

Anaphylaxis from peanut oil in infant feedings and medications

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Abstract. – Peanut is a very dangerous allergen. Too often one is unaware that peanut allergens can be found everywhere, hidden in a myriad of foods, and without any indication of their presence. It is stressed that not even infant feedings and medications can be exempt, thus leading to anaphylaxis.

Key Words:

Peanut, Peanut oil, Infant feedings, Medications, Anaphylaxis, Prevention.

Introduction

Anaphylaxis is a term coined by Portier and Richet to indicate the lessened resistance to a toxin resulting from a previous inoculation of the same material¹. Anaphylaxis triggered by peanuts is a dangerous kind of food allergy, since several fatal cases have been reported, and spontaneous recovery is uncommon, because lethal anaphylaxis was triggered by servings which contained the food without the patients' knowledge². The residual allergenicity of peanut oil has been considered negligible, nor trace amounts of peanut oil were detected in virgin oil, therefore peanut oil has been considered to be devoid of allergenicity³. An oral challenge with oil in ten peanut-allergic adult patients revealed no reactivity: however Taylor et al bought the oil at a local supermarket, placed 1 ml of it in gelatin capsules, which were frozen, and were ingested as such by the patients at 30-min intervals⁴. This procedure insures the masking of the distinctive flavours associated with the small amounts of food, however the argument can be made that we cannot ascertain the precise symptoms elicited at different levels of

the gastrointestinal tract after the absorption of the capsule, especially in infants and little children⁵. Our method of putting the food directly upon the inner border of the lower lip insures an objective picture which needs no further confirmation. Only 10 subjects have been studied³, however Sampson commented that to be 95% certain that 95% of peanut allergic patients will not react to peanut oil, 58 individuals would have to be challenged to peanut oil with no reactions⁶.

Moneret-Vautrin⁷ has published the cases of four little infants aged 4-13 months sensitive to peanut. The babies were affected by atopic dermatitis (AD), and had spreading skin lesions which motivated the search for food allergy. Skin prick tests (SPTs) and RAST to peanut were strongly positive. All were fed from birth with the same milk formula, and the authors were able to show that it included peanut oil. One baby was breast-fed for 5 days, however the parents did not eat any peanut product, therefore a breast-milk-induced sensitization seems unlikely, also in view of the rarity of the condition³.

The diagnosis was confirmed by Moneret-Vautrin et al⁷ with an open provocation test. We administer the challenge test under medical surveillance in a gradual fashion: a drop of cow's milk (CM) or of a formula is put upon the inner border of the lower lip, and a further 5 ml of CM are given after 5 minutes; 100 ml of CM are given after 30 minutes. The reactions are defined as immediate if the first symptoms occur within two hours of ingesting the food antigen, and delayed if the first symptoms occur after two hours. If any clinical symptoms secondary to the challenge test are observed, the challenge test in the hospital is stopped. After the last administration of the tested food the children are watched for at

Table I. Prevention of lethal food-induced anaphylaxis in children.

- Children and parents must be informed of the potentially lethal food-induced anaphylaxis
- Emergency kits containing epinephrine in spring-loaded self injectable syringes must be provided
- Parents and children > 7 year-old must be trained to use such kits
- Parents and older children must be taught how to read and interpret lists of ingredients on packaged foods (careful attention to biochemical terms or technical jargon)

Adapted from 12.

least 4 hours and then discharged. In the four babies⁷ a drop of the formula as above detailed was put upon the inner border of the lower lip, and a further one ml was given after 5 minutes. After the ingestion of a few drops, a rash spread to the abdomen in the first, and the AD worsened in the second infant.

The vegetable lipid content of the milk formula was 10%, 80% of which was peanut oil. A rapid analysis shows that the average intake was about g 7/die. The authors studied the nature of vegetable lipids in 45 milk formulas and learned that 11 (24.5%) contained peanut oil⁷.

