

Diagnosis of food allergy in Finland: Survey of pediatric practices

Kaila M, Vanto T, Valovirta E, Koivikko A, Juntunen-Backman K.
Diagnosis of food allergy in Finland: Survey of pediatric practices.
Tempediatr Allergy Immunol 2000; 11: 246–249. © Munksgaard, 2000

Food-related symptoms are common in the first years of life, and food allergy should be diagnosed using an elimination challenge test. We surveyed Finnish hospital-based pediatricians using a self-completion questionnaire to ascertain the current clinical practice: 24 of the 25 pediatricians (representing 24 of 25 hospitals) so approached gave evaluable responses. Food allergies were diagnosed using a clinical elimination challenge test in patients with suspected allergy to cow's milk or cereals (wheat, rye, barley, oats). Of the 24 departments, four reported that they performed challenge in all patients before diagnosis was confirmed, and 14 performed challenge in most patients before diagnosis was confirmed. The duration of the challenge varied from 0.5 to 7 days (median 4 days). A 1-week challenge was used in eight hospitals. The double-blind placebo-controlled challenge was used in seven of the hospitals, and in none routinely. Altogether, 16 of the respondents agreed that there is a need to establish clinical guidelines for the diagnosis of food allergy. In conclusion, despite a long tradition of medical education on the subject of food allergy, practices vary for its diagnosis. There is therefore a requirement for appropriate clinical guidelines.

**M. Kaila¹, T. Vanto²,
E. Valovirta³, A. Koivikko²
and K. Juntunen-Backman⁴**

¹Department of Pediatrics, Tampere University Hospital, Tampere, Finland, ²Department of Pediatrics, Turku University Hospital, Turku, Finland, ³Turku Allergy Center, Turku, Finland, ⁴Skin and Allergy Hospital, Department of Allergology, Helsinki University Central Hospital, Helsinki, Finland

Key words: cow's milk allergy; diagnosis; food allergy; atopy; survey

M. Kaila, MD, Medical School, University of Tampere, PO Box 607, 33101 Tampere, Finland
Tel.: +358 3247 6016
Fax: +358 3247 5655
E-mail: minna.kaila@uta.fimnet.fi

Accepted 15 June 2000

Food allergy or suspicion thereof is a common problem in pediatrics, where it is estimated that up to 30% of children are suspected of having food-related allergic symptoms (1). Only in the case of cow's milk allergy is the epidemiology relatively well defined, where it is known that $\approx 3\%$ of patients are diagnosed with the condition within the first few years of life (2,3). The difficulties in defining epidemiology stem from problems in diagnosing food allergy. Varying diagnostic protocols have been published (4–6). Even the double-blind placebo-controlled food challenge that is considered the gold standard is actually not standardized.

In Finland, two recent publications outline a set of guidelines for the diagnostic procedure (7,8), endorsed also by the Finnish Paediatric Association. For several years, pediatricians who care for children with allergies and asthma have had annual meetings, with topics such as diagnosis and treatment of food allergy. With this in mind, we wanted to ascertain whether the diagnosis of food allergy by Finnish pediatricians is uniform throughout the country. For this purpose, we

mailed a self-completion questionnaire to hospital-based pediatricians.

Materials and methods

Pediatricians with a special interest in allergies (and asthma) were identified using lists of members of the Finnish Paediatric Association and a list from the Finnish National Asthma Programme. Altogether 25 pediatricians (representing 25 hospital-based Pediatric Departments) were sent a self-completion questionnaire and, after a second mailing, 24 replies were received and are included in this study. The study population was selected to evaluate the practices of those responsible for the clinical practice in their hospital district and who, because of this responsibility, lecture others.

The questionnaire was developed specially for the present study by the authors (all board-certified pediatric allergists). The questionnaire comprised 39 questions, including background information on the clinic itself and specific questions on the number of food challenges

performed (in 1 year), the duration of the challenges, use of skin-prick testing and measurement of specific immunoglobulin E (IgE), and use of patch testing. The respondents were also asked whether the testing was carried out by a dermatologist or a pediatrician, as it was suspected that this may vary. We were primarily interested in cow's milk and cereal challenges, and specific questions regarding challenges to these foods were included, whereas only a general question on other food challenges was included. We also included a question on the occurrence of anaphylactic reactions. Finally, the respondents were asked to rate their agreement or disagreement with some statements: how well known the diagnostic practice was in their hospital; how good co-operation was with primary care in taking care of these patients; and whether they thought it advisable that a guideline be put out on the actual practice of challenges. Responses were given according to the following scale: agree completely, agree partly, difficult to say, disagree partly, disagree completely.

