PIFA: Revisiting the UK EuroPrevall cohort

Area of research interest: Food hypersensitivity
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Background

Food allergy and other allergic diseases such as asthma, hay fever and eczema, affect about a third of children in the UK. At present, there is no cure for these conditions and so it is important to develop prevention strategies.

The EuroPrevall project was a large-scale EU FP6 funded multicentre study focusing on the prevalence and burden of food allergy across Europe. The UK EuroPrevall birth cohort was recruited as part of this project in 2005-7.

In parallel with birth cohorts in 8 other European countries, 1140 infants were followed until 2 years of age, with suspected food allergy being assessed by the gold standard double-blind, placebo-controlled food challenge (DBPCFC). Only the UK cohort provided detailed infant food diaries which have enabled researchers to answer questions about how the early diet, particularly dietary patterns, impacts on the development of allergic diseases. However, manifestations of food allergy and other related allergic diseases radically change throughout childhood necessitating further assessment of this cohort.

Through revisiting the UK EuroPrevall cohort at 8-9 years researchers will be able to build upon the information which was gathered previously.

This follow up project will allow us to gain an understanding into how older children are affected by food allergy and to investigate whether there is a link between early life nutrition and the development of allergic diseases (including asthma and eczema) in later life. The results of the follow up study may enable us to develop strategies to prevent the development of allergies and asthma in the future.

Research Approach

This current follow up project is set within the EU FP7 iFAAM project (Integrated Approaches to Food Allergen & Allergy Risk Management). iFAAM aims to reassess the whole European birth cohort (n~12000) at 8-9 years of age focusing on food allergy (defined by DBPCFC) and asthma. These data will be used to describe the natural history and risk factors for food allergy and asthma, gain an understanding of how older children are affected by food allergy, and to assess the impact of early diet on the development of allergic disease in school aged children.

The research approach involved sending an introductory letter to all participants by post providing an update about the related PIFA study and information on the iFAAM project explaining how they could participate in the follow-up study by completing the online questionnaire on food allergy and

asthma. Parents of participants were also contacted by phone where possible and invited to participate in the study.

A face-to-face assessment was then undertaken. This allowed the assessment of weight, height, blood pressure and eczema status. Skin prick testing and a blood test were undertaken where participants gave consent to assess allergy status.

Participants with possible food allergy/allergies identified during the face-to-face visit were then invited for a Double Blind Placebo Control Food Challenge (DBPCFC). The protocol for this was broadly similar to that of EuroPrevall where it consisted of an active and a placebo day which were in a random order. Challenge data were then recorded directly into the online database.

This approach allowed the researchers to determine the current prevalence of food allergies and asthma, whether the children presenting with food allergies previously still currently had allergies or if they have grown out of them, and what the risk factors could potentially be for developing some allergic diseases.

Results

39.8% (454) of the 1140 parents recruited in the PIFA study from Southampton, UK completed the online questionnaire.

For parent-reported symptoms results showed that:

20.7% (94) of parents reported allergic symptoms in their children. The reported rate of food allergy to different foods varied, cow's milk had an incidence rate of 14.3% (65), hens egg 4.2% (19), wheat 3.3% (15), peanut 2.2% (10), tomato 1.8% (8), soy 1.3% (6), hazelnut 0.9% (4), crustaceans 0.7% (3), nuts (except hazelnut) 0.7% (3), strawberry 0.7 (3), white fish 0.4% (2), kiwi 0.4% (2), apple 0.2% (1), citrus fruits 0.2% (1) and lastly oily fish 0.2% (1).

For doctors-diagnosed food allergy:

8.8% (40) of parents reported allergic symptoms in their children. Cow's milk had a rate of 5.3% (24), hens egg 3.3% (15), peanut 1.8% (8), wheat 1.1% (5), soy 0.9% (4), hazelnut 0.7% (3), nuts (except hazelnut) 0.7% (3), crustaceans 0.4% (2), tomato 0.2% (1), strawberry 0.2 (1), white fish 0.6% (European cohort), oily fish 0.2% (European cohort), kiwi 0.2% (European cohort), apple 0.1% (European cohort), citrus fruits 0.1% (European cohort).

The key results across the whole European cohort were:

From the original ~12000 study participants recruited across nine countries across Europe in 2005–2009 for Europrevall a total of 6105 children participated in this school-age follow-up across Europe. 6069 completed questionnaires, 2322 completed interviews and 2188 completed core skin prick tests. For 982 of 6069 children (16.2%), parents reported adverse reactions after food consumption in the online questionnaire. Of 2288 children with parental face-to-face interviews and/or skin prick testing, 238 (10.4%) were eligible for a DBPCFC. Sixty-three foods were challenge-tested in 46 children across Europe. Twenty food challenges were positive in 17 children, including seven to hazelnut and three to peanut. Another seventy-one children were estimated to suffer FA among those who were eligible but refused DBPCFC. From this data is estimated that food allergy prevalence across Europe would be between 1.4% and 3.8%.

Overall in primary school children in eight European countries, the prevalence of FA was lower than expected even though parents of this cohort have become especially aware of allergic reactions to food. There was moderate variation between centres hampering valid regional comparisons.

Published Papers

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