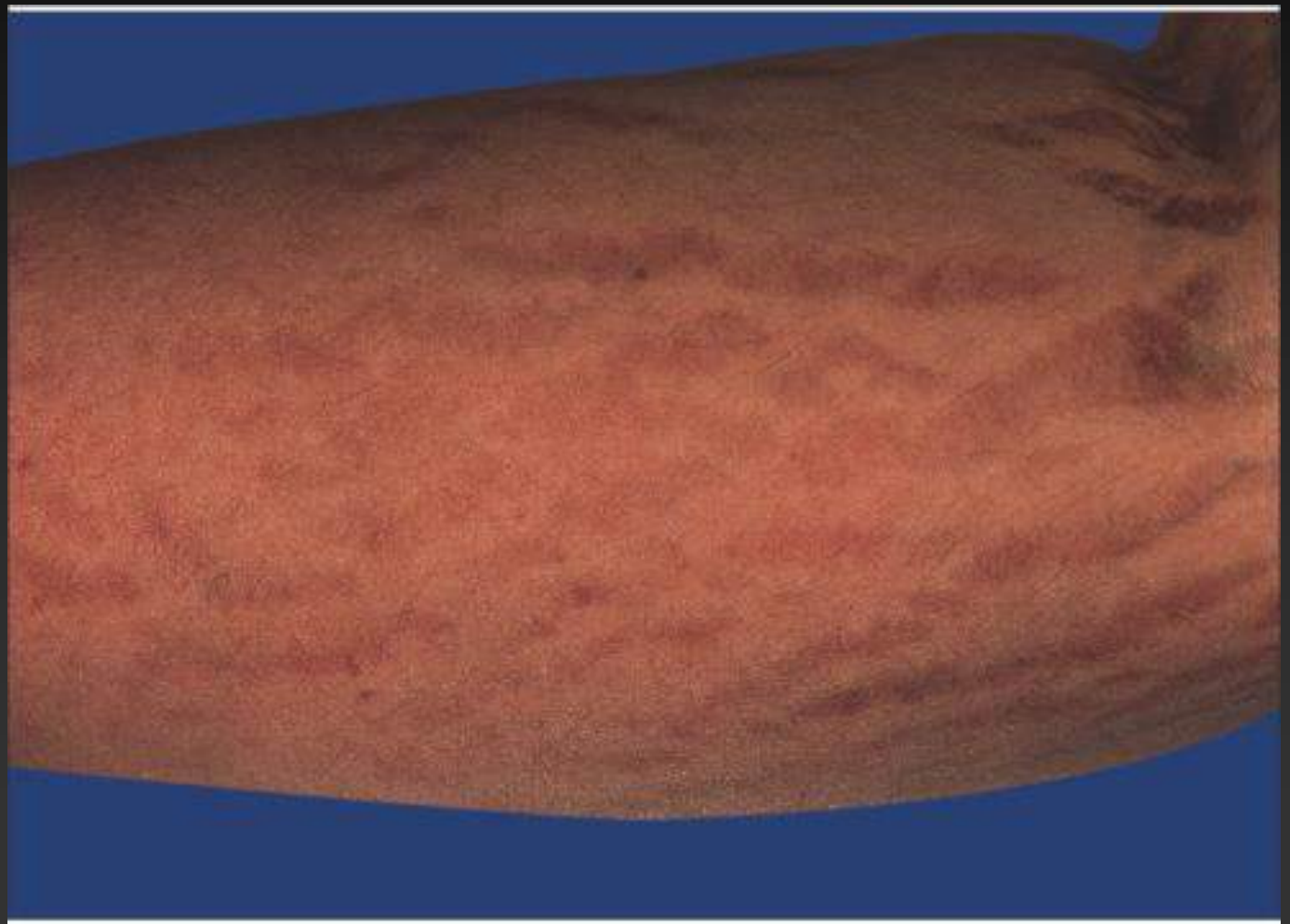


2-3 weeks on/1 week off regimen should decrease risk of atrophy

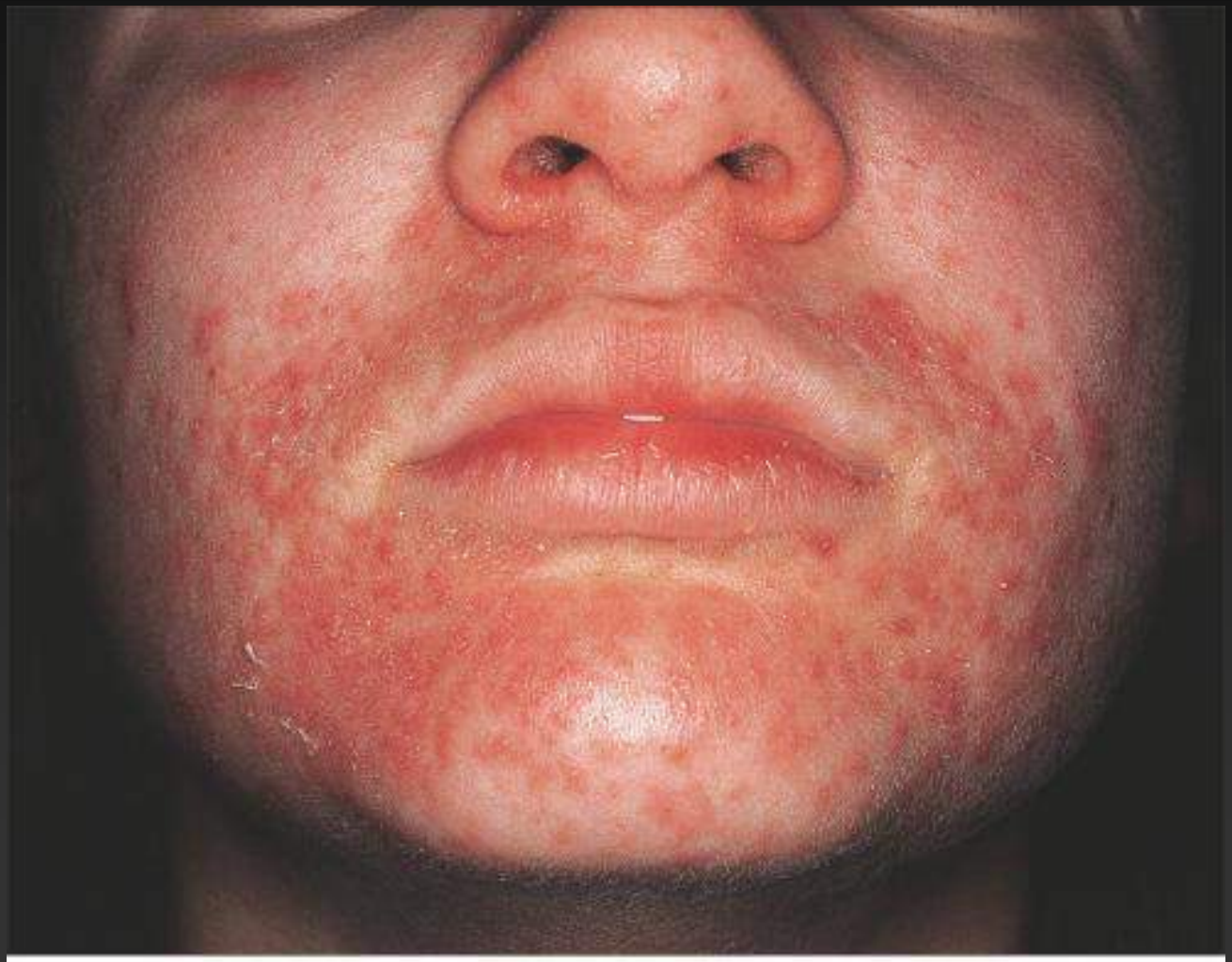
Telangiectasia, erythema, atrophy



Striae



Perioral Dermatitis



Other Side Effects

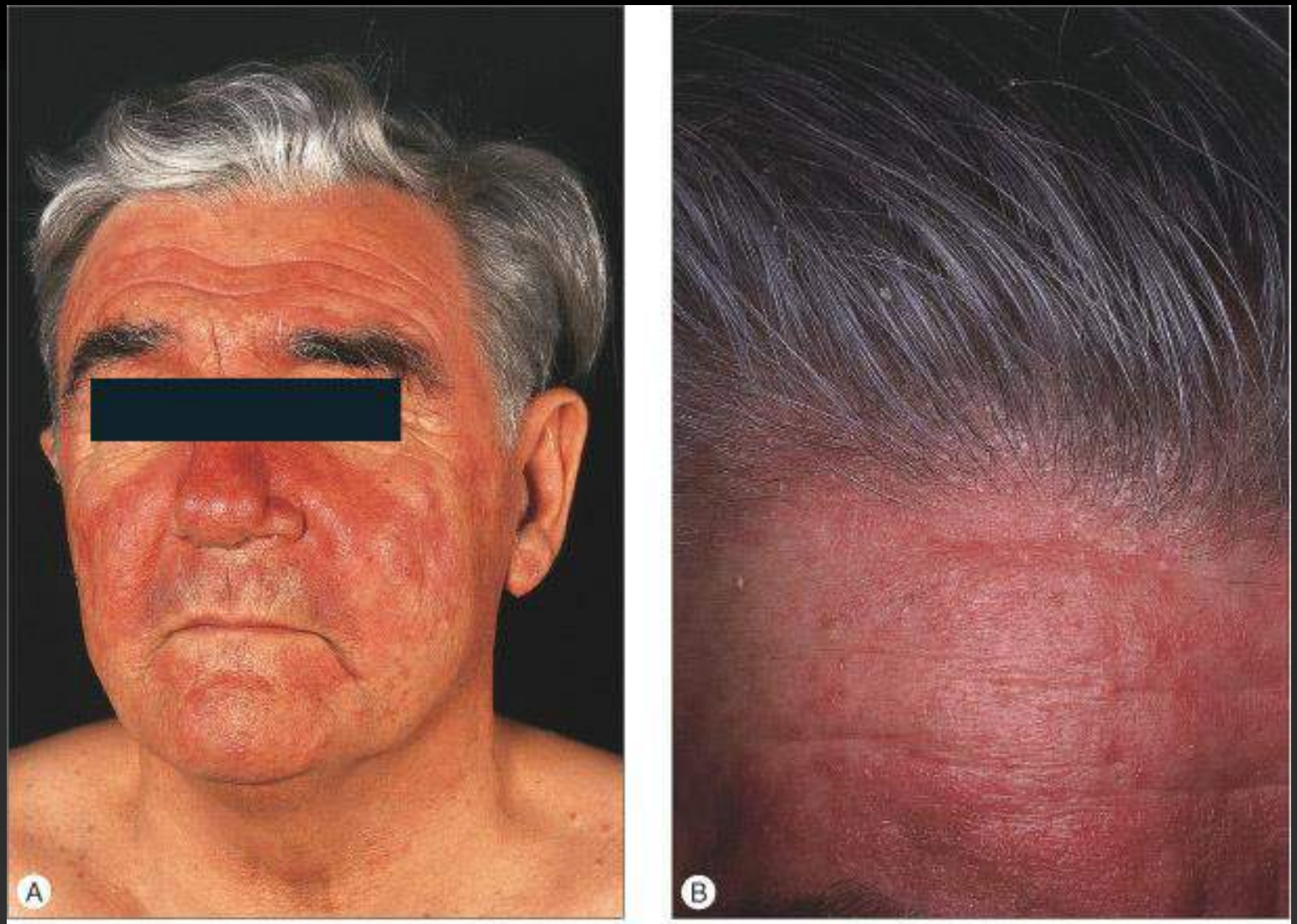
- Hypopigmentation
- Purpura
- Erythema
- Decreased wound healing
- Steroid dependency
- Worsening of infections and infestations
- Tachyphylaxis – loss of efficacy with continued use
- Burning and itching, etc.

Rare Systemic Side Effects

- Especially potent steroids
  - over large surface areas
  - in kids
  - under occlusion
- mild hypercortisolism,
- HPA axis suppression,