The Finnish Health Care system has been recently reviewed (9). Basically, there exists a communal system that provides for primary level care, and a hospital system providing for specialized, secondary-level health care, for example Pediatric and Dermatologic Clinics. In addition, the country is divided into five University Hospital districts, each providing secondary care locally, and tertiary care for a population of $\approx 1\,000\,000$, altogether covering the entire population. The country is divided into 450 cities, towns, and townships, and most have independent communal health care centers. Side-by-side there exists an extensive private sector.

Results

Altogether 25 questionnaires were mailed, and 24 answers with usable data were received. The 24 Pediatric Departments covered 93.2% of the child population in Finland (956 592 children under the age of 16 in 1997). The number of pediatricians in each clinic varied between two and 36 (median six) operating in out-patient clinics, and there were 0–6 wards (median 2) in each clinic, with altogether 0–180 beds (median 25).

All Pediatric Departments provided data on the number of new referrals, which totalled ≈ 3500 per month. Of these referrals, 40% were made because of asthma or other allergic symptoms and 9% because of symptoms suggestive of food allergy.

Skin-prick testing and measurement of serum-specific IgE (radioallergosorbent test; RAST) were performed by all departments. Skin testing

was carried out at 11 Pediatric clinics only, at 10 Dermatologic clinics only, and in both in two cases. In addition, 18 clinics used skin patch testing (6) for basic foods, either routinely or as required. The patch testing was performed by Dermatology clinics in 16 hospitals.

Food allergies were diagnosed using a clinical elimination challenge test in patients with suspected allergy to cow's milk or cereals (wheat, rye, barley, oats). Of the 24 departments, four performed the challenge testing before diagnosis was confirmed in all patients, 14 departments carried out challenge on most patients, and four departments usually carried out challenge. Any other foods, including egg and fish, were formally challenged only rarely. The challenge procedure was performed when the child on elimination clearly improved, and was otherwise healthy. The challenge was started in hospital, in 15 departments in the out-patient unit, and was continued by the parents at home when no symptoms recurred during the first hours of the challenge, i.e. while still in hospital. A formal symptom diary was used by 16 departments during the prolonged challenge at home, while in the remainder an informal note was added to the patient's files. The duration of the challenge varied significantly, from 0.5 to 7 days, with a median of 4 days. A 1-week challenge was used in eight hospitals. The double-blind placebo-controlled food challenge was used in only seven of the hospitals, and in these not routinely.

Altogether 2848 food challenges were reported to have been performed, of which 994 were positive (34.9%). Of these challenges, 2047 were cow's milk challenges. We also inquired about serious reactions: 36 were reported, nine of which were anaphylactic. The remainder of the challenges were cereal challenges, mostly with wheat. There were no serious or anaphylactic reactions during the cereal challenges.

The respondents evaluated the current practices in their individual hospitals as follows. Most ($n=20$) considered that the diagnostic procedure was well known at their hospital, and 16 thought that the co-operation between the primary health care and the specialist clinic was good, though only four rated the co-operation as excellent. Interestingly, 16 of 24 (67%) respondents agreed completely that a guideline for the whole country was needed, and an additional four of 24 agreed in part.

Discussion

The present study reports the first assessment ever of the diagnostic practices of food allergy in

Finland in the pediatric age-group. Despite several literature searches, no such reports from any other country could be identified.

Some methodological comments are necessary. The self-completion questionnaire was read and evaluated beforehand by all authors, but not validated or piloted. As the idea to study this matter originated in the Section of Allergy and Immunology of the Finnish Paediatric Association, the Dermatology clinics were not included in the survey. According to several responses, dermatologists do, however, take care of a sizeable proportion of the patients. The specific figures are not available in this study. We wanted to include Pediatric Units with a favorable attitude towards allergic diseases, and therefore recruited the study population from amongst those who had nominated an asthma-responsible pediatrician, as suggested in the National Asthma Programme (10). The selected departments do, however, provide secondary health care for the majority of the child population in the country. Neither private practices nor pediatricians working in primary care were included in this survey, which had as its primary objective the evaluation of practices of the pediatricians responsible for diagnostic practices in their respective districts.

