

Anaphylaxis to quail egg

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Hypersensitivity to hen egg (HE) is a common cause of food allergy in children. Clinical and serological cross-reactivity between hen egg proteins and those of other birds eggs (turkey, duck, goose, sea-gull) have been described (1). Only serological cross-reactivity (2) but not clinical reactions to quail egg (QE) have been reported. Quail eggs are easy to buy in Italy and have been termed as appropriate for children suffering from HE allergy. We report a case of QE anaphylaxis in a child with HE allergy.

D.G. is a 5-year-old boy, without a family history of allergic disease, born after a regular first pregnancy. He was breast-fed for 6 months and, after the fifth month, his feed included cow's milk. At the age of 6 months, he developed atopic dermatitis and was diagnosed to be allergic to both cow's milk and HE proteins. He was put on a diet without cow's milk and HE until the age of 12 months. At that time, it was possible to include cow's milk but not HE as he continued to show strong skin prick test (SPT) reactivity (> 10 mm) to HE.

From the age of 3 years, he developed allergic rhinitis and asthma episodes, mainly at home, during autumn. SPT and specific IgE showed dust mite sensitization (Table 1). Total IgE levels were 266 kU/ml.

Anaphylaxis to quail egg due to cross-reactivity with hen egg.

Table 1. Prick–prick tests, skin prick tests, and specific IgE responses to HE and QE

	Prick–prick test*	Skin prick test*	Specific IgE (kU _A)
HE white	12	10	52.5 (5° class)
HE yolk	9	8	44.7 (4° class)
QE white	8		–
QE yolk	9		–
<i>Dermatophagoides pteronissinus</i>		8	25.5 (4° class)
<i>D. farine</i>		10	73.0 (5° class)
Histamine hydrochloride (1 mg/ml)		4	
Negative control Glyceral saline solution		0	

* Skin wheal medium diameter (mm).

He was admitted to our hospital because of angio-edematous rash, rhinoconjunctivitis with edema of tarsal conjunctiva, wheezing and illness. These symptoms had arisen immediately after he had rubbed his face with his hand that had traces of QE and regressed in about 30 min after intramuscular antihistaminic treatment and nebulized bronchodilator therapy. The child had never eaten any bird species nor had any pets or birds at home. The QE had been used for cooking, on the advice of the family doctor who did not consider QE dangerous in spite of the child's HE allergy.

Prick–prick tests (PPT) were strongly positive to both crude HE and QE white and yolk. SPT with HE white and yolk (Stallergenes S.A., Fresnes/Paris, France) as well as specific IgE for HE white and yolk (Pharmacia Upjohn AB, Uppsala, Sweden) were also strongly positive, while specific IgE for QE was not available. (Table 1). To evaluate if cutaneous cross-reactivity between HE and QE white and yolk was particular in this child or more common, we performed PPT with crude HE and QE egg white and yolk on 25 atopic children (mean age 47.8 months), 15 of who showed PPT positivity and allergy to HE. All children with PPT positive to egg white ($n = 15$) and yolk ($n = 13$) of HE showed positive

PPT to QE also (for both egg white and yolk) and none of the children with negative PPT to HE showed PPT positive to QE (Spearman correlation 1.0; $P < 0.0001$). The SPT wheal mean diameter was 9.2 and 5.7 mm for HE white and yolk, 6.9 and 5.4 mm for QE white and yolk, respectively.

Oral challenges with HE and QE were not carried out because of the lack of informed consent.

We describe a child experiencing anaphylaxis at first contact with QE while reporting HE allergy. Furthermore, we show a strong correlation between HE and QE PPT positivity.

Severe egg allergy by skin contact has been described (3) and wheezing has been possibly attributed to inhalation of egg proteins (4). As hen and quail belong to the same classification, 'Galliformes', this suggests the possible presence of cross-reactive epitopes among the eggs of the two bird species and thus may explain the wide cross-reactivity, as already described for other bird eggs. In absence of oral challenges, we could not definitely establish clinical cross-reactivity between HE and QE. However, the child's history, as well as the skin test correlations detected in the atopic group strongly recommend the avoidance of QE in children affected with HE allergy.

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Sheep and goat's milk allergy – a case study

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Key words: cow's milk allergy and immunoblotting; goat's milk allergy; sheep's milk allergy.

Cow's milk allergy (CMA) is an important problem in infancy and early childhood. Cross-reactivity between proteins from cow, sheep and goat's milk explains why eviction diets in CMA patients should not include these proteins (1).

