Study of food allergy on Spanish population

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ABSTRACT

Background: The aim of the study was to investigate the prevalence of food allergy in patients referred to our Allergy Unit and to evaluate the diagnostic methods used.

Methods: We selected 674 patients referred to the Allergy Unit of our hospital from May 2002 to October 2004. The prevalence of symptoms was determined by a standardized questionnaire, prick-prick test, and serum specific IgE. In a second phase, double-blind oral challenge tests were administered.

Results: Food allergy was found in 106 patients (15.7 %): 71 adults (67 %) and 35 children (33 %). The prevalence of food allergen sensitization was 14 % in adults and 20.8 % in children. A total of 89.6 % of the patients experienced symptoms immediately. Only 29.2 % the patients of sought medical attention and adrenaline was administered to five (16.1 %). The foods most frequently involved in allergic reactions were fruits (56.6 %) and tree nuts (22.6 %).The most common symptoms were oral allergy syndrome (46.2 %), urticaria (32.1 %), and anaphylaxis (14.2 %).

Combining the results of the questionnaire with those of prick-prick tests in patients whose allergy was confirmed by double-blind, placebo-controlled food challenge (9.1 %) showed a sensitivity of 95.5 %, a negative predictive value of 96 %, a specificity of 75 % and a positive predictive value of 73 %.

Conclusions: 1. The prevalence of food allergy in our sample was 9.1 %. 2. The foods most frequently involved in allergic reactions were fruits and tree nuts. 3. The most common symptoms were oral allergy syndrome, urticaria, and anaphylaxis. 4. Combining our questionnaire with *in vivo* tests allowed us to diagnose 75-96 % of patients with no food allergy and 95 % of food allergy patients.

Key words: Prevalence. Food allergy. Diagnosis. Challenge tests.

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The European Academy of Allergy and Clinical Immunology (EAACI) defines the hypersensitivity food reactions according to the mechanisms which produce them. The food allergy is a disorder in which a little quantity of food induces an immunological reaction. Foods can provoke allergic reactions through several mechanisms. The most important and the one that has undergone more studies is the IgE mediated reaction type I since it can be life threatening. However, there are different immunological non-IgE mediated mechanisms such as the type IV retarded reactions. The food hypersensitivity reactions non-mediated immunologically (what used to be known as intolerance reactions) may be due to pharmacology, metabolic and toxic causes[1].

There isn't patgnomonic clinical of food allergies. The most rateable element in the anamnesis is that the relation is close in time. The more frequent symptoms are urticaria and angioedema. Both, acute rhinitis and rhinorrea whether accompanied by conjunctivitis or not are often observed in challenges. It is estimated that foods provoke a third of the anaphylactic shocks

Nowadays, the incidence and prevalence of allergic diseases is on the increase in industrial countries, specially those food allergies which present a high mortality rate and are life threatening. This is related to the deterioration of life-quality and to an increase in social and sanitary costs, and also to work and school absenteeism.

The usual diagnostic instruments are satisfactory only for class 1 food allergy in which the sensitization process occurs in the gastrointestinal tract. This kind of food allergy is rare in adults and one of the first manifestations in children. Class 2 food allergy is mainly seen in adults and develops as a consequence of an allergic sensitization to inhalant allergens, the majority of these proteins are difficult to extract and highly labile. Therefore, diagnostic setups using natural extracts for in vivo and in vitro assays are in many cases unsatisfactory[2]. The lack of reliable extracts makes us carry out challenges with the consequent waste of time and the possible risk for the patient undergoing the test. The challenge procedure is difficult to carry out since the food should be fresh and be taken immediately in the case of SAO. Nowadays the challenge procedures are not standardised and that is why it isn't possible to compare the results between different centres and different populations. There are no direct comparative studies in scientific protocols available in the literature that directly compares the various parameters: timing between two subsequent challenges or increment of the dose for the challenge. Moreover, these tests cannot be performed on all the individuals, there are certain types of patients who require standardized programmes and those tests must be adjusted according to the nature and severity of the reaction: atopic eczema dermatitis syndrome, patients with controversial symptoms often of subjective nature such as chronic fatigue syndrome, chronic urticaria, patients with isolated late reactions in the digestive system. On certain occasions it is not advisable to perform the test: patients with a clear case history of anaphylaxis, in patients with acute infection, seasonal allergy, chronic atopic disease, pregnant women and patients taking medication (antihistamines, neuroleptics, oral steroids, aspirins and other NSAIDs, ACE-inhibitors, beta-blockers). The challenge procedure requires trained personnel and adequate equipment, this method is expensive and dangerous[3].

The present study investigates the prevalence of food allergy in children and adults referred to our Allergy unit and it evaluates the use of a new questionnaire and in vivo and in vitro tests for food allergy diagnosis: prick by prick tests and specific IgE determinations.

METHODS

Study design

We selected our study from 674 successive patients referred to the Allergy Service of our hospital from May 2002 till October 2004. There were 168 children aged 0-14 years and 506 adults aged > 15 years. The place subjected to the study was Coria and its smaller municipalities which include about 50,000 inhabitants; these belong to Cáceres a region in the southeast of Spain.

The prevalence of symptoms was determined by a questionnaire, in vivo and in vitro tests. In a second phase the patients with probability of food allergy underwent double-blind placebo controlled food challenge (DBPCFC).

Adverse food reaction questionnaire

The questionnaire included questions about reactions to food, pulmonary symptoms, allergic illnesses and atopic family history. Other relevant information was gathered such as age, occupation, diagnosis by a physician, and other allergic illnesses. Participants were asked whether they had ever suffered from any trouble due to food ingestion and whether this response occurred always after eating the same food, what type of food was it, type and severity of reaction and treatment. Only those who responded positively to the questions were considered to have suffered an adverse food reaction.

Skin prick tests (SPT)

SPT was performed on the flexor surface of the forearm with a standard range of extracts of food: milk, egg white, egg yolk, blue and white fish, crustaceans, molluscs, tree nuts, legumes, fruits and vegetables (Leti, Spain) and inhalant allergens (Alk-Abelló, Spain); the allergen panel consisted of *Dermatophagoides pteronyssinus*, rye grass, ragweed, birch and olive tree, *Alternaria*, cat and dog, positive (histamine) and negative controls. Wheals were measured after 15 minutes. A positive SPT result was defined as a wheal of 3 mm in diameter. SPT was performed by the prick-prick technique using offending fresh unprocessed food (s) mentioned in the history[4] (PPT).

IgE-specific antibodies

Blood samples were drawn in case of probable food allergy by questionnaire and/or SPT positive.