Atopic Dermatitis and Other Papulosquamous Diseases

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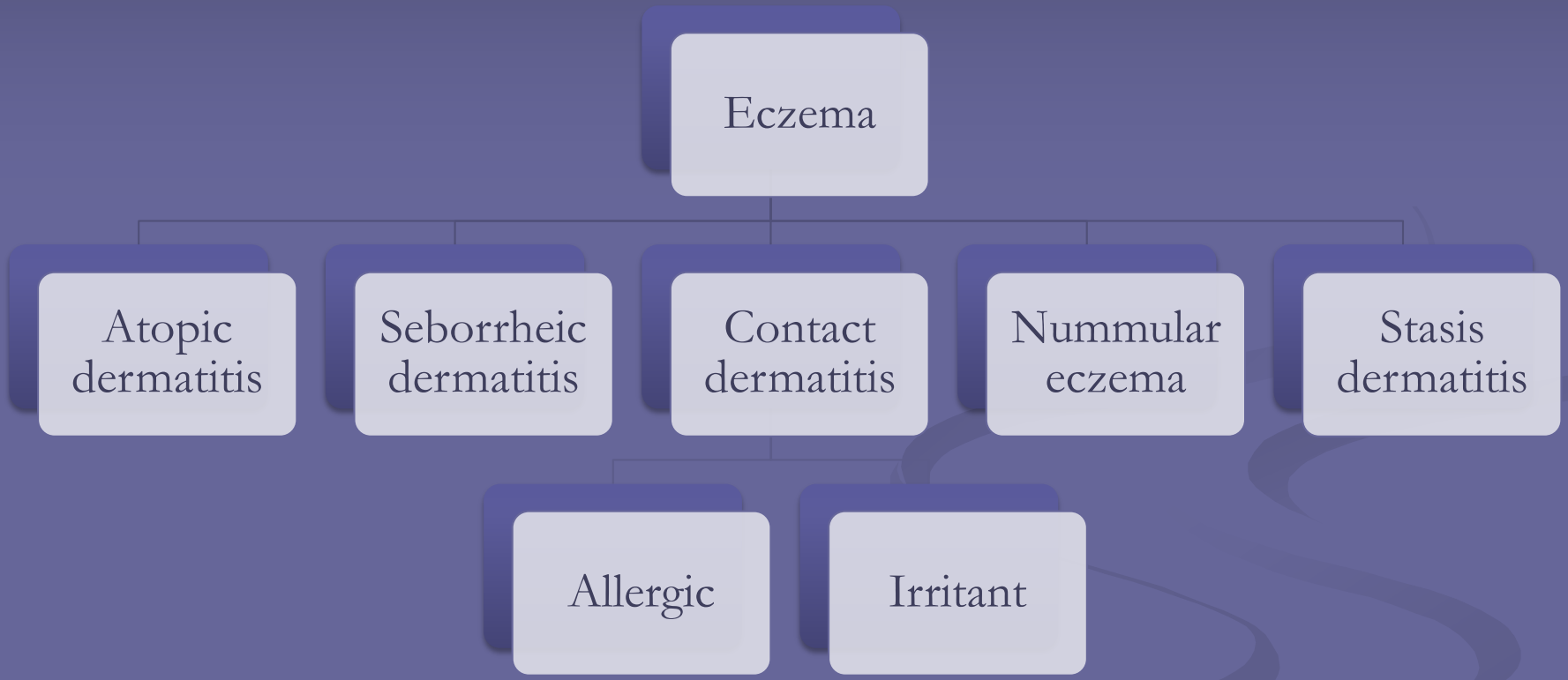
Eczema
Atopic dermatitis
Seborrheic dermatitis
Contact dermatitis
Nummular eczema
Stasis dermatitis
Allergic
Irritant

