

Original article

Atopic dermatitis and food allergy

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Summary

The incidence of food allergy in the general population is rapidly increasing. It is estimated that it currently affects 3.5% of the population in France. Atopic dermatitis is the most frequent clinical symptom observed in young children (occurring in 80% of cases of food allergy in children less than one year old). Sensitization to food allergens starts very early in life, in utero. It appears that it occurs in the presence of a particular genetic predisposition, i.e., an atopic predisposition. The expression of this disease is directly related to the patient's environment. The introduction of a carefully managed exclusion diet, determined with the help of a dietician following allergy testing, is essential for the treatment of atopic dermatitis in young children. The detection and removal of other allergenic factors in the patient's environment is also necessary. © 2000 Éditions scientifiques et médicales Elsevier SAS

atopic dermatitis / environment / exclusion diet / food allergy

Résumé – Dermatite atopique et allergie alimentaire.

L'allergie alimentaire est une maladie dont la fréquence est croissante. Sa prévalence actuelle est estimée à 3,5 % en France. La dermatite atopique est son expression clinique la plus fréquente chez le jeune enfant (80 % des cas en dessous d'un an). La sensibilisation aux allergènes alimentaires débute très tôt, in utero. Elle apparaît sur un terrain génétique particulier : le terrain atopique. L'expression de la maladie est directement liée à l'environnement du patient. La mise en place de régime d'éviction au terme d'un bilan allergologique soigneusement conduit et avec le concours d'une diététicienne est essentielle au traitement de la dermatite atopique du jeune enfant. La maîtrise des autres allergènes présents dans l'environnement du patient (pneumallergènes, allergènes cutanés et notamment cosmétiques, allergènes professionnels...) est indispensable. © 2000 Éditions scientifiques et médicales Elsevier SAS

dermatite atopique / environnement / régime d'éviction allergie alimentaire

Atopic dermatitis mainly affects atopic children during their first year of life. For it to occur, there must necessarily be a genetic predisposition and exposure to environmental factors. The etiology of this disease is multifactorial. Hormonal, emotional, and irritative factors may play a role, but the particular predisposition to infection and to multiple IgE-mediated sensitizations are the predominant factors. They are

indicative of the atopic syndrome, characterized by a specific lymphocytic profile with an imbalance in the Th1/Th2 ratio in favor of Th2. Any contact with a foreign protein can lead to a hypersensitive reaction on the part of the infant, whether that contact is cutaneous, airborne or digestive. During the first months of life, the largest quantities of antigens which the infant comes into contact with are through the food

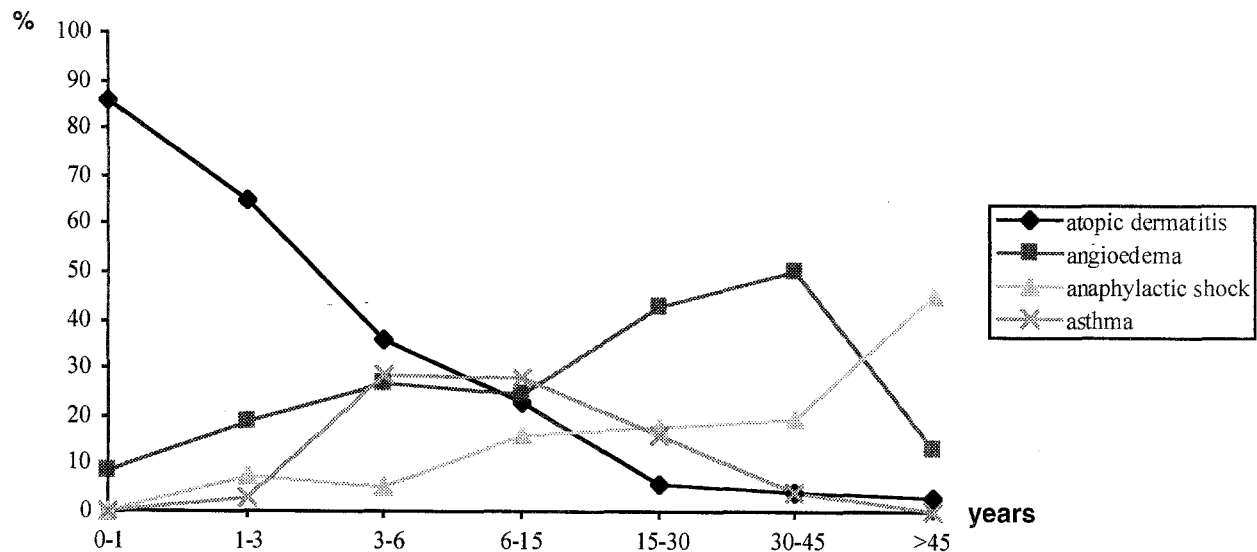


Figure 1. Clinical picture according to age in cases of food allergy (396 patients).

he ingests. Thus the signs of food allergy are the first to appear. The most frequently observed manifestation in the first months of life is atopic dermatitis.

