

FOOD SAFETY OF ALLERGIC PATIENTS IN HOSPITALS : IMPLEMENTATION OF A QUALITY STRATEGY TO ENSURE CORRECT MANAGEMENT

P. Sergeant ⁽¹⁾, G. Kanny ⁽¹⁾, M. Morisset ⁽¹⁾,
J.-C. Waguet ⁽²⁾, C. Bastien ⁽³⁾, D.-A. Moneret-Vautrin ⁽¹⁾

Summary

Food allergy could affect up to 8% of children. Four cases of food anaphylaxis in hospitalized children are reported, pointing to the need of food allergenic safety procedures in hospital settings. The implementation of the operating procedure in hospital food production units (HFPU) of Nancy University Hospital is described. The dietetics Department developed an hypo-allergenic diet and specific avoidance diets. Dietitians within HFPU managed the choice of starting materials, the circuit organization in order to avoid any risk of contamination during preparation and cooking of food, product traceability, and trained the staff of HFPU. Within the care units physicians, dietitians, nurses, hospital workers are involved in meal management. A diet monitoring sheet is integrated into the patient's nursing file and enables the dietitian to validate the diet in the computer, the nurses to display the patient's diet on the schedule on the wall in their office. The hospital workers finally use a tray form indicating the patient's identity, his / her diet and the menu of the day. Such a procedure absolutely secures the whole circuit and specifies the responsibilities of each person, whilst ensuring effective cooperation between all partners. Since 1999, the implementation of this multi-step strategy has prevented from any further reaction in a department specialized for food allergies in children and in adults. As setting up food allergenic safety in hospitals is not addressed adequately in the European directives, it's judicious to draw attention of hospital catering managers and hospital canteen staff to this necessity.

Key-words : Food allergy - Food safety - hospital food production units - Specific diets - Dietetics Department.

INTRODUCTION

Food allergy affects 3.24% of the French population (1) but could affect up to 8% of children (2). An ever increasing number of allergic children frequent hospital departments. It appears necessary therefore, to be able to offer allergen-free meals in hospitals. In schools, the risk of emergency allergic situations has been addressed through a project to implement Personalized Management Protocols and care and emergency protocols (3). Circular No. 99-181 dated November 10, 1999 allows families to send food baskets to the canteen when safety cannot be guaranteed for the allergic child. The need to take into account the risk of food allergy in hospitals has not yet been given careful consideration by hospital

canteen managers and health workers. We report here four case reports that demonstrate the need for this type of consideration, and explain how we organized the hospital Food Production Unit (HFPU) and the clinical department receiving meals at Nancy University Hospital in order to guarantee the safety of allergic patients (infants, children and adults) hospitalized for food allergy.

CASE REPORTS

■ **Case report 1 :** a forty-five year old man was hospitalized in 1999 for investigation into recurring angioedema including one severe incident of laryngeal angioedema. Results of allergy testing evidenced no atopy or sensitization to food proteins. The meals ingested before onset of edema suggested intolerance to metabisulfites (MBS). A DBPCFC to metabisulfites (30 mg) was positive and resulted in laryngeal angioedema within two hours of ingestion. A second episode

(1) Department of Internal Medicine, Clinical Immunology and Allergology. - University Hospital - 29, avenue de Lattre de Tassigny - 54035 Nancy Cedex (France).

(2) Saint Vincent de Paul Hospital - 75014 Paris (France).

(3) Dietician, health services quality manager in charge of catering and dietetics - University Hospital - 29, avenue de Lattre de Tassigny - 54035 Nancy Cedex (France).

occurred 36 hours later at 2 a.m. The hypoallergenic meal eaten the evening before consisted in leeks in salad dressing, turkey escalope, fried rice, cream cheese and stewed apple. The investigation carried out in the catering department revealed that the vinegar used in the salad dressing contained sulfites. The usual supplier of vinegar had run out of stock so another vinegar containing sulfites had been delivered and used. The reason for the allergic episode during the night was related to sulfite intolerance.

■ **Case report 2 :** a two-year old boy was hospitalized in 1999 for allergy testing to peanuts. Within minutes of ingesting mashed marrows, the child presented with a facial angioedema, cough and lip cyanosis. The mashed marrow had a particular taste and it was discovered that because its consistency had been considered too soft, a teaspoon of green peas had been added to thicken it. Allergy testing had established peanut-green-pea cross sensitivity.

■ **Case reports 3 and 4 :** two children were hospitalized in a Pediatrics department (Paris) in 2002, one for meningeal syndrome and one for asthma. They presented with anaphylactic shock after ingestion of a chocolate powder given for breakfast. The Reading Analysis of the chocolate powder label indicated the presence of lupin flour. Both children were allergic to peanuts and a cross sensitization peanut-lupin flour was demonstrated by prick-tests.

The vigilance of these four patients cannot be questioned since masked allergens were involved (4, 5, 6, 7).