Acute

Erythematous plaque +/- grouped vesicles

Prominent spongiosis

Little acanthosis and hyperkeratosis

Subacute

Erythematous plaque with scale and crust

Spongiosis

Acanthosis and hyperkeratosis

Chronic

Lichenified plaques

Minimal spongiosis

Irregular to psoriasiform epidermal hyperplasia

Atopic Dermatitis

- Chronic relapsing skin disease
- Most commonly starts before 5 yo
- Pruritus → clinical hallmark often precedes the lesions
- 3 stages:
  - Infantile (2m-2y)
  - Childhood (2-10y)
  - Adult

Infantile

- 60% of AD by age 1, 90% by age 5
- Cheeks, scalp, forehead, neck, wrists, extensor surfaces
- Worsening with immunizations and viral infx
- Can resolve by 2 yrs of age
- Worse in winter months
- Exudative
- Areas affected = areas they can scratch

Childhood

- Less exudative
- Antecubital / popliteal fossae is classic
- Eyelids, face, neck, flexor wrists
- Itch-scratch cycle
- If >50% BSA → growth retardation
- Severe AD → psychological disturbances

Adolescents and Adults

- Adults → hand eczema may predominate
- Eyelids, nipple also common
- Lichenification and prurigo
- Staph colonization universal
- Worse with stress
- A/W wet work
- R/O contact allergy

Major Features

- Pruritus
- Typical morphology and distribution of skin lesions
- Chronic or chronically relapsing dermatitis
- Personal or family history of atopy

Minor Features

- Xerosis
- **Ichthyosis/palmar hyperlinearity/keratosis pilaris**
- Immediate (type I) skin test
- Elevated serum IgE
- Early age of onset
- Cutaneous infections/impaired cell-mediated immunity
- Tendency toward non-specific hand or foot dermatitis
- Nipple eczema
- Cheilitis
- Recurrent conjunctivitis
- **Dennie–Morgan infraorbital fold**
- Keratoconus
- **Anterior subcapsular cataract**
- Orbital darkening
- Facial pallor
- **Pityriasis alba**
- Anterior neck folds
- Pruritus when sweating
- **Intolerance to wool and lipid solvents**
- **Perifollicular accentuation**
- **Food intolerance**
- **Environmental/emotional factors**
- White dermographism/delayed blanch

Associated Symptoms

- Respiratory allergies present in 70% of pts
  - Most commonly dust mites, molds, pet dander, pollen
- Wheezing/asthma
- Food allergies (40%)
  - Milk, eggs, peanuts, soy, wheat, shellfish
- 80% of pts with infantile AD will develop seasonal allergies or asthma

Common Eczema Triggers[7]

Irritants

- Soaps, detergents
- Disinfectants (chlorine)
- Contact with:
  - Juices from fresh fruits, meats, vegetables
  - Chemicals, fumes on the job

Allergens

- House dust mites
- Pets (cats > dogs)
- Pollens (seasonal)
- Molds
- Dandruff

Microbes

- Certain bacteria ***(Staphylococcusaureus)***
- Viruses
- Certain fungi

Others

- Hot or cold temperatures
  - Heat
  - Humidity
  - Perspiration from exercising
- Foods
- Stress
- Hormones

The cytokine profile of early atopic dermatitis is similar to the following condition:

- A. Psoriasis
- B. Lepromatous leprosy
- C. Tuberculoid leprosy
- D. Allergic Contact dermatitis

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Immunologic

Early

- Th2 response
  - IL-4
  - IL-5
  - IL.10
  - IL-13

Chronic

- Th1 response
  - IL-2
  - IFN-γ
  - TNF-β
  - IL-12
  - IL-18

Th1

- Atopic dermaittis (chronic)
- Psoriasis
- ACD
- Tuberculoid leprosy
- Cutaneous leishmaniasis

Th2

- Atopic dermatitis (early)
- CTCL
- Lepromaotus leprosy
- Disseminated cutaneous leishmaniasis

Early Atopic Dermatitis

- Th-2 predominance
  - IL-4, IL-5, IL-10, IL-13
  - IL-4 → downregulates IFN-γ
  - IL-4 and IL-5 → ↑IgE and eosinophilia
  - IL-10 → inhibits delayed type hypersensitivity

The following cytokines are increased in early Atopic Dermatitis, except:

- A. IL-4
- B. IFN-γ
- C. IL-13
- D. PGE2 (Prostaglandin E2)
- E. B and D

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Skin barrier function

- Defective skin barrier
  - ↓ Filaggrin
  - ↓ Ceramides
  - ↑ Proteases

  Results in
  - ↑ Allergen absorption
  - ↑ Transepidermal water loss
  - ↑ Microbial colonization

Genetics

- Risk of atopy with atopic parents
  - 1 parent → >25%
  - 2 parents → 79%
- Stronger association between siblings than parents
- Higher risk with maternal rather than paternal atopy
- Mutations in filaggrin

The following is an ophthalmologic complication associated with Atopic Dermatitis?

- A. Anterior subcapsular cataracts
- B. Pinguecula
- C. Recurrent styes
- D. Uveitis

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Ophthalmologic abnormalities

- Cataracts → 10% of patients with AD
  - Anterior → Atopic
  - Posterior → Atopic and Glucocorticoids (Prednisone)
- Eyelid dermatitis
- Chronic blepharitis
- Keratoconus

Cutaneous / vascular stigmata

What is this sign?

Hertoghe's sign

Cutaneous / vascular stigmata

- Dennie-Morgan folds
  - darkening under the eyes

Cutaneous / vascular stigmata

Cutaneous / vascular stigmata

Dirty neck

- hyperkeratosis and hyperpigmentation

Cutaneous / vascular stigmata

White dermatographism

Cutaneous / vascular stigmata

Keratosis Punctata

- Hyperlinear palms

- Pityriasis alba

- Keratosis Pilaris

- Lichenification

Susceptibility to Infection

- > 90% chronic lesions have *Staph aureus*
- Secondary infection should be considered with flares
- Treat carriers in the family
- MRSA
- Tx:
  - Bleach baths
  - Bactroban
  - Oral antibiotics

Eczema herpeticum

Viral infections

- Pts with AD are more prone to viral infections
  - Verruca
  - Molluscum
  - HSV
- Eczema vaccinatum
  - Severe, generalized eruption
  - Smallpox vaccination or contact with vaccinated person

Treatment

Treatment

- Hydroxyzine
- Benadryl
- Ice
- Menthol

Pruritus

- Bactroban
- Beach Baths
- Hibiclens
- Oral antibiotics

Infection

- Topical steroids
- Topical TCIs
- Tar
- Phototherapy
- Immunomodulators

Inflammation

Regional Eczemas

Ear eczema

- Sites
  - Most frequently external auditory canal
    - Often manifestation of Seb derm or ACD
  - Helix and postauricular fold also commonly affected
  - Earlobe → nickel allergy
  - Infections
    - Staph, Strep, Pseudomonas

Eyelid dermatitis

- Atopic dermatitis
  - Both upper and lower eyelids
- Allergic contact dermatitis
  - Upper eyelids
  - Volatile substances, tosylamide, epoxy hardeners, insect sprays, lemon peel

Nipple dermatitis

- Atopic dermatitis
- Allergic/irritant contact dermatitis
- Paget's disease
- Nevoid hyperkeratosis of the nipples
- Candida/ Bacteria
  - Source may be breastfeeding infant

Hand Eczema

- Many potential causes
  - ACD
  - ICD
  - AD
  - Dyshidrosis
- Multiple clinical presentations
- Biopsy not always definitive
- Major occupational problem
  - 80% of all occupational dermatoses

Pompholyx
(Acute Vesiculobullous Hand Dermatitis)

- Deep seated vesicles
- Palm and lateral fingers
- Symmetrical
- Pruritus
- Hyperhidrosis is common
- Chronic: hyperkeratotic, scaly, fissuring
- Rule out bullous tinea or id reaction

Hyperkeratotic hand dermatitis

- Middle age – elderly men
- Hyperkeratotic fissure prone areas in middle of palm
- Must also consider psoriasis
- Very refractory to treatment

Id Reaction

- Response to inflammatory process
  - Often tinea pedis
- Lateral fingers and palms
- Pruritic
- Treat underlying infection

The following is true about this condition:

