

CLINICAL OBSERVATION

# A case of severe allergic reaction to cooked potato

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## ABSTRACT

White potato is a very common ingredient in the diet of infants in Mediterranean countries, and in its cooked form, it is one of the first solid foods introduced, usually around the age of 4–6 months. Allergy to potato is uncommon, and allergic reactions to cooked potato have been reported only in children. We report a case of severe potato-induced allergic reaction in an 8-month-old infant with atopic dermatitis and multiple food allergies that raises questions about differential diagnosis between anaphylaxis and food protein-induced enterocolitis syndrome (FPIES).

**Conclusion:** Allergy to cooked potatoes could be a cause of severe although rare allergic reactions; it could be very difficult, in some cases, to make a differential diagnosis between anaphylaxis and FPIES. Moreover, the diagnosis appears to be very important for the choice of therapy and long-term allergologic management.

## CASE REPORT

We report a case of severe potato-induced reaction in an 8-month-old infant with atopic dermatitis (AD) and multiple food allergies (FA). He suffered from severe AD since he was 1-month-old and was treated with first-line therapy (education of skin care and steroid ointment). Serum food-specific IgEs (Unicap Phadia, Uppsala, Sweden; lower limit of detection <0.10 kU/L) at 3 months were positive for cow's milk (casein 12.8 kU/L, beta-lactoglobulin 0.05 kU/L, alpha-lactalbumin 0.03 kU/L), egg (white 7.58 kU/L, yolk 1.28 kU/L), soy (2.23 kU/L), wheat (3.72 kU/L) and codfish (0.40 kU/L); total IgEs were 207 kU/L (normal value <13 kU/L). Breastfeeding on strict maternal avoidance of cow's milk, egg and fish was supplemented with casein-based extensively hydrolysed formula (eHF) and AD improved. At 5 months, breastfeeding was stopped, and weaning was started with potato, carrot, rice cereal, olive oil and rabbit meat.

At 8 months, the patient was seen at the Emergency Department of our hospital for a 45-min history of incoercible vomiting (five episodes) and profuse blood-stained diarrhoea (three episodes) that started simultaneously, 15 min after the ingestion of a meal containing cooked potatoes, carrots, corn cream, olive oil, rabbit meat and pear.

Physical examination revealed lethargy, marked pallor, tachycardia (heart rate: 180 bpm) and hypotension (systolic blood pressure 60 mmHg, diastolic blood pressure not detectable). An intravenous (i.v.) line was taken, and saline solution and prednisolone were given. Laboratory tests showed metabolic acidosis (pH: 7.30; HCO<sub>3</sub>: 20.8 mmol/L; base excess: -5.7) and elevated white blood cell count

(WBC: 17380/μL) with neutrophilia (neutrophils: 13760/μL); C-reactive protein was normal. The patient's condition improved within 2 h of i.v. therapy. In particular, vomiting stopped shortly after admission, and diarrhoea stopped 24 h later.

A work-up ruled out infective, metabolic, surgical and cardiologic disorders, and so an allergic reaction was suspected. The infant was fed exclusively eHF and was referred to our Department for further allergologic evaluation.

Skin prick tests (SPT) for all the foods in the suspected causative meal (fresh cooked carrot and potato, rabbit meat, corn cream and pear) were negative; serum IgEs were positive only for potato (9.09 kU/L). Severe cooked potato-induced allergic reaction was suspected, so oral food challenges (OFCs) were performed for each suspected food (fresh cooked carrot, rabbit meat, corn cream and pear, all proving negative), but not for potato, for which strict avoidance was recommended. In particular, the OFCs were performed 1 month after the acute reaction, with an interval of 3 days after each OFC before the next was performed.

At the allergologic follow-up at our Department, multiple IgE-mediated FA were diagnosed on the basis of results of OFCs (cow's milk, egg, peanut) and the onset of acute urticaria after the accidental assumption of kiwi.

Three years later, potato-specific serum IgEs were reduced (3.6 kU/L), and the SPT for both raw and cooked potato were still negative, so an OFC to cooked potato was performed and was negative. At the age of 3 years, cow's milk was tolerated; allergies to egg, peanut and kiwi persisted.