PREVALENCE

The incidence of food allergy is estimated at 3.5% in France [21]. Extensive research has confirmed the role of food allergy in childhood atopic dermatitis, its frequency being estimated at between 30 and 60% [20, 22, 26]. Atopic dermatitis is the most frequent manifestation of food allergy in children under three years of age [23]. The data of the CICBAA (*Cercle d'Investigations Cliniques et Biologiques et Allergologie Alimentaire*) [15] concerning 703 patients with a total of 1,116 food allergies, the diagnosis of which was determined according to the European criteria [4], show that 80% of infants under one year of age with food allergy present with a clinical picture of atopic dermatitis. The older the child, the less atopic dermatitis is associated with cases of food allergy. In our experience, from the age of three to six years, it represents only 36% of clinical cases of food allergy, 23% from six to 15 years, and even less afterwards. The clinical picture of food allergy changes over time (figure 1). This allergy may persist, but with other symptoms: the same patient can have been

successfully treated for his or her atopic dermatitis, but this may have been replaced with attacks of angioedema, asthma, or even anaphylactic shock [16].

PHYSIOPATHOGENESIS

The sensitization of the fetus to food allergens can take place very early in utero, or later during breast-feeding [5]. In utero, sensitization can develop from the time that Peyer's patches have been formed, at four and a half months of gestation. During breast-feeding, a link has been established between the presence of milk and eggs in the mother's diet and the occurrence or worsening of eczema in the infant [6].

A prospective study of a cohort of 1,265 randomly-selected children has shown that the risk of eczema is related to the early introduction, i.e., before the age of four months, of foods other than milk: this risk increases by a factor of 2.9 when there is early diversification [9]. It is important to stress the role of modifications in childhood dietary habits in the increased incidence of food allergy: the too early or too massive introduction of certain foods which are known to be allergenic, and perhaps the excessive allergenicity of certain dietetic baby foods are contributing factors.

CLINICAL ASPECTS

The results of oral challenge tests have widely demonstrated that the most frequent clinical expression of food allergy in patients presenting with atopic dermatitis is an erythematous rash followed by eczema either during the hours following the test or later on [25, 26]. Acute urticaria or Quincke's edema, contact urticaria may also occur. Digestive symptomatology (regurgitation, vomiting, colic, diarrhea, constipation) or possibly delayed growth can be associated with this disorder, and the risk of respiratory or even anaphylactic complications should not be ignored. This risk can either be immediate or at relatively long-term, and changes with the age of the patient. Cases of dishydrosis and internal reactivation of contact eczema have been described for nickel and balsam of Peru after consumption of citrus fruits, cinnamon, vanilla or spices. A characteristic type of perioral eczema and cheilitis has been observed as a result of allergies to certain flavoring agents [13]. Patients with atopic dermatitis are particularly susceptible to 'false food allergy' upon intake of foods which release histamine and/or are rich in histamine [19].

DIAGNOSIS

The relationship between infant atopic dermatitis and food allergy has been sufficiently established in the literature for it to be concluded that a systematic investigation should be made for a possible food allergy in a child under three years presenting with eczema. The diagnosis requires specialized allergy testing. Although a certain foods can be identified by the parents as being responsible for acute manifestations of food allergy (Quincke's edema, urticaria, anaphylactic shock), this is often impossible in the case of chronic diseases such as eczema, especially as the food is often eaten repeatedly or its allergenic nature is not known, as in the case of eggs, peanuts, milk, wheat flour, etc.

The severity of atopic dermatitis can be determined by establishing a clinical score which makes it possible to objectively monitor the progression of this food allergy. The most widely used scale at the present time is the SCORAD, developed by the European task force on atopic dermatitis [1]. It takes

into account three elements: the extent of the lesions; their intensity (erythema, papules, scabs, excoriations, lichenification); and the intensity of the subjective symptoms (pruritis and sleep disturbance). The diagnosis is based on an analysis of the current diet, followed by skin tests. As the negative predictive value of the prick test is excellent, a negative result is in most cases sufficient to eliminate the presence of a food allergy [20]. If the prick tests (or patch tests [11]) establish the presence of sensitization, challenge tests make it possible to distinguish between what is simply sensitization due to atopic predisposition, and food allergy [3, 4, 24].