A. 2 peaks of incidence: childhood and elderly
B. Exacerbated by a dry environment
C. Topical steroids are of limited value
D. Usually not associated with atopy

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Juvenile Plantar Dermatosis

- Seen from 3 yo – puberty
- More common in atopic children
- Symmetrical smooth, glazed, erythematous patches
- Weight-bearing and frictional areas
- Forefoot > heel; toewebs spared
- Cause
  - Repeated maceration by occlusive shoes
- Tx
  - Avoidance of maceration
  - Topical steroids no better than barrier protection

Nummular Eczema

- Discrete coin shaped lesions
- VERY pruritic
- Usually on lower legs and extensor surface of arms
- Atopic dermatitis often nummular in adolescents
- Treatment responsive

Wiskott-Aldrich Syndrome

- X-linked recessive --- wAitEr
- Defect → WASP on short arm of X chromosome which controls assembly of actin filaments
- Triad:
  1. **Eczematous dermatitis**
  2. **Recurrent infx**
  3. **Purpura**
- Increased IgA, IgE and variable IgM
- Death usually by age 15 – infection, bleeding, lymphoma
- Lymphoma develops in 25% of pts who survive past childhood
- A/W autoimmune disease

Hyper IgE Syndrome

- AD – STAT 3 mutation
- AR – DOCK8, TYK2
- Begins by 2 months of age
- Eczematous dermatitis
- Coarse facies with broad nasal bridge
- Retention of primary teeth
- Recurrent infx
  - Deep seated Staph infx
  - Pneumonias → bronchiectasis, pneumatoceles
  - Candida
- Arterial aneurysms: chiari 1 mal, coronary vasc abnormal → MIs
- ↑ IgE and IgD (>2,000 IU/ml)
- Eosinophilia
- Increased risk for lymphoma
- Job Syndrome or Buckley's syndrome – AD HIES

Chronic Granulomatous Disease

- ¾ of cases are X linked recessive, others AR
- Defects in the subunits of NADPH-oxidase complex
  - CYBB gene, impaired superoxide production
- Decreased ability to destroy **catalase + organisms**
  - Staph, Serratia, E.coli, Apergillus, Candida, Listeria, Pseudomonas
- Staph aureus infections and abscesses are hallmark
  - Bones, skin, liver, lung
- Seb derm like eruption and aphthae
- Gingivostatmtis (apthouslike ulcerations)
- Nitro blue tetrazolium test
  - Low reduction to blue formazan
- Carriers: DLE like skin eruption, SLE

  like systemic symptoms
- Survival **not** increase with BMT

Seborrheic dermatitis

- Erythematous, greasy, scaly plaques
  - Scalp, ears, face, chest, intertriginous areas
  - Often pruritic
- Two age peaks
  - first 3 mo of life
  - 4^{th}-7^{th} decades
- Generalized, erythrodermic forms

Seborrheic dermatitis

- Pathogenesis unknown, but proposed:
  - Malessesia furfur (Pityrosporum ovale) – lipophilic yeast
  - Increased sebum secretion
  - Abnl sebum composition
  - Drugs: arsenic, gold, methyldopa, cimetidine, neuroleptics
- Associated diseases:
  - Parkinson's disease
  - Epilepsy
  - Increased incidence & severity in HIV +

Subsets

- **Pityriasis sicca**: dandruff
- **Pityriasis steatoides**: oily seb derm
- **Cradle cap**: scalp of infants
- **Marginal blepharitis**: edge of the eyelids
- **Sebopsoriasis**: psoriasis & seb derm overlap
- **Erythroderma desquamativum**: generalized exfoliative erythroderma with sudden confluence of lesions as a complication of seb derm in infants
  - AKA: Leiner's disease
  - Familial form: functional deficiency of C5

Treatment

- Low potency topical steroids
  - Watch for steroid rosacea
- Topical antifungals (esp imidazoles)
- Topical calcineurin inhibitors
- Selenium sulfide
- Vitamin D3 analogs
- Low-dose isotretinoin