These case reports draw attention to the fact that food safety by way of specialized, individual diets must be guaranteed for patients with known food allergy. Moreover, they demonstrate the critical steps to be taken into account when implementing any operating procedure in hospital food production units (HFPU). The result was close cooperation between allergists, the dietetics department and the centralized municipal canteen dispatching meals to Nancy University Hospital. A several-layered strategy was implemented.

IMPLEMENTATION OF SPECIFIC DIETS

The Dietetics Department, on the advice of the hospital dietician and the Quality Manager of the Catering/Dietetics Department responsible for the practical aspects involved in dealing with a centralized municipal canteen, developed specific diets.

■ **Hypoallergenic diet :** a basic hypoallergenic diet was drawn up, to prevent ingestion of the principal food allergens, whether masked or not, and any risk of false food allergy related to foods rich in histamine, tyramine and other mediators of histamine release (8).

This diet (table 1) is prescribed for children and adults hospitalized for diagnostic tests lasting a few days. This diet, known as the "hypoallergenic diet" is suitable for adults and a milled version suitable for children aged between six months to two years is also available.

■ **Avoidance diets :** these concern patients with a known food allergy. They are based on the hypoallergenic diet and are adapted to the patient's specific allergy. Their basis is the same as the hypoallergenic diet with regard to compliance of canteen operating procedures: methods of preparation, cooking and packaging to avoid contamination in the food chain. Moreover, the diets avoid the principal allergens for children: milk, egg, peanut and wheat flour (7).

MANAGEMENT OF HYPOALLERGENIC DIETS WITHIN THE FOOD PRODUCTION UNIT (cold chain in individual trays)

Management was clearly facilitated by the presence of dieticians within the food production unit. They have all the information required to implement these types of preparations, and they are aware of the risks involved if avoidance is not complied with. The management of hypoallergenic diets is based on several principles : Choice of starting materials, Circuit organization, Product traceability (from reception of raw materials to finished products), Staff training

CHOICE OF STARTING MATERIALS

The choice of starting materials is essential when preparing hypoallergenic diets since they require many specific constraints :

> **Raw food :** natural raw and frozen vegetables, fresh or frozen meat (100% meat, not pre-cooked meat, since fat, preservatives and spices may be found in pre-cooked meat).

> **Choice of specific products :** products used for all preparations (hypoallergenic or not): sulfite-free vinegar, rape oil (no peanut oil to prevent any errors), small pots of single fruits containing no carob flour, small pots of vegetables with no peas or celery.

Products used only for hypoallergenic diets: cocoa powder (no added flavoring, fats or lupin flour).

➤ **Use of special dietetic products :** crackers guaranteed to contain no wheat, no milk, no eggs, no peanut (to replace bread in wheat avoidance diets).

CIRCUIT ORGANIZATION

Management of these hypoallergenic diets requires a certain number of constraints :

- the presence of a specialized dietetics unit preparing specific diets within the food production unit ;
- strict management of food production to avoid any risk of contamination during preparation and cooking of food. For example, simultaneous cooking of fish and meat in the same oven, decontamination of work surfaces after each preparation ;
- Use of plastic equipment instead of stainless steel to avoid nickel contamination.

PRODUCT TRACEABILITY

Each step from the raw product to the finished product can be traced :

- reception of starting materials: control of compliance with specifications ;
- delivery of starting materials to the production unit ;
- Production : compliance with technical sheet (recipe), validation of tasting, clear labeling, validation of labeling, validation of steps documented in the HACCP (The Hazard Analysis and Critical Control Point) method as per the directives in the decree dated 29/09/1997 ;
- Storage of finished products in a well-defined area.

Distribution of meals to care units :

- double checking at distribution,
- if out of stock, validation of any replacement meals by the dietician at the HFPU.

STAFF TRAINING

Special training was given to staff preparing these diets. Training included information on food allergy and the serious effects on patients if specifications were not strictly complied with.

CIRCUIT ORGANIZATION WITHIN THE CARE UNITS

Many people are involved in meal management : physicians, dieticians, nurses, nursing orderlies, hospital workers. It appeared necessary to organize joint struc-

tures for all the staff involved to enable complete traceability of the patient's diet, from the medical prescription to delivery at the patient's bedside.

DIET MONITORING SHEET

A document commonly referred to as the "diet monitoring sheet" was integrated into the patient's nursing file (table 2). From the initial prescription made up by the allergist, this sheet becomes the joint document for all the staff involved in meal management. Any modifications to the diet during hospitalization can be recorded. The diet monitoring sheet enables :

- the dietician to validate the diet in the computer ;
- the nurses to display the patient's diet on the schedule on the wall in their office and to update it if any orders are given orally during the day or if the diet is modified ;
- the nursing orderlies to order the patient's meals by entering data in a portable computer terminal ;
- the hospital workers to reconstitute and warm up the patient's meal using the "tray form" that indicates the patient's identity, his/her diet and the menu of the day.

Once implemented, this system :

- secured the various circuits involved in the ordering and circulation of meal trays within the care unit ;
- harmonized the information required by all the staff involved and specified the responsibilities of each person, whilst ensuring effective cooperation between all partners.

