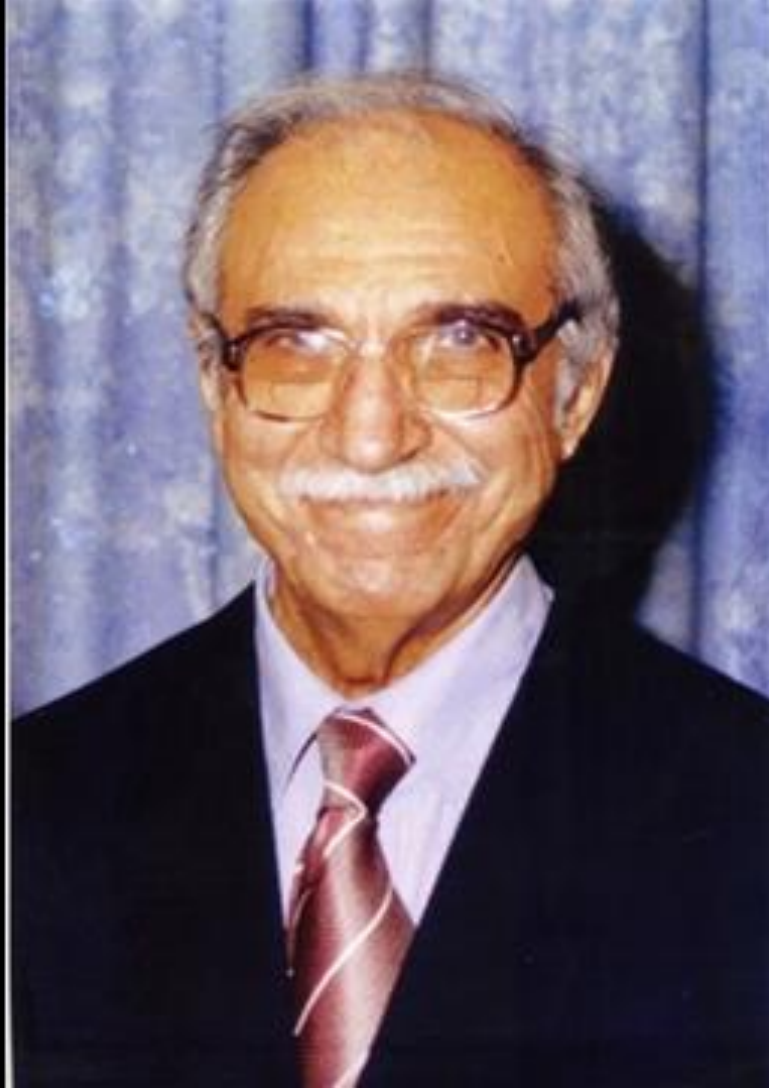


Allergy: An Overview

M Gharagozlou MD

Allergy & Clinical immunology Dept.
Children's Medical Center
Tehran University of Medical Sciences

استاد فقید
دکتر ابوالحسن فرهودی



Background

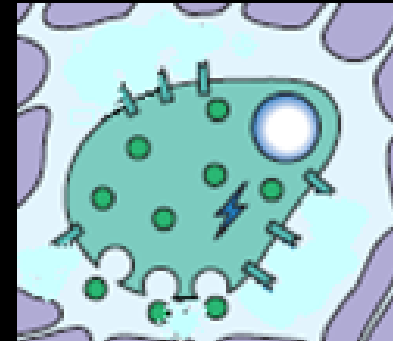
- A steady increase in the prevalence of allergic diseases globally has occurred with about 30-40% of the world population now being affected by one or more allergic conditions.
- Pawankar R, Canonica GW, Holgate ST, Lockey RF, editors. WAO white book on allergy. Milwaukee (WI): World Allergy Organization; 2011.

Background

- The allergic conditions are common!
- Rates appear to be increasing in developing countries
- Rates (for some conditions) appear to be decreasing in developed countries
- The hygiene hypothesis has evolved and been superseded by a much broader concept of microbial exposure
- Microbial exposure fits in with the more broader paradigm that "exposure" is the way forward, rather than "avoidance"
- Exposure being dogs, farm animals, barns, siblings, worms....etc

Allergy is:

- Allergy is mostly an immediate hypersensitivity mediated by IgE and mast cell degranulation.
- Mediators
 - Enzymes - MC tryptase
 - Histamine (not respiratory MCs)
 - Cytokines - IL3, IL4
 - Cyclo-oxygenase - prostaglandin
 - Lipoxygenase pathway - leukotriene



Allergy (cont.)