Psoriasis

- Affects ~2% of Americans
- Polygenic predisposition + triggering environmental factors
- Well-demarcated, usu symmetric, erythematous papules & plaques with white scale
  - Scalp, elbows, knees, hands, feet, trunk, nails
  - Erythrodermic & pustular forms
- Psoriatic arthritis in 10-25% pts
  - Joint sx before 4th decade
  - H/o warm, swollen joints

Pathogenesis

- Hyperproliferation of keratinocytes
  - T-cell and cytokine mediated
- Overexpression of type-1 cytokines
  - IL-2, IL-6, IL-8, IL-12
  - IFN-γ, TNF-α
- Streptococci
  - β–hemolytic streptococci of Lancefield groups A, C, and G can cause exacerbation of chronic plaque psoriasis
  - Guttate psoriasis
- Stress

Psoriasis – Clinical Patterns

- **Chronic plaque psoriasis**: MC form seen in 90% pts, stable lesions of trunk & extremities
- **Guttate psoriasis**: lesions 0.5-1.5cm
  - Strep inf often precedes
- **Small plaque psoriasis:** lesions 1-2 cm, thicker & scalier than guttate
- **Inverse psoriasis**: intertriginous areas, scaling often absent
- **Erythrodermic psoriasis:** prominent erythema, superficial scale
- **Pustular psoriasis**:
  - Generalized - von Zumbusch type
  - Localized – Pustulosis palmaris et plantaris & Acrodermatitis continua of Hallopeau

Psoriasis – Clinical Patterns

- **Psoriasis ostracea**: thick plaques w/ tough lamellar scales like the outside of an oyster shell
- **Psoriasis follicularis**: tiny scaly lesions @ follicular orifices
- **Psoriasis figurata / annulata /gyrata**: curved linear patterns produced by central involution
- **Napkin psoriasis:** onset usu 3-6 mo, diaper area, readily responsive to treatment, usu resolves by 1 yo

Generalized pustular psoriasis (von Zumbusch)

- H/o plaque psoriasis and often psoriatic arthritis
- Ill-appearing
  - Fever, erythroderma, hypocalcemia, cachexia
- Sudden onset
  - Flexural erythema → generalizes and pustules appear
  - Lakes of pus periungually, palms, and at the edge of psoriatic plaques
  - Mucous membrane lesions
    - Lips red & scaly
    - Superficial ulcers
    - Geographic tongue

Generalized pustular psoriasis (von Zumbusch)

- Causes
  - Withdrawal of systemic corticosteroids
  - Iodides, coal tar, terbinafine, minocycline, hydroxychloroquine, acetazolamide, salicylates
- Treatment
  - Acitretin is the drug of choice (rapid response)
  - Isotretinoin, cyclosporine, methotrexate, biologics, dapsone

Impetigo herpetiformis

- Generalized pustular psoriasis of pregnancy
- Flexural erythema, studded with pustules, followed by generalized pustular flare
- Treatment
  - Many patients only respond to delivery
  - Prednisone 1 mg/kg/day ****
  - May contribute to neonatal lung maturity

Psoriasis: Additional Findings

- Nail changes: 40% pts
  - Pits – most common, fingers>toes
  - Subungual hyperkeratosis
  - Oil spots, salmon patches – nearly specific
  - Splinter hemorrhages
  - Onycholysis
- Geographic tongue
- Psoriatic arthritis

Psoriatic arthritis

- 10-25% of psoriasis pts
- Nearly 50% HLA-B27
- 5 clinical patterns
  - Asymmetric oligoarthritis or polyarthritis with swelling and tenosynovitis of one or a few hand joints (70%)
  - Asymmetrical distal interphalangeal joint involvement with nail damage (16%)
  - Arthritis mutilans with osteolysis of phalanges and metacarpals (5%)
  - Symmetrical polyarthritis-like rheumatoid arthritis, with claw hands (15%)
  - Ankylosing spondylitis alone or with peripheral arthritis (5%)

Drug-induced psoriasis

- PLAN-B
  - Prednisone taper, Lithium, ANtimalarials, Beta-blockers
- Terbinafine
- Calcium-channel blockers
- Captopril
- Glyburide
- Granulocyte colony-simulating factor (G-CSF)
- ILs
- IFNs
- Lipid lowering drugs
- anti-TNFs