- very rarely Cushing's syndrome

6. Seborrheic Dermatitis

- Infantile and adult forms
- overgrowth of *Malassezia* (*Pityrosporum*) yeast
- Lesions favour the scalp, ears, face, central chest, and intertriginous areas
- well-demarcated, red, inflamed area covered with greasy, bran-like, often yellowish scale



Adult seborrheic dermatitis

Infantile

- Increased sebum production during the first few months of life.
- Most common in infants is “cradle cap”
- Other areas of the body
  - face, skin folds, diaper area, trunk and extremities.
- Conservative treatment with bathing and application of emollients is advised in most cases
  - topical ketoconazole and topical steroids reserved for severe cases

Adult

- Dandruff is most common manifestation
- Often has a chronic or relapsing course.
- More severe cases dermatitis may be seen throughout scalp, around eyebrows, eyelashes, on the forehead, face, an even chest
- Treatment of dandruff can be achieved with
  - zinc pyrithione shampoos (Head&Shoulders)
  - topical corticosteroids
  - topical antifungals (ciclopirox olamine – Stieprox)

PEARLs

- Dermatitis treatments include
  - topical corticosteroids (4 main potency groups)
  - topical calcineurin inhibitors
  - +/- systemic agents and phototherapy
  - Novel biologics (dupilumab) – targeted therapy
  - Chronic hand dermatitis - alitretinoin