- Other forms of Hypersensitivity
 - Type II - Cytotoxic antibody
 - Type III - Immune complex
 - Type IV - Delayed hypersensitivity - days



Allergens

- Most common allergens include:
- Pollen
- Animal dander
- Dust
- Molds
- Rx drugs
- Insects
- Foods

Allergens

- Other allergens and irritants can include:
- Dyes
- Perfumes
- Detergents
- Cosmetics
- Soaps
- Smoke
- Chemicals
- Latex

Allergic Conditions

- Allergic conditions may manifest themselves as:
- Allergic rhinitis (Hay fever)
- Asthma
- Dermatitis
- Urticaria
- Food allergies
- Anaphylaxis

Symptoms

- Allergy symptoms can occur at any age
- The most frequent appearance of symptoms occurs in childhood
- Signs and symptoms of allergy include: sneezing, cough, redness of eyes/nose, skin rash, pain in the forehead, noisy breathing, fatigue

Diagnostic Allergy Tests

- Allergy tests include:
- Skin tests
- Patch tests
- Laboratory tests
- Nasal smears
- Sinus x-rays

Skin Testing

- 3 basic types of skin tests include:
- Scratch
- Patch
- Intradermal test
- Tests all involve the introduction of a suspected allergen on or into the patients skin. Degree of the reaction indicates a patient's allergic state.

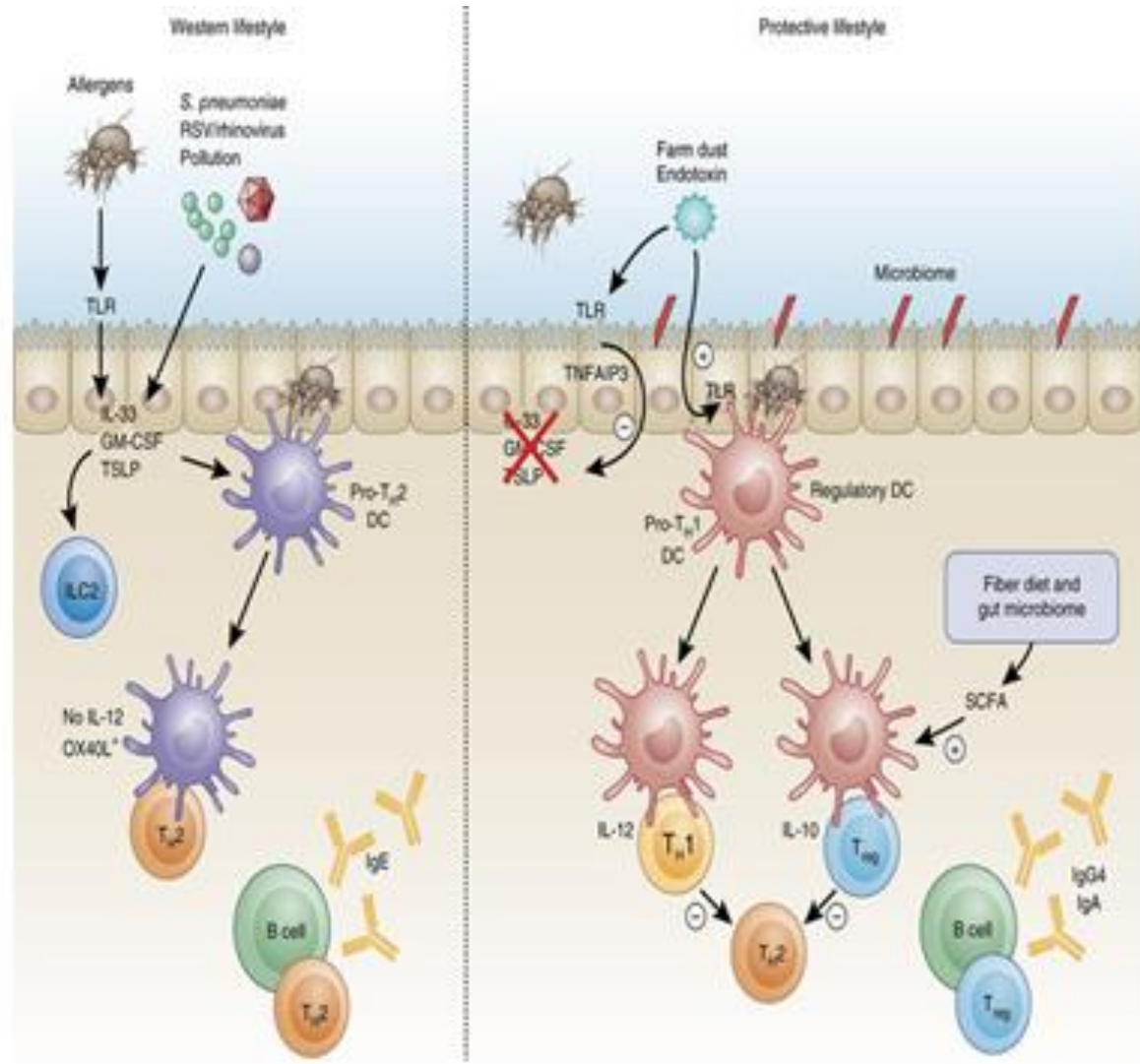
Allergy Treatments

- Treatments can include:
- Avoidance of known allergens
- Drug therapy
- Immunotherapy
- Some combination of the above methods

The Hygiene Hypothesis

The facts “...could be explained if allergic diseases were prevented by infection in early childhood...”

