Atopic Dermatitis

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AD DDX : infants

- SD:
  - presents during the first month of life as
  - yellowish-white, adherent scale-crusts on the scalp.
  - predilection for the skin folds, and the forehead
  - Folds: lesions may be oozing and lack scale

- Scabies:
  - burrows
  - identification of the mite or eggs via dermoscopy or skin scrapings
  - predominance of discrete small crusted papules,
  - involvement of the axillae and diaper area
  - presence of acral vesiculopustules.

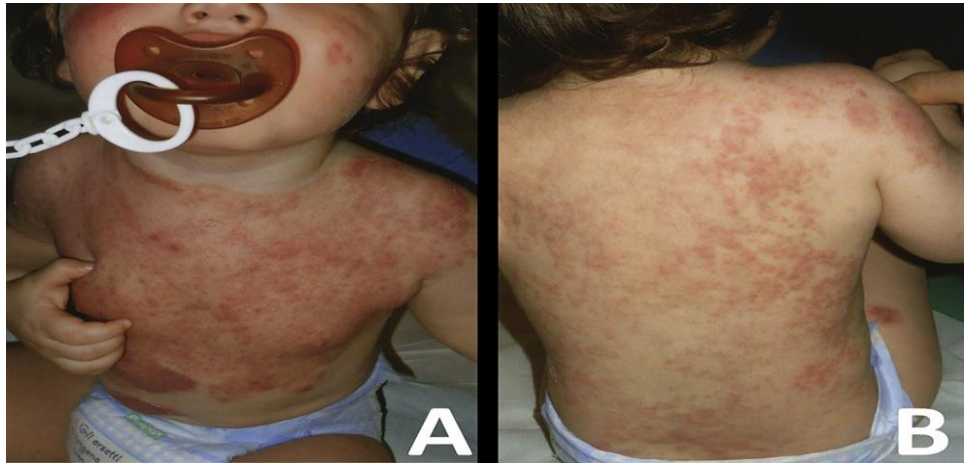
- primary immunodeficiencies:

AD DDX : Adolescents and adults

- Allergic contact dermatitis (ACD):
  - No personal or family history of atopy
  - who fail to respond as expected to treatment
  - who develop lesions in an atypical distribution pattern
  - **Protein contact dermatitis** has a predilection for atopic individuals and can also present as a chronic eczematous dermatitis. Causes include a variety of foods and animal products

- Mycosis fungoides (MF):
  - considered in adolescents and adults with chronic dermatitis poorly responsive to topical corticosteroid treatment
  - histologic findings of early MF may be difficult to distinguish from those of AD
  - multiple biopsies are recommended, preferably from untreated areas of skin (corticosteroids can eliminate the epidermotropic T cells).

- Dermatophytosis:
  - Wide spread lesion of dermatophytosis
  - Tinea incognito
  - Id reaction



- Drug reaction:
- Psoriasis:

AD and Food Allergy

What is food allergy?

- Food allergy : CM + tests or DBPCFC

- *double-blind placebo-controlled food challenge (DBPCFC) test remains the 'gold standard' for the diagnosis of FA*

- Tests for food allergy:
  - *in vitro*: serum-specific IgE
  - *in vivo* :skin prick tests (SPT) , prick–prick tests, patch test

    - Serum specific IgE : ***PPV : 60%*** ***NPV: 95%***

    - In vitro tests are valuable when skin prick tests (SPT) cannot be applied (e.g. dermographism or UV- and drug-induced skin hyporeactivity, eczema at the test site, lack of compliance for SPT in infancy)

    - in vitro specific IgE to food allergens gives better quantitative data for the grade of sensitization which helps to estimate the probability of the risk of a clinical reaction (although precise decision points are not available)

Introduction and definitions :

- Although atopic diseases have a clear genetic basis, environmental factors, including early infant nutrition, have an important influence on their development
- ***Food allergy seen in 30% children with AD***

- allergenic foods:
  - 8 major groups of allergenic foods that account for approximately 90% of all food allergies and must be declared on labels for processed foods in the United States.
  - These include cow milk, eggs, fish, crustacean shellfish, tree nuts, peanuts, wheat, and soybean***. (most common food allergen : egg)***
  - More than 170 foods have been described to cause allergic reactions, and additional foods (eg, sesame) are included in labeling laws in other countries.
  - ***Some food allergies do not improve with advancing age (tree nuts, fish, and shellfish)***

- food allergy:
  - an immunologically mediated hypersensitivity reaction to any food, including IgE-mediated and/or non–IgE-mediated allergic reactions

- Infants at high risk for developing allergy:
  - infants with at least 1 first degree relative (parent or sibling) with documented allergic disease

- Hydrolized formula:
  - partially hydrolyzed formula: formula that contains reduced oligopeptides having a molecular weight of generally less than 5000 Da;
  - extensively hydrolyzed formula: formula that contains only peptides that have a molecular weight of less than 3000 Da
  - free amino acid-based formula: peptide-free formula that contains mixtures of essential and nonessential amino acids.