Psoriasis Treatment

- Topical
- Light
- Systemic

Topical Tx

- Corticosteroids
- Tar
- Anthralin
- Tazarotene
- Calcipotriene
- Calcineurin inhibitors
- Salicylic acid

Light Tx

- NB-UVB is more effective than BB-UVB
  - Efficacy close to that of PUVA
- Eximer laser
- PUVA
  - Increase risk of SCC and melanoma

More elaborate techniques

- Goeckerman technique
  - 2-5% tar applied & tar bath taken at least 1x/day
  - Excess tar removed with mineral oil
  - Then, UV light
  - +/- topical corticosteroids
- Psoriasis day-care centers
  - Patients clear in average of 18 days
  - 75% remain free of disease for extended periods

More elaborate techniques

- Ingram technique
  - Daily coal tar bath
  - Followed by daily UV light
  - Anthralin paste
  - Talcum powder
  - Stockinette dressings

Systemic tx

- Corticosteroids
  - Only in impetigo herpetiformis when the mother cannot deliver
  - Can cause rebound or pustular psoriasis
- Methotrexate
  - Psoriatic arthritis
- Cyclosporine
  - Fast-acting
  - Erythrodermic psoriasis
- Retinoids
  - Acitretin

Systemic Tx

- Anti-TNFs
  - All treat psoriatic arthritis
    - Infliximab (Remicade)
    - Etanercept (Enbrel)
    - Adalimumab (Humira)
- Others
  - Alefacept (Amevive)

Reactive Arthritis = Reiter syndrome

- Trigger: GI/GU infection
  - Chlamydia, Shigella, Salmonella, Yersinia, Campylobacter, Ureaplasma, Borrelia, Cryptosporidia, gonoccocci
- Young men 20-40yo
  - HLA-B27 predisposes
- Usu resolve spontaneously w/i 12 mo
  - 50% may experience recurrence

Reactive Arthritis

- Triad
  - Urethritis
    - Bacterial or nonbacterial
  - Conjunctivitis
    - Also keratitis, iritis
  - Arthritis
    - Asymmetric, sudden onset
    - Peripheral joints: knee, ankle, metatarsophalangeal
    - Sacroiliitis

Skin findings

- Psoriasiform lesions in 1/3
- Hyperkeratotic, thick crust
  - **Keratoderma blenorrhagicum -** soles
  - **Balanitis circinata -** glans penis
- Mucosa: painless, shallow, red erosions
  - Buccal, palatal, & lingual mucosa

Reactive Arthritis - Treatment

- Tx skin disease as psoriasis
- Rest
- NSAIDS
- Systemic corticosteroids
- Sulfasalazine
- Infliximab
- Methotrexate
- ABX – tx acute GU infection

Subcorneal pustular dermatosis = Sneddon-Wilkinson disease

- Middle-aged women
- Superficial pustules
  - Annular & serpiginous patterns
  - Abdomen, axillae, groin
  - Pustules are sterile
  - Relapsing and remitting course
- Associated with IgA monoclonal gammopathy
- Treatment
  - Dapsone
  - Sulfapyridine

Eosinophilic pustular folliculitis

- Follicular papules & pustules
  - head, trunk, ext
- Assoc with peripheral eosinophilia
- Tends to be chronic w/ recurrences
  - NOT eosinophilic pustular folliculitis of inf

Eosinophilic pustular folliculitis

- 3 clinical types:
  - Classic (Ofugi disease):
    - Japanese men, pustules in seb distribution
  - Assoc w/ immunosuppression:
    - HIV +, severely pruritic papules on face & upper trunk
  - Infancy / Neonatal period:
    - Follicular pustules on scalp

Eosinophilic pustular folliculitis

- Treatment:
  - topical steroids
  - NSAIDs, esp indomethacin
- Clinical improvement assoc with decrease in eosinophilia