BMJ 1989; 299:1259–60



Debbie Mautzells/Springer Nature

Hygiene hypothesis....?

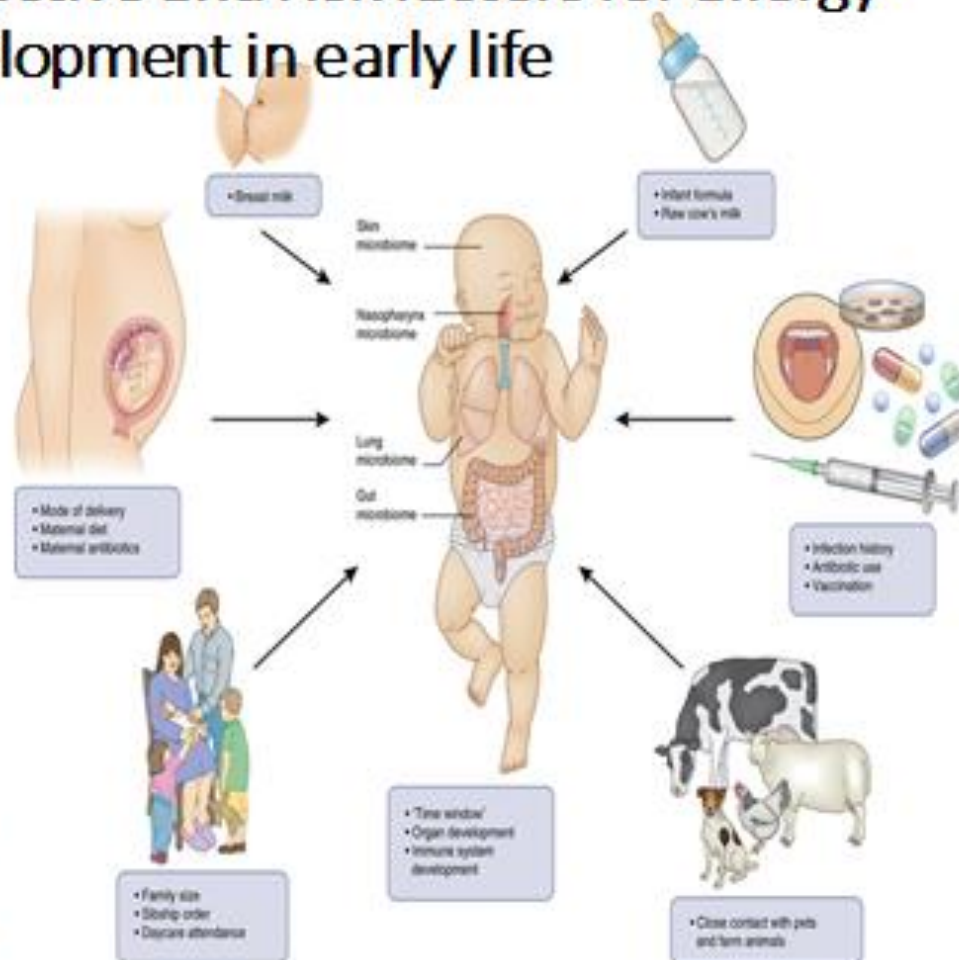




SOURCE: NATIONAL INSTITUTE OF HEALTH, SCIENTIFIC ANALYSIS OF HUMAN MICROBIOME PROJECT

Shawn Tamm - FORTUNE NEWS / NARS, TODAY

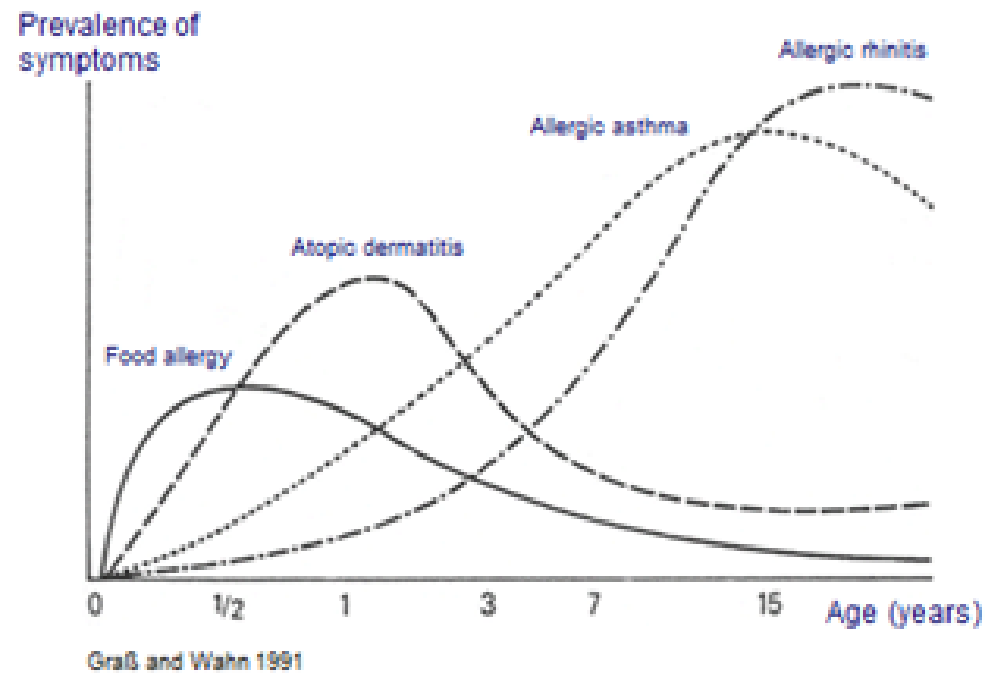
Protective and risk factors for allergy development in early life