THE MOST FREQUENT ALLERGENS

The most frequent allergens observed in cases of atopic dermatitis are eggs (40%), peanuts (17%) and milk (12%) (*figure 2*). The implicated allergens change with the age of the patient; allergy to eggs and milk decreases over time (*figure 3*). Peanut allergy is a relatively recent phenomenon which seldom affects adults. Its cure is rare. The risk of anaphylactic shock, and of fatal or near-fatal asthma has been emphasized [8, 27]. The number of implicated allergens increases with age, i.e., from 2 in infants under six months of age to 20 in children between one and three years of age.

TREATMENT

Symptomatic treatment is based mainly on the prescription of local corticosteroids to reduce cutaneous inflammation. Skin infections are treated by specific medication (antiseptics, antibiotics, antifungal agents). Nonetheless, although these measures are effective in relieving atopic dermatitis, they do not make it regress or prevent new attacks.

However, the introduction of an exclusion diet for the identified allergen or allergens is an undisputably effective means of preventing further extension and atopic dermatitis attacks [2, 10, 12, 17]. These diets are different from the previously recommended hypoallergenic diets, which were difficult to maintain due to their monotony. The new diets are used for a period of three weeks when AD is severe, and when it is not immediately possible to perform skin tests.

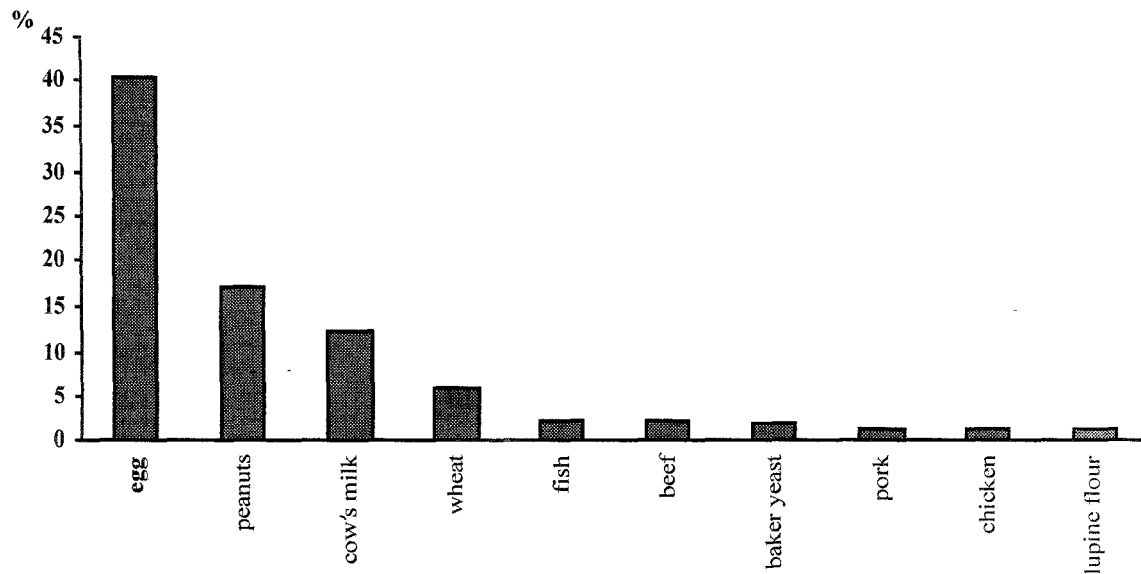


Figure 2. The most frequently observed allergens in cases of atopic dermatitis (133 observations, 220 food allergies).