Allergy to sheep and goat's milk without CMA is rare. In Mediterranean

countries, sporadic cases have been reported, which seem to be related to traditional diets (2, 3). We report two cases of an IgE-mediated allergy (4) to goat and sheep's milk without any actual clinical CMA.

Case 1. A 9-year-old boy experienced, at the ages of 6 and 7, two episodes of lip swelling and dyspnoea 5 min after eating pizza made from different cheeses. He had had no symptoms related to cow's milk intake. Skin prick tests (SPT) were carried out using cow, sheep and goat's milk commercial extracts (ALK-Abelló, Hørsholm, Denmark), with a positive reaction to sheep's milk (8 × 20 mm) and goat's milk (6 × 15 mm). SPT and specific IgE (UniCAP®; Pharmacia Diagnostics, Uppsala, Sweden) for cow's milk were negative. No challenge test was performed on this patient, as the informed consent was not obtained. Goat's milk immunoblotting analysis (AlaBLOT®; DPC, Los Angeles, CA, USA) was positive, showing several IgE-binding bands (12, 14, 25, 32, 35 and 80 kDa).

Case 2. A 4-year-old boy with past CMA and no symptoms with cow's milk and dairy products from the age of 17 months, experienced, during the last 2 years, recurrent episodes of facial urticaria and lip swelling some minutes after contact with goat and sheep's cheese. SPT (ALK-Abelló) were positive to sheep's milk (15 × 5 mm) and goat's milk (17 × 5 mm). SPT were also positive to total cow's milk (8 × 7 mm), β -lactoglobulin (6 × 5 mm) and casein (4 × 3 mm), and negative to α -lactalbumin. Specific IgE (UniCAP®) was 4.5 kU/l (class 3) for total cow's milk, 4.0 kU/l (class 3) for casein and negative for α -lactalbumin and β -lactoglobulin. An oral challenge test with goat's milk was positive with facial and neck urticaria, swelling of the eyelids and bronchospasm. This patient was positive to cow and goat's immunoblotting (AlaBLOT®). Immunoblotting inhibition assay (AlaBLOT® inhibition assay procedure) was performed to confirm that this patient was sensitized to both cow and goat's milk allergens due to the recognition of different proteins (Fig. 1).

When performing the goat's milk inhibition assay, a total inhibition was found for both goat (positive control) and sheep's milk extracts but only 13.5%

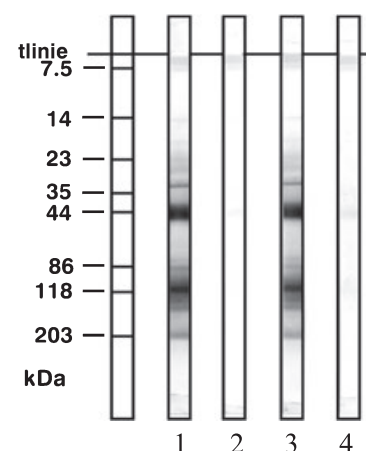


Figure 1. Goat's milk AlaBLOT® IgE assay: IgE binding to goat's milk allergen was completely inhibited by goat's and sheep's milk extracts (99.4 and 98.7%, respectively) and not inhibited by cow's milk extract (13.5%). Lane 1: noninhibited; lane 2: inhibited with goat's milk extract; lane 3: inhibited with cow's milk extract; lane 4: inhibited with sheep's milk extract.

for cow's milk extract (no inhibition) (Table 1). Concerning the cow's milk inhibition assay, a total inhibition was found for cow's milk extract (positive control) and a partial inhibition for goat's milk (80.2%). These results support that patient symptoms did not result from cross-reaction between goat and cow's milk allergens.

The first case brings up the possibility of the existence of an allergy to sheep and goat's milk without any previous or current history of CMA. The second case shows that a patient who outgrows his CMA can have clinical manifestations to a different kind of milk. Skin and blood tests suggest a new sensitization to sheep and goat's milk.

Table 1. Sheep and goat's milk allergy without cow's milk allergy: IgE binding to goat's milk allergens was completely inhibited by goat and sheep's milk extracts and not inhibited by cow's milk extract

	Inhibition with CM	Inhibition with GM	Inhibition with SM
GM	13.5	99.4	98.7

GM, goat's milk; SM, sheep's milk; CM, cow's milk. Values represent percentage of immunoblotting inhibition with different milk extracts.