Pustular Eruptions of Palms & Soles

- Palmoplantar pustulosis
- Acrodermatitis Continua (Hallopeau)
- Infantile acropustulosis

Palmoplantar pustulosis

- Chronic, sterile pustule formation
- High rate of recurrence
- Often resistant to tx
- 3:1 Females, ages 20-60yo
- Assoc: smoking, thyroid, H. pylori, anxiety
- no increased freq of psoriasis-linked genes
- SAPHO syndrome (synovitis, acne, pustulosis, hyperostosis, osteitis)

Palmoplantar pustulosis

- Acitretin
- Potent topical steroids, topical retinoids
- Vitamin D3 analogues
- Cyclosporine, MTX
- Bath PUVA
- Grenz ray therapy: produced at low kilovoltages, therefore very low penetration (absorbed within the first 2 mm of skin). Appears to reduce Langerhans cell numbers, producing an anti-inflammatory effect.

Acrodermatitis Continua (Hallopeau)

- Rare, sterile pustular eruption
  - begins distally, spreads proximally
  - continuous pustlation → nail destruction, atrophy of distal phalanx
- Can be associated w/generalized pustular psoriasis (von Zumbusch)
- Tx same as for palmoplantar pustulosis
  - caution w/ potent topical steroids if already signs of atrophy

Infantile Acropustulosis

- Less than 10 months of age
- Intensely pruritic
  - Pustules at the edges of the palms & soles
- Histology
  - Subcorneal pustule with neutrophils
  - Eosinophils may be numerous
- Treatment
  - Topical corticosteroids
  - Dapsone

Small Plaque Parapsoriasis

- Hyperpigmented or yellowish red scaling patches on trunk
- 1-5cm
- Male>Female, peak incidence in 5th decade
- Digitate variant – follows cleavage lines
- Rarely progresses to CTCL without treatment
  - LPP: 10%/decade progress to overt MF

Tx:

- Phototherapy: UVB or NBUVB (usually refractory to topicals alone)

Confluent and Reticulated Papillomatosis (Gougerot and Carteaud)

- Acquired icthyosiform dermatosis
- Young adults
- Persistent brown, scaly macules, papules, plaques
  - Neck, upper trunk, axillae
  - Confluent centrally. reticulated at periphery

Tx:

- Topical: keratolytics, retinoids, vit D derivatives
- First line: Minocycline 100mg bid x 6 weeks
- Also clarithromycin, erythromycin, azithromycin
  - suggests abnl response to infection or inflammation

Pityriasis Rosea

- Salmon-colored papules & macules with dry, crinkled epidermis → desquamates leaving collarette of scale
- Herald patch, "hanging curtain" sign
- Spring & Fall, Females, Papular PR: kids <5y, esp in AA

ETIOLOGY: HHV-6, -7

Tx:

-self-limited (3-8 weeks)

-topical steroids / UVB / erythromycin

Pityriasis Rubra Pilaris

- Follicular red-brown papules w/ central horny plug, yellowish-pink scaling patches, confluent palmoplantar hyperkeratosis
- Scalp, lateral neck & trunk, extensor ext, w/ "islands of sparing"
- Bimodal (before 5y & in 50s)
- HIV patients: PRP + acne conglobata, hidradenitis suppurativa, or lichen spinulosis

HISTO: hyperkeratosis, follicular plugging, checkerboard para at the follicular orifice

Tx: systemic retinoids, MTX, topical lactic acid/urea

Aquagenic Wrinkling of the Palms

- white papules w/ central pore 3-5 min after water exposure
- ? AD
- assoc with CF

Exfoliative Dermatitis = Erythroderma

- Diffuse scarlet erythema w/ small laminated scales, exfoliation
- Pruritis, fever/chills, secondary infection & sepsis
- 7% mortality

ETIOLOGY:

-pre-existing chronic dermatoses (psoriasis, atopic derm), drug, malignancy, PF, Norwegian scabies, generalized dermatophytosis, immunodeficieny (kids)

HISTO: often non-specific, may retain features of primary disease process (MF, psoriasis)

Tx: topical mid-potency steroids, IV steroids, antibiotics, cyclosporine

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