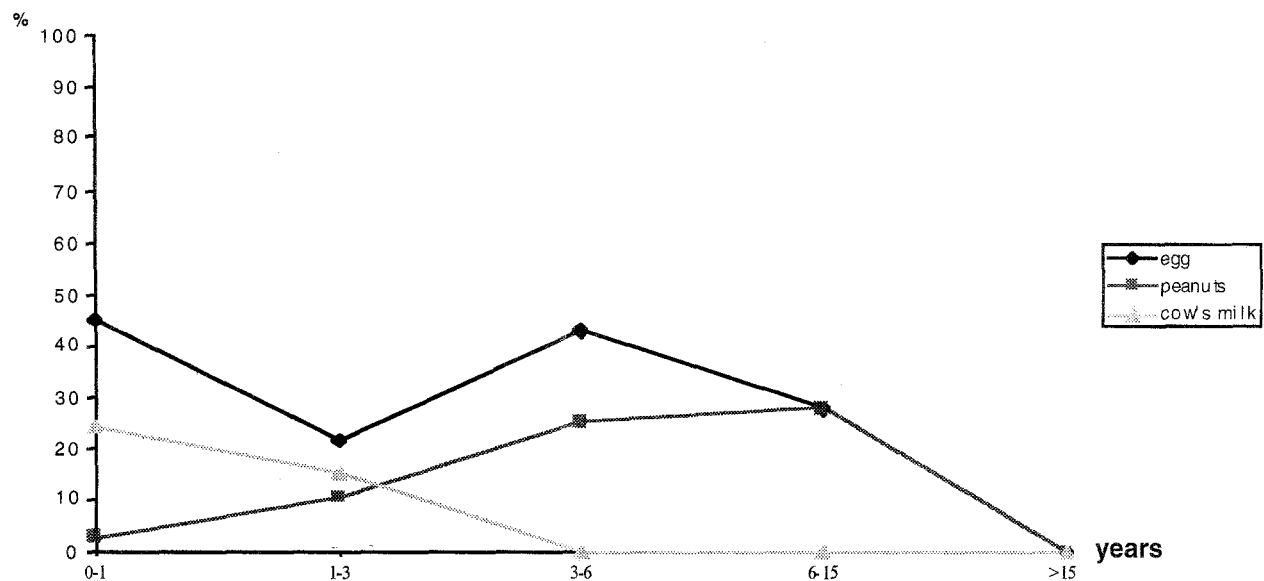


Figure 3. Evolution in the frequency of main food allergen in cases of atopic dermatitis according to age.

Exclusion diets are prescribed medically and can only be established after carefully conducted allergy testing. They strictly exclude the identified allergens. In our experience, they are very effective: 69% of patients presenting with food allergy-associated atopic dermatitis showed an improvement at two months (a decrease on the SCORAD rating scale of at least 20 points), with a 33% cure rate, 80% at six

months and 91% at one year [12]. The study recently published by Lever et al. provides objective findings that underline the value of an exclusion diet in cases of food allergy to eggs in children with atopic dermatitis [17]. These diets must avoid the intake of 'hidden' allergens, and should be thoroughly explained. The collaboration of a specialized dietician is especially useful, as he/she can propose alternatives to

replace the excluded foods and can ensure that the patient is eating a balanced diet [14]. The main allergenic exclusion diets, together with recipes based on the permitted foods, can be found in the Alim'Inter journal (Website: www.cicbaa.com). This can help the patients get started on such diets, and follow them. Once the restrictions of these exclusion diets have been carefully explained, they are minimal compared to the therapeutic benefits and the comfort experienced by the patient. The retrospective study we conducted on 18 children with atopic dermatitis demonstrated that 94% of the parents were satisfied with the diet, and a concomitant improvement in the atopic dermatitis, in sleep and in nervous reaction with a decrease in irritability was noted. Failures in exclusion diets have four main causes: lack of compliance with the diet due to an inattentive family (this is becoming increasingly rare), non-recognition of 'hidden' allergens (which is why it is important to supply detailed documents explaining all the exclusions), undetected multiple allergies, and, lastly, other unknown environmental factors (animal danders, house dust mites, molds, etc.).

The implementation of exclusion measures must be complete. It is necessary to avoid contact with food allergens or those presenting cross-reactions by other routes: medicinal excipients, cosmetics (problem of the vegetable oils used), contact with latex contained in child's dummies or toys, airborne allergens due to the existence of cross-reactions with food allergens (egg-bird syndrome, pork-cat, etc.) [7, 8]. The restoration of skin integrity through well-managed allergenic exclusion measures decreases the risk of skin infections.

CONCLUSION

Atopic dermatitis, the primary expression of atopic disease, is a disorder of the immune system with cutaneous manifestations. It should be taken into account by the allergist as early as possible and in an optimum manner. Taking the etiological food allergy factor into account should lead not only to the implementation of exclusion diets, but also to overall management of the patient's allergenic environment with a view to preventing further sensitization to lung allergens (house dust mites, animal danders, etc.) which might replace food allergens as causative

factors in atopic dermatitis [28]. It also appears necessary to reconsider the term hypoallergenicity in cosmetology for atopic skin by encouraging those concerned to take more interest in the product composition in protein allergens (peanut and sesame oil, oat extract, products derived from milk or eggs, etc.). As at the present time we cannot influence the genetic predisposition of these patients, it is by learning to control their environment that we can offer them the best prospects for the future. It has become fundamental to consider nutrition as an endogenous micro-environment, and from the onset to be as concerned about it as we are about air pollution!

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