According to the present survey, severe or anaphylactic reactions are rare, suggesting that, as diagnostic procedures, the cow's milk challenge and especially the cereal challenge, are relatively safe. As not all suspected foods can be challenged in a hospital setting, the everyday practice of instructing parents to try out foods at home after a period of elimination seems justified. Guidelines need to be established for selection of patients suitable for home challenge. However, the fact that anaphylactic reactions were reported underlines the importance of appropriate emergency skills and equipment when commencing a food challenge in the clinic setting. The present survey does not provide information on the epidemiology of anaphylaxis, but after a register has been set up, such data may be available in the near future.

The double-blind method of challenge, which has been shown to be more reliable for parents as well as pediatricians (11) is not commonly used. This is understandable, as the double-blind method takes twice as long to perform and is not standardized. Some hospitals use the more cumbersome double-blind method, but only in specially selected patients. The present results indicate that an open challenge is adequate for clinical practice, as the proportion of positive challenges is even smaller than that observed in the previous study (11). The smaller proportion of

positive challenges reported in this study may be related to the retrospective nature of the questionnaire and to the fact that food challenges other than cow's milk challenges were included. The exact numbers reported may not be accurate, because the respondents in most cases gave approximations of the numbers of patients so treated. Again, the proportion of negative challenges substantiates the need to perform a challenge test and not to rely solely on history and laboratory testing when diagnosing allergy to nutritionally important foods.

In conclusion, the present study shows that food allergy to basic foods is diagnosed in a variable manner throughout the country. However, similarities also exist, and provide a basis on which more uniform methods can be developed. Standardization proposals have been previously published (12). As the quality of medical practices gains importance, well thought out (preferably evidence-based) guidelines become increasingly valued. There is a need to develop commonly agreed guidelines to standardize the diagnostic work-up of suspected allergy to basic foods, such as cow's milk and cereals. This need was echoed by the majority of the respondents.

References

1. EGGESBO M, HALVORSEN R, TAMBS K, BOTTEN G. Prevalence of parentally perceived adverse reactions to food in young children. *Pediatr Allergy Immunol* 1999; 10: 122–32.
2. SCHRANDER JJP, VAN DEN BOGHART JPH, FORGET PP, et al. Cow's milk protein intolerance in infants under 1 year of age: A prospective epidemiological study. *Eur J Pediatr* 1993; 152: 640–4.
3. HOST A, HALKEN S. A prospective study of cow milk allergy in Danish infants during the first 3 years of life. Clinical course in relation to clinical and immunological type of hypersensitivity reaction. *Allergy* 1990; 45: 587–96.
4. BOCK SA, SAMPSON HA, ATKINS FM, et al. Double-blind, placebo-controlled food challenge (DBPCFC) as an office procedure: A manual. *J Allergy Clin Immunol* 1988; 82: 986–97.
5. HILL DJ, CAMERON DJ, FRANCIS DE, GONZALEZ-ANDAYA AM, HOSKING CS. Challenge confirmation of late-onset reactions to extensively hydrolyzed formulas in infants with multiple food protein intolerance. *Clin Exp Allergy* 1995; 96: 386–94.
6. ISOLAURI E, TURJANMAA K. Combined skin prick and patch testing enhances identification of food allergy in infants with atopic dermatitis. *J Allergy Clin Immunol* 1996; 97: 9–15.
7. SAVILAHTI E, JUNTUNEN-BACKMAN K, PAGANUS A, ONNELA S. Lehmänmaitoallergian ja keliakian diagnostiikka ja hoito (*in Finnish; Diagnosis of cow milk allergy and celiac disease*). *Suom Lääkäril* 1995; 50: 3691–5.
8. ISOLAURI E, TURJANMAA K, KAILA M. Kun ruoka ei

- sovi (*in Finnish; When food is unpalatable*). Duodecim 1997; 113: 595–602.
9. KOIVUSALO M. Decentralisation and equity of healthcare provision in Finland. Br Med J 1999; 318: 1198–200.
 10. HAAHTELA T, LAITINEN LA. Asthma programme in Finland 1994–2004. Report of a Working Group. Clin Exp Allergy 1996; 26 (Suppl. 1): 1–24.
 11. KAILA M, ISOLAURI E. Diagnosis of cow milk allergy in infants: open or blinded? J Allergy Clin Immunol 1997; 100: 714–5.
 12. NIGGEMAN B, WAHN U, SAMPSON HA. Proposals for standardization of oral food challenge tests in infants and children. Pediatr Allergy Immunol 1994; 5: 11–3.