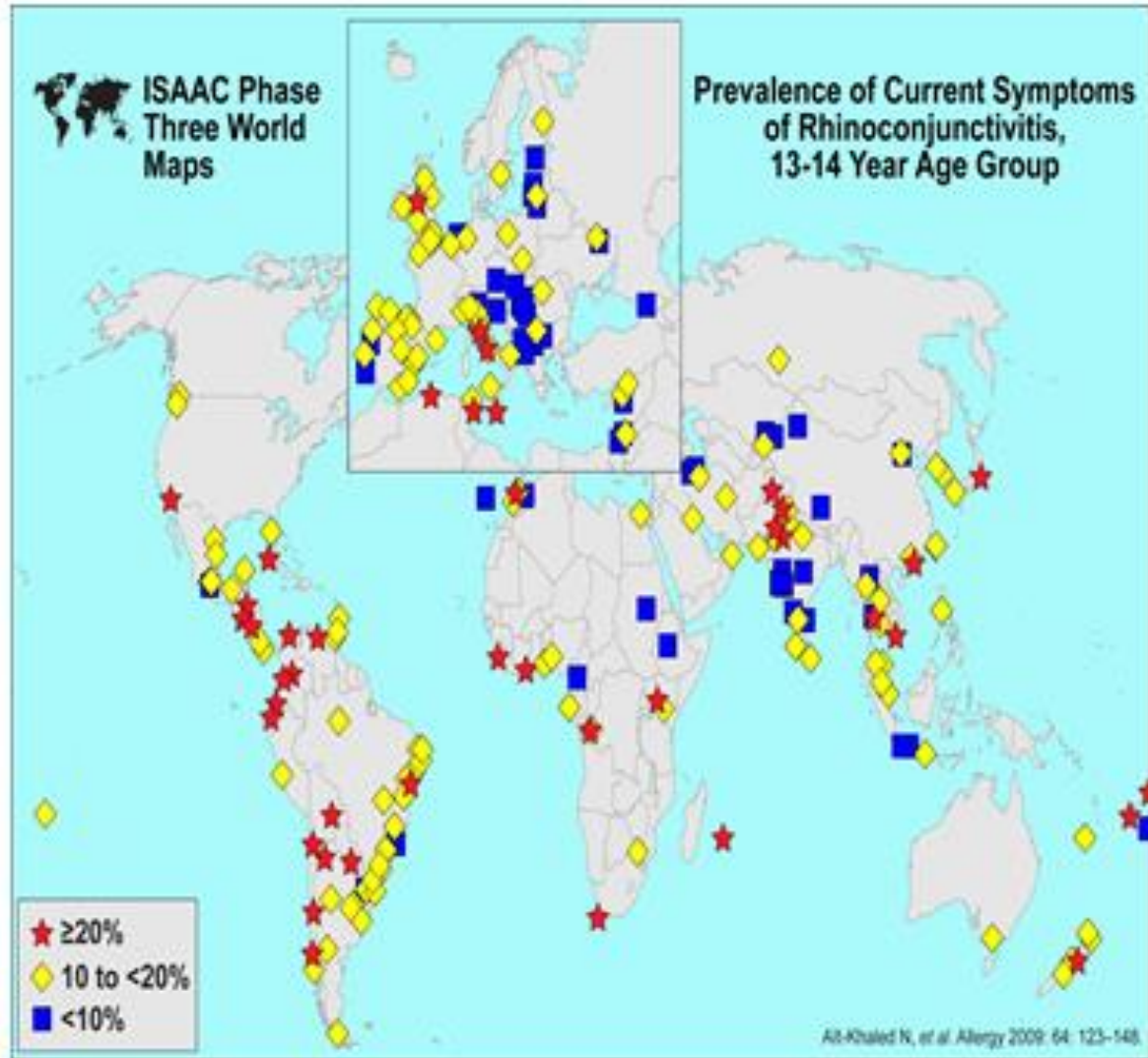


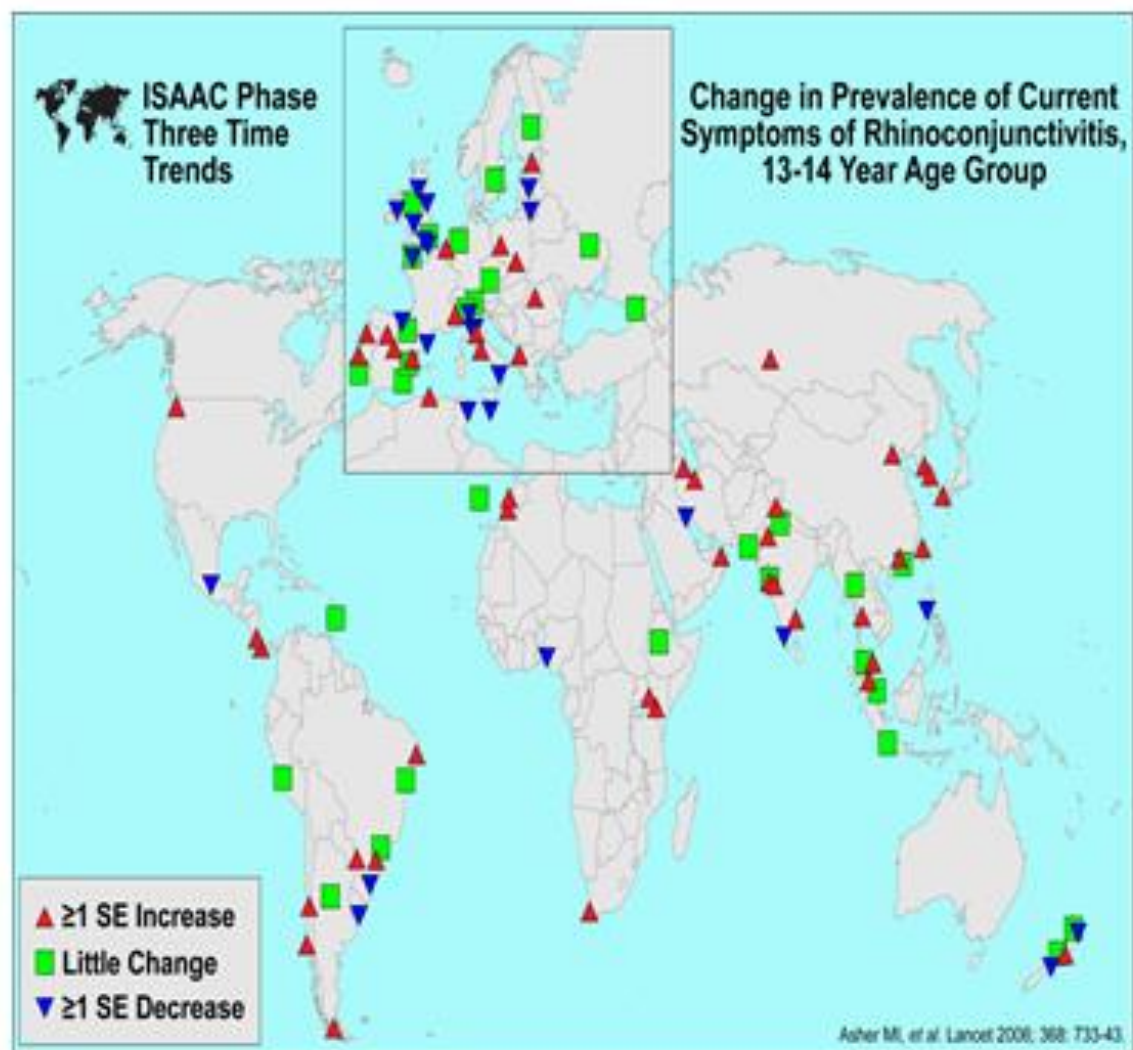
The immunology of the allergy epidemic and the hygiene hypothesis
Lambrecht & Hammed, *Nature Immunology*.

