Dermatology elective
for yr. 5

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How to diagnosis and manage eczema and psoriasis.
Objectives

• Identify and describe the morphology of eczema and psoriasis
• Describe associated triggers or risk factors for eczema and psoriasis
• Describe the clinical features of psoriatic arthritis
• List the basic principles of treatment for eczema and psoriasis
Approach dermatologic disease with an understanding of basic skin structure and microanatomy.
Layers of the skin

- The **epidermis** is the topmost layer, and consists primarily of keratinocytes.
- The **dermis** lies below the epidermis, and consists primarily of fibroblasts, collagen, and elastic fibers.
Can you name the four major layers of the epidermis?

- Stratum corneum
- Stratum granulosum (granular cell layer)
- Stratum spinosum (spiny layer)
- Stratum basale (basal cell layer)
Scale/scale crust
Psoriasiform Lesions
Spongiotic vesicle

Eczema/dermatitis
Below the dermis lies fat, also called **subcutis**, panniculus, or hypodermis.
Erythema nodosum
Eczema/dermatitis

No.1 common skin problem
Most common symptom is pruritus
Eczema/dermatitis is a immunologic reaction of our skin to antigens
Langerhans Cells

important in the induction of delayed-type hypersensitivity
Classification of eczema

**Exogenous**
- Allergic
- Photo allergic dermatitis
- Irritant

**Endogenous**
- Skin barrier defect
• sequence of histological events in eczema after contact with antigen.
Eczema; acute, sub-acute stage
Subacute eczema
Subacute eczema histology
Eczema; chronic stage

Lichenification: lichen simplex chronicus
lichen simplex chronicus histology
Classification of *Exogenous* eczema

- Allergic contact dermatitis
- Photo allergic dermatitis
- Irritant
Exogenous eczema
Allergic; nickle, rubber
Photo-dermatitis
Langerhans Cells

important in the induction of delayed-type hypersensitivity
Classification of Exogenous eczema

- Allergic contact dermatitis (Photo)
- Irritant contact dermatitis; acute/chronic
Acute Irritant contact dermatitis;
Paederus dermatitis

kissing lesion

Paederus fuscipes
Chronic irritant; Hands eczema
Skin hydration

• Water is absolutely essential for the normal functioning of the skin and especially its outer layer, the stratum corneum (SC).

• Healthy tissue containing >10% water
The retention of water in the SC

1. Natural Moisturizing Factor, NMF
2. Intercellular lipids
3. Sebum lipids from sebaceous gland
Classification of endogenous eczema

• Atopic dermatitis
  10-15% of children 6-15 yrs.
• Nummular eczema
• Xerotic eczema
• Dyshidrotic eczema
• Seborrheic dermatitis
Endogenous eczema
Atopic dermatitis: barrier dysfunction
Atopic Dermatitis

Infants affected on face, elbows, and knees

Lesions settling into elbow and knee flexures. Also on wrists and ankles.
Flexor, lichenification, excoriation
Barrier dysfunction

Filaggrin gene (FLG) mutation
Dyshidrosis
Nummular eczema
Acquire Xerosis /Ichthyosiform

- Regular polygonal plates arranged in parallel rows or diamond patterns (fish-like)
- Genetic
- Environment
- Aging
- Chemical induced
xerotic eczema
Seborrheic eczema

- eczema, mainly affecting hairy areas, and often showing characteristic greasy yellowish scales.
Seborrhoeic dermatitis
Eczema/dermatitis

- Exogenous
- Allergic
- Irritant

- Endogenous
- Atopic
- Xerotic
- Seborrheic
- Dyshidrosis
- Nummular
How to make diagnosis?
Hx: contact from work or life style
Family Hx

PE: characteristic of lesions
Investigation

- KOH preparation to exclude fungal infection
- Patch test to identified antigen
- Serum Ig E for aero or food antigen
Patch test
Patch test / Photo patch test
Rx; Exo/endogenous eczema

• Avoidance

• *Skin hydration*
The retention of water in the SC

1. Natural Moisturizing Factor, NMF
2. Intercellular lipids;
3. Sebum lipids from sebaceous gland
Chemical composition of NMF in corneocytes

- Chemical Composition (%)
- Free amino acids 40
- Pyrrolidone carboxylic acid 12
- Lactate 12
- Sugars 8.5
- Urea 7
How to choose emollient and cleanser?