## DISCUSSION

In Europe, white potato is a very common ingredient in the diet of infants, and in its cooked form, it is one of the first solid foods introduced, usually around the age of 4–6 months. Allergic reactions to potato are uncommon, and allergy to cooked potato has been reported only in children with both immediate and late reactions (1). In our case report, clinical and laboratory features are consistent with both anaphylaxis and food protein-induced enterocolitis syndrome (FPIES). FPIES is a severe non-IgE-mediated food hypersensitivity, typical of early childhood. Cow's milk and soy are the most frequently offending foods; FPIES by solid foods has also been described (2). Main features are profuse vomiting and diarrhoea (sometimes bloody) within 1–3 h after the ingestion of the causative food that leads to dehydration and shock in 20% of patients (3). Other common symptoms are hypothermia, pallor, cyanosis and lethargy. Laboratory findings may include neutrophilia, thrombocytosis and metabolic acidosis; usually, serum food-specific IgEs and SPT prove negative (2,3).

Persistent gastrointestinal symptoms, hypotension and hypotonia occurring rapidly after potato ingestion and potato-specific serum IgEs, were suggestive for severe anaphylaxis (4). In two case series of allergy to cooked potato in infants and young children, three cases of anaphylaxis have been reported, and none presented cardiovascular symptoms (3,5). On the other hand, vomiting and profuse bloody diarrhoea, lethargy, marked pallor, tachycardia and hypotension with metabolic acidosis and neutrophilia could be suggestive for acute FPIES, whose atypical form is associated with specific IgE positivity for the triggering food (2). In two case series of children with FPIES, allergy to cooked potato was reported in one case, presenting vomiting and diarrhoea (2), and in two cases, presenting more severe symptoms, but not hypotension (1). Although FPIES manifestations arise usually 1–3 h after the ingestion of the causative food, an onset within 15 min has also been reported (3,6). In our case, the prompt clinical response to i.v. rehydration without administration of epinephrine supports the diagnosis of FPIES.

Differential diagnosis between anaphylaxis and FPIES raises some questions about patient management. As the OFC is strictly contraindicated in case of anaphylaxis and not rigorously required in the case of a strong clinical suspect of FPIES, we chose not to perform it.

Second, epinephrine is not generally recommended for the treatment of FPIES unless there is a concomitant IgE-mediated FA (7), as in our case, and we could not exclude anaphylaxis. Consequently, we decided to prescribe injectable epinephrine as first-aid treatment in case of a new episode.

Lastly, 80% of infants presenting FPIES by solid foods are likely to react to more than one food (3,7,8), and cases of concomitant FPIES and IgE-mediated FA are reported (3,6,7). For these reasons, we had to carefully plan timing and administration of weaning, in particular for foods at high risk for FPIES and not yet proposed during the

weaning (fish, legumes, poultry, oat, barley, lamb and banana) (2,7). In fact, in these patients, the introduction of solid foods requires caution and medical supervision, although there is no clear recommendation or guideline. At 9 months of age, we performed SPT with fresh food and sIgE for codfish, plaice, hake, pea, chicken, turkey, oat, barley, lamb and banana, all proving negative, except for lentils (1.25 kU/L) and chickpea (0.52 kU/L). We planned OFCs for these foods in a hospital setting. No allergic reactions were observed.

When the described event occurred, our patient had been receiving potatoes daily for 3 months without any type of reaction. The infant had recurrent moderate AD, since he was 1-month-old, without significant worsening after introduction of the potato. A similar time lapse between onset of ingestion and onset of clinical symptoms was also observed by De Swert et al. (5) in their case series of 17 children with proven potato allergy. Castells et al. (9) described a case of immediate hypersensitivity reaction after ingestion of potato at 5 months of age when the infant was fed potato for the first time. Therefore, we suppose that the sensitization process differs between patients.

Tolerance to potato is generally achieved at around 4 years of age (5); also, our patient, despite the severity of symptoms, achieved tolerance to potato 3 years after the episode.

In conclusion, allergy to cooked potatoes could be a cause of severe although rare allergic reactions, especially in atopic children. Our case raises questions about differential diagnosis between anaphylaxis and FPIES and long-term allergologic management.

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## DISCLOSURE

The authors have nothing to declare.

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