Allergic (Atopic) March

Course of Atopic Diseases in Childhood







Atopic Dermatitis

(Management Challenges)

AD: The Basics

- Atopic dermatitis (AD) is a chronic, pruritic, inflammatory skin disease with a wide range of severity
- AD is one of the **most common skin disorders** in developed countries, affecting up to 20% of children & 1-3 % of adults
 - In most patients, AD develops before the age of 5 and typically clears by adolescence
- Primary symptom is **pruritus** (itch)
 - AD is often called “the itch that rashes”
 - Scratching to relieve AD-associated itch gives rise to the ‘**itch-scratch**’ cycle and can exacerbate the disease
- Patients experience periods of remission and exacerbation

Atopic Dermatitis: Pathogenesis

- The cause of AD is multifactorial and not completely understood
- The following factors are thought to play varying roles:
 - Genetics
 - Skin Barrier Dysfunction
 - Impaired Immune Response
 - Environment

Typical AD for Infants and Toddlers



Erythematous, ill-defined plaques on the cheeks with overlying scale and crusting



Erythematous, ill-defined plaques on the lateral lower leg & foot

Clinical Findings: Distribution



Wiedinger S, and Novak N Lancet 2015 [Early ahead of print]





















Associated Findings

- Xerosis



Associated Findings

- Keratosis Pilaris



Associated Findings

- Ichthyosis



Associated Findings

- Pityriasis alba







Differential Diagnosis

- Seborrheic dermatitis



Differential Diagnosis

- Seborrheic dermatitis
- Scabies





Scabies

Palmoplantar pustules



Scabies

Before Rx

After Rx



Differential Diagnosis

- Seborrheic dermatitis
- Scabies
- Drugs



Differential Diagnosis

- Seborrheic dermatitis
- Scabies
- Drugs
- Psoriasis



Differential Diagnosis

- Seborrheic dermatitis
- Scabies
- Drugs
- Psoriasis
- Allergic contact dermatitis



Complications







4 Eczema herpeticum. The clusters of tiny crusted superficial erosions always suggest disseminated herpetic infection.



LABORATORY

- Diagnosis is based on clinical features
- Skin biopsy is of little value: R/O other skin diseases
- Skin testing or, CAP: specific IgE in assessing food or environmental Ag



TREATMENT

The goals:

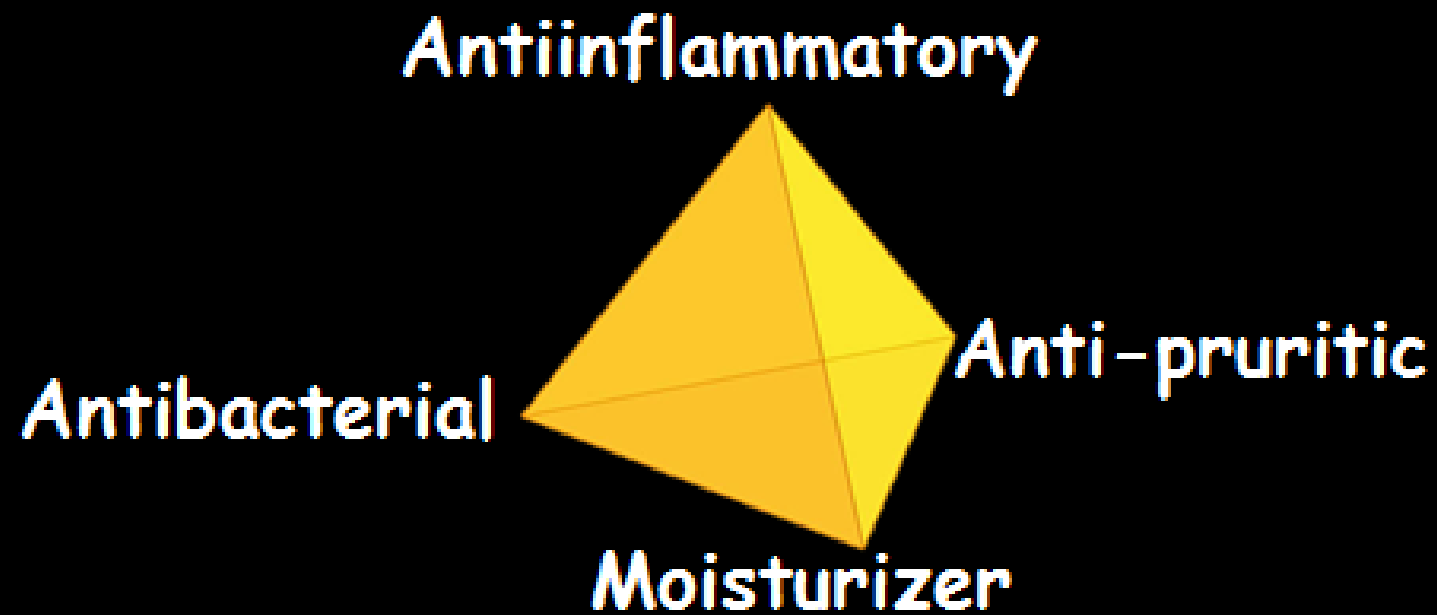
Reduce the number and severity of flares

Increase the number of disease-free periods.