This diet monitoring form ensured dietary monitoring throughout hospitalisation. It was filed in the nursing file when the patient was discharged and remained a reliable traceability document concerning diets within the department.

CONCLUSION

The multi-step strategy was implemented in 1999, following the observation of cases 1 and 2 that occurred in a department with infants children and adults referred for food allergies. Since then, no further reactions were observed.

These case reports illustrate the responsibility incumbent upon hospitals when dealing with patients' pathologies. The prevalence of food allergy is on the increase, and is becoming a common problem amongst children. Since up to 10 % of hospitalised children could present with food allergies, it is therefore judicious to draw the attention of hospital catering managers and all hospital canteen staff to the necessity of setting up

food safety procedures concerning risk of food allergy in all health institutions, an issue that is not addressed adequately in the European directives.

BIBLIOGRAPHY

1. Kanny G., Moneret-Vautrin D.-A., Flabbee J, Beaudoin E., Morisset M., Thévenin F. - A population study of food allergy in France. *J Allergy Clin Immunol* 2001;108:133-140.
2. Moneret-Vautrin D.-A., Kanny G., Parisot L. - Première enquête sur le réseau d'allergovigilance en allergie alimentaire. *Allergie et Immunologie* 2002;34:194-198.
3. Moneret-Vautrin D.-A., Kanny G. *et al.* - Food anaphylaxis in schools: Evaluation of the management Plan and the emergency kit. *J Allergy Clin Immunol* 2001;107:S270.

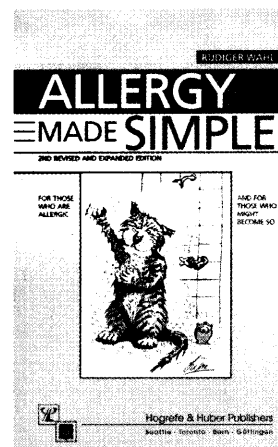
4. Hefle, S.-L. - Hidden food allergens. *Curr Opin Allergy Clin Immunol* 2001;1:269-71.
5. Moneret-Vautrin D.-A. - Ingrédients protéiques et OGM, risque allergique et sécurité alimentaire. In : *Sécurité alimentaire du consommateur*. M Mole, Ed TEC et DOC, Paris 2002;405-419.
6. Taylor S.-L. , Hefle S.-L. - Ingredient and labeling issues associated with allergenic foods. *Allergy* 2001;56 Suppl 67:64-69.
7. Boenkca A. - *Contribution on European Research to risk analysis food*, Addit Contam 2001;18:1135-1140.
8. Moneret-Vautrin D.-A. - Biogenic amines : In : Somogyi JC, Müller HR, Ockhuisen T, eds Food allergy and food intolerance. Basel : *Bibl. Nutr. Dieta* 1991;61-71.
9. Moneret-Vautrin D.-A. , Kanny G., Sergeant P. - La diététique thérapeutique des allergies alimentaires. *Rev fr Allergol Immunol Clin* 1999;39:325-338.



- Why do more and more people suffer from allergies ?
- What are allergies anyway ?
- What kind of allergies exist, and what can you do if you suffer from them ?

These are central questions that are answered in this little book in a very straightforward and down-to-earth way. The witty and informative text (which is even accompanied by some interludes in song) is illustrated with entertaining cartoons emphasizing the points in the text that are of most importance to patients with allergic disorders and to the physicians who deal with them.

With Forewords by
Prof. Allen P. Kaplan, MD,
Prof. A. L. de Weck, MD,
 and **Prof. K. Ch. Bergman, MD**



"Charming anecdotal stories, cartoons, and original songs are the tools employed in *Allergy Made Simple* to introduce this topic to those seeking basic understanding of this malady and its therapies... it fulfills its ambition in a very readable, frequently humorous and always entertaining fashion.

"Tales about the experiences of Richard II after eating strawberries, a pilot's encounter with a bee in his cockpit, or a young woman's reaction to wearing skintight jeans are examples of the author's ability to present information with which the reader can readily identify, easily comprehend, and probably never forget.

"Highly recommended".

From a review of the previous edition by Myron J. Zitt, MD, Chief of Allergy and Immunology at Queens Long Island Medical Group, Noth Babylon, NY, writing in the Annals of Allergy, Asthma & Immunology (Vol. 81).

"*Allergy Made Simple* is a unique book which summarizes the most up-to-date information regarding the causes of "allergy" and its prevention and treatment, employing a practical, readable, and thoroughly enjoyable approach. It is written primarily for patients who suffer from allergic diseases.

However, anyone with an interest in allergic diseases will find material in it that is of interest and informative.

"Dr. Wahl's contribution is an important addition to the available literature for patients with allergy, and I can recommend it wholeheartedly".

From the Foreword by Professor Allen P. Kaplan, MD, Medical University of South Carolina, Charleston, SC, and President of the World Allergy Organization.