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FOOD ALLERGY REACTIONS IN GENEVA IN 2021 (ALLERGIES AND FOOD GE21)

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Key words

Food allergy, eliciting dose, foodstuff, prepacked food, allergen labelling

Aim of the study

5 to 8% of the population suffers from a food allergy, leading potentially to a severe reaction. Different factors of severity have been studied, but the relationship between consumed amount of allergen and reaction severity has never been investigated outside controlled medical environments and with real life cases. Therefore, there is uncertainty regarding consumption of very small amounts of allergen (traces). The principal aim of this study was to have a global vision of cases requiring a medical consultation, to analyze qualitatively and quantitatively the allergen content in foods, and to study the circumstances leading to a food allergy reaction. A secondary aim was to assess whether the food legislation applicable today is sufficient to protect consumers from adverse allergic reactions.

Material and methods

Patients were recruited from December 2020 to February 2022 at the emergency departments in the Geneva University Hospitals and local hospitals, trough the allergology outpatient consultation, at school and daycare facilities and trough their primary care physicians. Medical history, suspected food samples eliciting reactions and allergy diagnostic tests of patients presenting reactions suggestive with immediate food allergy were collected. The samples were analyzed for their allergen content and, if available, the compliance of the products (including packaging and labelling) with the Swiss food law was evaluated.

Results and significance

In total, 146 patients were recruited (41 adults and 105 children). Suspected allergens were mostly nuts, milk, fish, shellfish and egg. About one third of them (42) had a severe reaction requiring intramuscular adrenalin to prevent anaphylactic choc. The initial food allergy diagnosis was confirmed for 65 patients. The remaining 81 subjects either suffered from oral allergy syndrome (15), had negative allergic testing (19), or did not undergo any allergic testing (47). During the recruitment, 115 food samples were collected. Laboratory analyses permitted to identify and quantify the responsible allergen for a confirmed allergy in 42 food samples. In other words they represent a direct, documented link between a consumed foodstuff and an adverse allergic reaction. Two thirds of these 42 documented cases involved nuts and milk. For mild reactions, the lowest eliciting dose was 12.8 mg/kg hazelnut in milk chocolate. For severe reactions, the lowest eliciting doses were 6.8 g/kg wheat in a homemade dish and 11 g/kg hazelnuts in milk chocolate. Twenty-six patients suffered from a first-time reaction to the allergen, meaning they

were not aware of their allergy and consumed the food without suspicion and often in large amounts. For the remaining 16 cases, patients aware of their allergy consumed the allergen, either by accident or by ignoring the label (accidental reactions). All these reactions involved children and four experienced severe symptoms. Nuts and milk were responsible for 13 of them. Most accidental reactions occurred with pre-packaged foodstuffs and with labelling indicating the allergenic ingredient or at least with a warning such as "may contain traces of...". Two cases occurred with undeclared allergens (neither ingredients nor traces) above the legal 1.0 g/kg limit.

From this study of nearly 150 cases of food allergy reactions over 15 months in the canton of Geneva, several conclusions could be drown. Children were over-represented among the reported reactions. Fortunately, most accidental reactions were mild. Most patients reacted to significant amounts of foods and not traces. Mandatory labelling of the 14 major allergens should protect most allergic patients. Nevertheless, prepacked foodstuff with correct labelling were mostly responsible for accidental reactions. Milk and nuts were mostly involved. Allergic patients did not always take into account the trace allergen warning whereas the ingredient list was usually taken into account. Accidental reactions occurred in four cases with foods on which trace allergen labelling was present. Worse, two accidental reactions occurred with prepacked foodstuff containing undeclared allergens above the legal limit of 1.0 g/kg requiring its declaration on the ingredient list, and thus not compliant with current regulations. Compliance and enforcement of the Swiss food law is therefore critical for the safety of consumers suffering from food allergies. This study shows also that confusing labeling and packaging, difficult to read labels, and labels in German or Italian, although formally compliant with national regulations, are overrepresented in accidental reactions. The fact that most allergic reactions occurred in children highlights the need for a clear and visible indication of allergens. For instance, indication of allergens separated from the ingredient list or in the form of pictograms would simplify allergen identification. In its current way, trace allergen warning does not provide much useful information to allergic people and these messages are therefore often ignored. The use of a negative statement "does not contain..." with a maximum value around 10 mg/kg would be much more useful for allergic consumers. If used, trace allergen labelling should be more specific on prepacked and transformed food, i.e. present on food containing such traces and absent on food without this mention. A maximum limit for trace allergen labelling, related to the risk of triggering a severe reaction, should also be set.

Publications, posters and presentations

- A. Piletta-Zanin *et al.*, AAGE21: Réactions d'allergies alimentaires à Genève en 2021
Poster, Pediatric Research Day, Geneva University Hospitals, HUG
- A. Piletta-Zanin *et al.*, Correlating food allergic reactions with the consumed food (AAGE201 study), Poster, Swiss Pediatric Congress 2022.
- Scientific article(s) in progress.

Project 4.20.1

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