Successful management:

- Skin hydration, pharmacologic therapy to reduce pruritus, and identification and avoidance of triggers

Atopic Dermatitis: Treatment





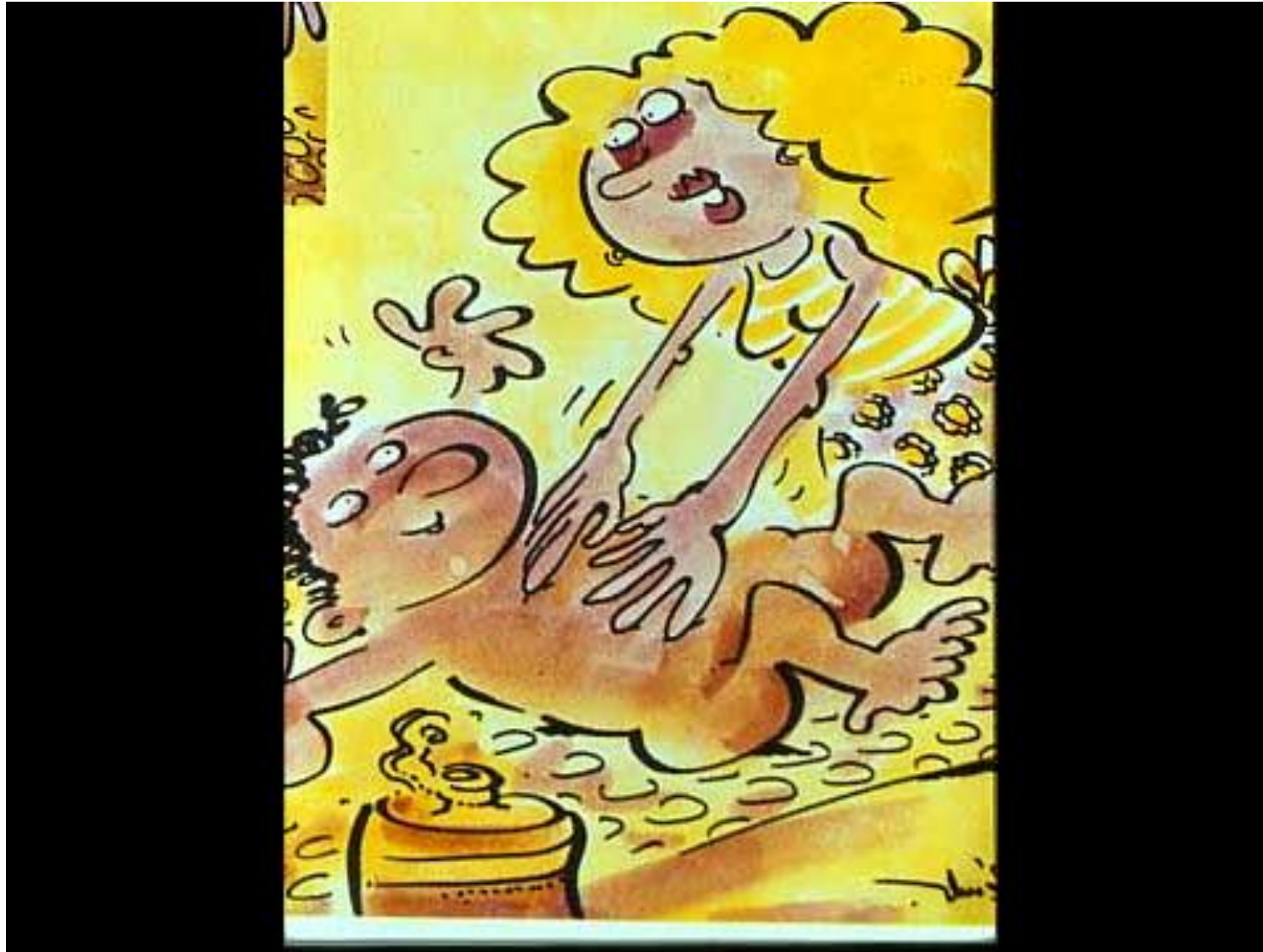
Education

- Parent education and written instruction are key to success
- “Action Plans” provide parents and caregivers with easy to follow treatment recommendations and guidance

Cutaneous Hydration

- Patients with atopic dermatitis have a decrease in skin barrier function and enhanced transepidermal **water loss**.
- Daily, **baths** for 15 to 20 minutes followed fragrance-free **emollients** **moisture** are a major component of therapy







Wet-wrap dressing









Major Food Allergens

- Eggs
- Cows' milk
- Soya
- Nuts
- Fish
- Wheat
- Others



Niggemann, 1996

غذاهائی که نباید مصرف شود :

شیر ، سرشیر ، خامه ، کره ، روغن ، گوچه فرنگی

ماهی ، گوشت های کنسروی ، کالباس (دل و جگر

کله پاچه و مخلفات ، سبزیجات ، پیاز ، سیر ، آجیل

شکلات ، قهوه ، کافور ، شیشه

بست فرنگی

انجیر - انار - خربزه

When to Refer

- Patients should be referred to a dermatologist when:
 - Patients have recurrent skin infections
 - Patients have extensive and/or severe disease
 - Symptoms are poorly controlled with topical steroids
 - Suspicious to food allergy



Case History

HPI: Parsa is a 12 month-old boy

CC: "itchy red rash" for the last 9 months.
The rash waxes and wanes, involving his face.
He is bathed daily using a "normal" soap.