Clinical manifestations of food allergy:

- Immediate-type reactions: **(more common)**
  - non-eczematous reactions are usually IgE-mediated, occur within 2 h after the administration of the allergen, with skin manifestations such as urticaria, angio-oedema, flush, and pruritus or other immediate-type reactions of the gastrointestinal tract, the respiratory tract or the cardiovascular system in the sense of anaphylaxis. Cutaneous manifestations occur in 74% of patients.
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- 'latephase' IgE-mediated reactions :
  - children might develop a transient morbilliform rash 6–10 h after the initial immediate reaction, disappearing within a few hours and considered as 'latephase' IgE-mediated response
- delayed-type reactions :
  - Isolated eczematous reactions typically occur 6– 48 h after the administration of the allergen with flares of eczema on predilection sites of AD, suggestive for a non-anaphylactic pattern
- combination of the two above-mentioned patterns with an immediate-type reaction followed by an eczematous delayed-type reaction has been described in approximately 40% of children

DIETARY RESTRICTIONS FOR PREGNANT AND LACTATING WOMEN

- studies have not supported a protective effect of a maternal exclusion diet (including the exclusion of cow's milk, eggs, and peanuts) during pregnancy or during lactation on the development of atopic disease in infants
- maternal diets rich in fruits and vegetables, fish, and foods containing vitamin D and Mediterranean dietary patterns were among the few consistent associations with lower risk for allergic disease in their children.*
- Foods associated with higher risk included vegetable oils and margarine, nuts, and fast food. *

** Netting MJ, Middleton PF, Makrides M. Does maternal diet during pregnancy and lactation affect outcomes in offspring? A systematic review of foodbased approaches. Nutrition. 2014 30(11–12):1225–1241*

EXTENT AND DURATION OF BREASTFEEDING ON THE DEVELOPMENT OF ATOPIC DISEASE

- 2008 AAP report : there is no short- or long-term advantages for exclusive breastfeeding beyond 3 to 4 months for prevention of atopic disease
- 2012 and 2014 meta-analyses confirmed 2008
- meta-analysis found no significant association between exclusive breastfeeding for ≥3 to 4 months versus breastfeeding for a shorter duration and asthma at 5 to 18 years of age (13 studies)*.
- However, this study did find that exclusive breastfeeding for at least 3 to 4 months decreases the cumulative incidence of eczema in the first 2 years of life, with or without any additional breastfeeding * .
- No association was found between breastfeeding and eczema beyond 2 years of age suggesting that protection afforded by breastfeeding may be limited to the infantile eczema phenotype.

Lodge CJ, Tan DJ, Lau MX, et al. Breastfeeding and asthma and allergies: a systematic review and meta-analysis. Acta Paediatr. 2015; 104(467):38–53

THE ROLE OF HYDROLYZED FORMULAS ON THE DEVELOPMENT OF ATOPIC DISEASE

- it has been suggested that if high-risk infants cannot be exclusively breastfed, use of such formulas will prevent atopic disease.

- 2008 AAP report: there was modest evidence that the use of either or exclusively hydrolyzed formula prevents atopic dermatitis in high-risk infants who are formula fed or initially breastfed after birth.

- 10-year follow-up German Infant Nutritional Intervention study * : Although the prevalence of atopic dermatitis at 7 to 10 years of age was significantly reduced with extensively hydrolyzed casein-based formula, there was no preventive effect on asthma or allergic rhinitis.