A local inquiry points to the presence of peanut oil in CM formulas for feeding healthy neonates and infants (modified, adapted, partially adapted, follow-up, for low birthweight infants formulas). Usually vegetable fat is substituted for cow butter, among which there is masked peanut oil. It is therefore advisable that the manufacturers specify whether the formulas commercialized by them contain peanut oil. In some brands of homogenized preparations with meat and meat and vegetables there

Table II. Prevention of lethal food-induced anaphylaxis in children.

- Accurate identification of the offending food(s)
- Education of the child, parents, day-care providers, school personnel, and restaurant personnel about lethal food-induced anaphylaxis
- Education of pediatricians, GP and nurses on the unsafe partly hydrolysate formulas in children with CMA
- Education of pediatricians, GP and nurses on crossreactivity

Adapted from 12.

Table III. Prevention of lethal food-induced anaphylaxis in children.

- Provide emergency kits containing epinephrine in spring-loaded self injectable syringes to:
- The parents
 - The child > 7 years of age
 - The dairy-care and school personnel

Adapted from 12.

are variable proportion of peanut oil. It is possible that the ignorance of this masked allergen could explain the failure of some even well conducted elimination diets. Recently⁸ peanut oil sensitization from medications has been evaluated in 112 infants aged 7-60 months (mean 37,3 ± 14,4). Forty children (group A) received vitamin D free from peanut oil, and 72 vitamin D preparations containing peanut oil, 28 daily (group B) and 44 monthly doses (group C). SPTs were positive in 5% (group A), 32,1% (group B) and 25% (group C) of children, respectively (p B versus A = 0.0026, C versus A = 0.008, author's analysis).

A new challenge has been found in 17 skin products containing peanut oil, many of which are prescribed or recommended for AD, dry skin, cradle cap, and nappy rash, and are commonly used for infants or by their mothers⁹. Certainly peanut can occasionally trigger contact urticaria, that can be associated with IgE-mediated allergy¹⁰.

As a consequence the severe life-threatening and lethal reactions to peanut (Table I-II)^{11,12} paralleled by similar reactions to hydrolyzed infant formulas (Table III)¹³, and the geometric progression of food allergy prevalence¹⁴ make the exclusion of peanut oil from adapted milk formulas and infant feedings highly recommended¹⁵.

Preventive measures are effective (Table IV)¹², especially if manufacturers of processed foods provide unambiguous ingredient list-

Table IV. Epidemiology of lethal food-induced anaphylaxis in children.

- No reliable data on:
- Incidence
 - Prevalence
 - Mortality

Adapted from 12.

Table V. Risk factors of lethal food-induced anaphylaxis in children.

<ul style="list-style-type: none"> • History of asthma • History of previous nearly lethal food-induced anaphylaxis • Unawareness that the eaten "culprit" food contained the offending food • Eat at school or in public places • Delay in administration of epinephrine
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Adapted from 12.

Table VI. Near lethal anaphylaxis due to a partly hydrolysate formula (pHF).

No	Age	Sex	Atopic disease	Food	Place
1	3 mos	M	Atopic dermatitis	pHF	Home
2	5 mos	M	Atopic dermatitis	pHF	Home
3	6 mos	M	Atopic dermatitis	pHF	Home
4	4 mos	F	Atopic dermatitis	pHF	Home
5	5 mos	F	Atopic dermatitis	pHF	Home
6	5 mos	F	-	pHF	Home
7	3 mos	M	-	pHF	Home
8	9 mos	F	Atopic dermatitis	pHF	Hospital
9	1 mos	F	Prevention of AD	pHF	Hom

Adapted from 13.

ings on package labels. Further, sensitized children or responsible adults in case of babies and young children must become dedicated readers of these ingredient lists (Table V)^{12,16}. Reaction could also be avoided if all the components of foods served by caterers and restaurants had to be listed¹⁷. Children at risk should keep a loaded syringe of epinephrine at hand at all times (Table VI)¹² since when fatal and near-fatal anaphylactic reactions to peanuts occurred not all children received epinephrine within 30 minutes¹².

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