Sometimes they use moisturizing lotion if her skin appears dry.

They recently introduced peas into his diet and wonder whether this may be contributing to the rash.

Case history

- PMH: Normal birth history. He is healthy aside from an episode of wheezing at 5 months of age. No hospitalizations or surgeries.
- Medications: none
- Family history: Mother has asthma and allergic rhinitis
- Social history: Lives in a house with his parents, no pets or recent travel
- ROS: “itches all night”

Skin Exam

Erythematous ill-defined patches with overlying scale and erosions on her cheeks



Question 1

- What elements in the history are important to ask in this case?
 - a. Does the rash keep her awake at night?
 - b. Which moisturizers are used and where?
 - c. Does the lesion worsen with a specific food?
 - d. All of the above

Question 1

- What elements in the history are important to ask in this case?
 - a. Does the rash keep her awake at night?
 - b. Which moisturizers are used and where?
 - c. Does the lesion worsen with a specific food?
 - d. All of the above

Question 2

- What is the most likely diagnosis given the history and skin exam findings?
 - a. Atopic dermatitis
 - b. Contact dermatitis
 - c. Psoriasis
 - d. Scabies
 - e. Seborrheic dermatitis

Question 2

- What is the most likely diagnosis given the history and skin exam findings?
 - a. Atopic dermatitis
 - b. Contact dermatitis
 - c. Psoriasis
 - d. Scabies
 - e. Seborrheic dermatitis

Question 3

- Which of the following statements supports the diagnosis of atopic dermatitis:
 - a. Chronic nature of the rash
 - b. Distribution of the rash
 - c. Family history of atopic disease
 - d. Symptom of pruritus
 - e. All of the above

Question 3

- Which of the following statements supports the diagnosis of atopic dermatitis:
 - a. Chronic nature of the rash
 - b. Distribution of the rash
 - c. Family history of atopic disease
 - d. Symptom of pruritus
 - e. All of the above

Question 4

- What percentage of children with atopic dermatitis also have or will develop asthma or allergic rhinitis?
 - a. 0-15%
 - b. 15-30%
 - c. 30-50%
 - d. 50-80%
 - e. 80-100%

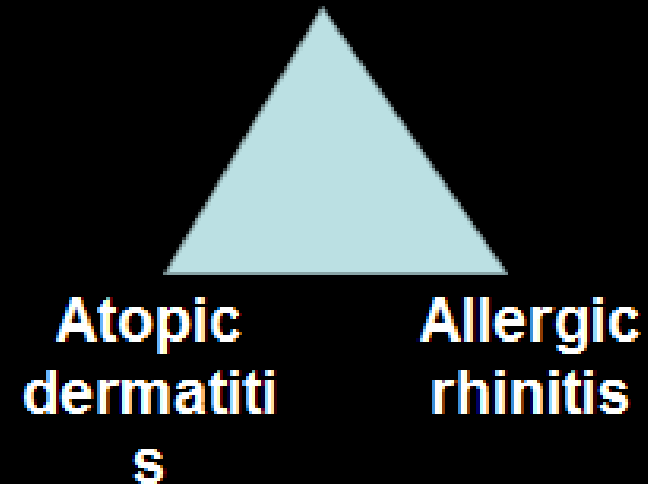
Question 4

Answer: d

- What percentage of children with atopic dermatitis also have or will develop asthma or allergic rhinitis?
- **50-80% of children will have another atopic disease**

The Atopic Triad

Asthma



Question 5

- Which of the following recommendations would you provide to Parsa's parents?
 - a. Daily or twice daily application of moisturizing ointment or cream
 - b. Hydrocortisone ointment to the face twice daily for up to 10 days
 - c. Mupirocin ointment to the face twice daily for up to 10 days
 - d. Ketotifen PO
 - e. All of the above

Question 5

- Which of the following recommendations would you provide to Parsa's parents?
 - a. Daily or twice daily application of moisturizing ointment or cream
 - b. Hydrocortisone ointment to the face twice daily for up to 10 days
 - c. Mupirocin ointment to the face twice daily for up to 10 days
 - d. Ketotifen PO
 - e. All of the above

Question 6

- Parsa's parents would also like more information regarding the association between food allergies and atopic dermatitis. What can you tell them?

Question 6

- Parsa's parents would also like more information regarding the association between food allergies and atopic dermatitis. What can you tell them?
 - Food allergy is a more likely trigger if the onset or worsening of the AD correlates with exposure to the food (33%)
 - The earlier, the more severe AD: more relevant to food allergy

Thank you