- Newer studies: conflicting reports , in summary, lack of evidence

* von Berg A, Filipiak-Pittroff B, Krämer U, et al; GINIplus study group. Allergies in high-risk schoolchildren after early intervention with cow's milk protein hydrolysates: 10-year results from the German Infant Nutritional Intervention (GINI) study. J Allergy Clin Immunol. 2013;131(6):1565–1573

TIMING OF INTRODUCTION OF ALLERGENIC COMPLEMENTARY FOODS AND FOOD ALLERGY

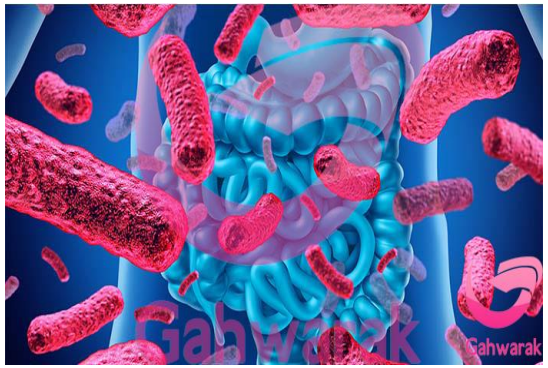
- Peanut:
  - A meta-analysis of the LEAP and the EAT studies revealed that, for peanut allergy, early peanut introduction at 4 to 11 months of age was associated with a reduced risk of peanut allergy*
  - expert panel recently advised peanut introduction as early as 4 to 6 months of age in infants at high risk (presence of severe eczema and/or egg allergy).

- Egg:
  - In a 2016 meta-analysis that included 5 studies, the authors concluded that there was moderate certainty of evidence from the 5 trials (1915 participants) that early egg introduction at 4 to 6 months of age was associated with reduced egg allergy risks

* Ierodiakonou D, Garcia-Larsen V, Logan A, et al. Timing of allergenic food introduction to the infant diet and risk of allergic or autoimmune disease: a systematic review and meta-analysis. JAMA. 2016;316(11):1181–1192

Pre- and probiotics÷

- Probiotics such as lactobacillus mixtures have been studied in AE and have been shown to induce improvement
- Other studies failed to show significant effects.
- In a study with 800 infants, the effect of a prebiotic mixture was investigated and found to have beneficial effects in preventing the development of AE
- Non-pathogenic bacterial strains such as Vitreoscilla filiformis or Aquaphilus dolomiae have been used as sources for bacterial lysates for topical therapy of AE
- Previous systematic reviews on probiotics for the treatment of AE have consistently concluded a lack of effect in children.
- On the basis of the existing literature, with only one group showing positive results in a controlled study, the guideline group decided not to give a recommendation for treatment with lactobacilli in AE.
- It may well be that a preventive effect of pre-or pro-biotic mixtures will be shown in future



SUMMARY AND RECOMMENDATIONS

- There is lack of evidence to support maternal dietary restrictions either during pregnancy or during lactation to prevent atopic disease
- There is evidence that exclusive breastfeeding for the first 3 to 4 months decreases the cumulative incidence of eczema in the first 2 years of life
- There are no short- or long-term advantages for exclusive breastfeeding beyond 3 to 4 months for prevention of atopic disease
- No conclusions can be made about the role of any duration of breastfeeding in either preventing or delaying the onset of specific food allergies

- There is lack of evidence that partially or extensively hydrolyzed formula prevents atopic disease in infants and children, even in those at high risk for allergic disease.
- There is no evidence that delaying the introduction of allergenic foods, including peanuts, eggs, and fish, beyond 4 to 6 months prevents atopic disease.
- There is now evidence that the early introduction of infant-safe forms of peanuts reduces the risk for peanut allergies. Data are less clear for timing of introduction of eggs
- An expert panel has advised peanut introduction as early as 4 to 6 months of age for infants at high risk for peanut allergy (presence of severe eczema and/or egg allergy).
- For infants with mild to moderate eczema, the panel recommended introduction of peanut-containing foods at around 6 months of age,
- for infants at low risk for peanut allergy (no eczema or any food allergy), the panel recommended introduction of peanut-containing food when age appropriate and depending on family preferences and cultural practices (ie, after 6 months of age if exclusively breastfeeding).

References

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Topics

- 1. DIETARY RESTRICTIONS FOR PREGNANT AND LACTATING WOMEN
- 2. THE ROLE OF EXTENT AND DURATION OF BREASTFEEDING ON THE DEVELOPMENT OF ATOPIC DISEASE
- 3. THE ROLE OF HYDROLYZED FORMULAS ON THE DEVELOPMENT OF ATOPIC DISEASE
- 4. TIMING OF INTRODUCTION OF ALLERGENIC COMPLEMENTARY FOODS AND FOOD ALLERGY
- 5. SUMMARY AND RECOMMENDATIONS

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