- **cleanser**
  - pH=4.8, liquid VS. bar

- **emollient**
  - Lotion, *cream*, ointment, oil

- **Ingredients**
  - Urea, Ceramide, Anti-inflammation

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**Table: Species of mammal and Average skin pH**

<table>
<thead>
<tr>
<th>Species of mammal</th>
<th>Average skin pH</th>
</tr>
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<tbody>
<tr>
<td>Man</td>
<td>4.8</td>
</tr>
<tr>
<td>Guinea-pig</td>
<td>5.5</td>
</tr>
<tr>
<td>Pig</td>
<td>6.3</td>
</tr>
<tr>
<td>Horse</td>
<td>6.3</td>
</tr>
<tr>
<td>Cat</td>
<td>6.4</td>
</tr>
<tr>
<td>Rat</td>
<td>6.5</td>
</tr>
<tr>
<td>Dog</td>
<td>7.4</td>
</tr>
<tr>
<td>Goat</td>
<td>8.1</td>
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</tbody>
</table>
Vehicles

Sprays
Gels
Foams
Creams
Sprays
Gels
Foams
Creams

Solutions
Oils

Ointments
Rx; Exo/endogenous eczema

• Avoidance

• *Skin hydration*

• Topical corticosteroid; eczema steroid sensitive

• Anti histamine $1^{st}$- $2^{nd}$
# Topical Steroid Strength

<table>
<thead>
<tr>
<th>Potency</th>
<th>Class</th>
<th>Example Agent</th>
</tr>
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<tbody>
<tr>
<td>Super high</td>
<td>I</td>
<td>Clobetasol propionate 0.05%</td>
</tr>
<tr>
<td>High</td>
<td>II</td>
<td>Fluocinonide 0.05%</td>
</tr>
<tr>
<td>Medium</td>
<td>III – V</td>
<td>Triamcinolone acetonide ointment 0.1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Triamcinolone acetonide cream 0.1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Triamcinolone acetonide lotion 0.1%</td>
</tr>
<tr>
<td>Low</td>
<td>VI – VII</td>
<td>Fluocinolone acetonide 0.01%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Desonide 0.05%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hydrocortisone 1%</td>
</tr>
</tbody>
</table>
Superimpose infection
Rx of mild eczema

• Identified cause
• Antigen avoidance
• Skin hydration
• Topical corticosteroид

• Appropriate antimicrobial Rx; topical/oral/combination
Psoriasis
Psoriasisiform Lesions
Psoriasis: The Basics

- Psoriasis is a chronic multisystem disease with predominantly skin and joint manifestations.
- Affects approximately 2% of the U.S. population.
- Thailand has less prevalence, <1%
- Age of onset: 20-30 and 50-60
- About 30% of patients with psoriasis have a first-degree relative with the disease.
- Waxes and wanes during a patient’s lifetime, is often modified by treatment initiation and cessation and has few spontaneous remissions.
• Most common location of psoriasis; scalp

• Plaque type
Scalp psoriasis, most common location
Plaque type = 80% of cases
Guttate ; young adult

- presents with drop lesions, 1-10mm salmon-pink papules with a fine scale
- Post strep sore throat
Acute form; Erythrodermic

- generalized erythema covering nearly the entire body surface area with varying degrees of scaling
- Associated with fever, chills, and malaise, hospitalization is sometimes required
Acute form pustular psoriasis

- Characterized by psoriatic lesions with pustules.
- Often triggered by corticosteroid withdrawal and contact irritation.
- When generalized, pustular psoriasis can be life-threatening.
Inverse psoriasis
Psoriatic arthritis (PSA) dactilitis
PSA
DDx: OA, Rheumatoid arthritis

(a) pitting and discoloration of the nails, (b) swollen finger joints, (c) and (d) sausage finger and sausage toe (dactylitis), (e) swollen heel at the Achilles tendon
Psoriasis: Pathogenesis

• Psoriasis is a hyperproliferative state resulting in thick skin and excess scale.
• Skin proliferation is caused by cytokines released by immune cells.
• Important cytokine is TNF alpha.
Psoriasis

• Is not only Skin diseases,
• Systemic diseases;
  Psoriatic Arthritis (PSA)
  Metabolic syndrome, CVD, Death
Treatment for mild psoriasis
PASI/BSA <3

• Emollient can improve psoriasis = 20%
• Topical medication

• PASI = Psoriasis Area and Severity Index
• Topical psoriasis Rx; **emollient**

**Steroid**

**Tar**

**Vitamin D**
Estimating BSA: Rule of Nines

- The “rule of nines” is a good, quick way of estimating the affected BSA
- Often used when assessing burns
- The body is divided into areas of 9%
- Less accurate in children

2 palms 2 times a day = 30 grams / mo

1 Palm = 1% BSA
1 Palm = 1% BSA

FTU = 0.5 G
Covers 2 % BSA
Covers 2 palms

2 palms = 2% BSA
2 palms 2 times per day
= 1 gram per day

SO...GIVE 30 GRAMS FOR EVERY 2 PALMS OF AREA TO COVER (FOR 1 MONTH Rx)
Treatment for psoriasis >3% BSA

- Emollient
- Topical medication
- Systemic Rx
  - Methotrexate
  - Cyclosporin A
  - Acitretin
- Phototherapy
conclusion

• Psoriasis is a chronic dermatology problem and more than skin deep; PSA and metabolic syndrome
• Patients and their family education is very important.
• Healthy life style should be encourage.
Extra reading