

## An infant with chickpea and egg allergy

To the Editor,

The incidence of food allergy is increasing in children. The incidence in children aged five or less is 3.5%.<sup>1</sup> Clinical findings usually appear within the first few years of life with the addition of new foods to the diet. Food-related clinical findings may or may not be IgE mediated. Although most commonly seen as urticaria and angio-oedema in the clinic, they can also produce anaphylaxis, atopic dermatitis, and various gastrointestinal and respiratory symptoms.<sup>1</sup>

The distribution of the foods that cause food allergy differs between countries according to how frequently they are ingested with the diet.<sup>1</sup> The most common causes of food allergies in children are milk, eggs, soya, wheat and nuts. Egg is the most common food that causes an IgE mediated reaction.<sup>1</sup> Combinations of food allergies may also be seen. The most common combinations of food allergens were included 'egg-milk', 'egg-wheat', and 'milk-wheat'.<sup>2</sup>

Legumes are an important source of proteins and are commonly found in the diet of developing countries and in the Mediterranean diet. The legumes most commonly ingested are lentil, chickpeas, beans and peas. The most commonly reported legume allergy is for lentil, followed by that for chickpeas.<sup>3</sup> These are quite commonly consumed in our country and added to the diet within the first year of life. However, there are no clear data on legume allergies in our country and in other countries.

We present a child who has IgE-mediated reaction to chickpea and egg.

A 19-month-old male presented at our clinic because of facial and labial swelling and redness within 30 minutes after eating chickpeas when he was 12 and 14 months old. He also defined a red skin lesion raised from the skin within one hour of eating food containing eggs twice in the past.

The patient had been delivered by the spontaneous vaginal route at term with a birth weight of 4050 gr. He had received mother's milk for 18 months and formula had been added at the 5th month and cow's milk at the 15th month. The patient did not want to eat eggs. Eggs had been added to his diet in yolk form when he was eight months old and as egg white when one year old. The patient had received a diagnosis of atopic eczema while three months old and had used steroid ointments. He also had a history of diarrhoea lasting for 3 months following the gastroenteritis he had suffered when 6.5 months old. The family history revealed no consanguinity of allergic disease in the family. The physical examination was normal.

Laboratory test results were as follows: haemogram, IgG, IgA, IgM were normal. IgE level was 172 IU/mL, there were 4% eosinophils on the peripheral smear, and egg-specific IgE was 17.5 IU/mL. The skin prick test (SPT) (induration/hypaemia) revealed the following sensitivities: histamine 6x5/28 mm, egg white 6x6/15 mm, egg yolk 5x5/13 mm, boiled chickpea water 9x9/22 mm and chickpea itself 9x9/25 mm. We found no sensitivity to soya, pea, peanut or bean antigens on the SPT. A double-blind placebo-controlled food loading test was performed with eggs and urticaria and angio-oedema appeared five minutes after the second egg dose. A double-blind placebo-controlled food loading test was not performed as the family was not willing.

The case was followed-up after elimination of chickpeas and eggs from his diet. An adrenaline auto-syringe (epi-pen junior 0.15 mg/ml) was provided for the patient. The family was educated on epi-pen usage and the anaphylaxis action plan.

The one-year follow-up revealed that the patient had not eaten any chickpeas or eggs and had not had any reactions. There was no skin lesion related to atopic eczema. The repeated SPT showed continuing chickpea (8x6/20 mm) and egg (6x5/15 mm) sensitivity.

Lentil and chickpea allergy is seen most commonly in the Mediterranean and Central Asia while soya and nuts from the same family commonly cause allergy in the USA, UK and Southeast Asia.<sup>5</sup> A study from the Mediterranean country Spain reports legume allergy as the fifth most common food allergy.<sup>6</sup> There are no clear data regarding legume allergy in our country. However, a 17-year-old case with lentil or food-dependent exercise-induced anaphylaxis and concurrent chickpea anaphylaxis has been reported.<sup>7</sup> A case that underwent liver transplantation and had lentil allergy following the transplant has also been reported.<sup>8</sup>

Food allergy develops in the first two years of life: lentil allergy in the first 15 months and chickpea allergy in the first 18 months.<sup>2</sup> This duration is especially related to the time the food enters the diet. Our patient had first shown signs related to chickpeas when it was added to the diet at 12 months of age.

Clinical findings of food allergy can consist of the oral allergy syndrome, urticaria, angio-oedema, rhinitis, asthmatic attack, anaphylaxis or even death.<sup>5</sup> Urticaria/angio-oedema had developed within 30 minutes following chickpea and egg ingestion in our case. The symptoms usually develop following oral ingestion but may also appear following contact or by inhalation during cooking.<sup>3,4</sup> Both of the reactions suffered by our case in relation to food had developed following oral ingestion.

A reaction may also develop following the first encounter with the food, as seen in our patient. Although the reason is not clear, prenatal sensitisation may be due to encountering the substance via the mother's milk before birth or previous ingestion of it without realising.<sup>3</sup> There may be sensitisation to other foods as well in children with legume allergy. A study from Spain has found the concurrence of allergies to eggs, fish and tree nut legumes.<sup>3</sup> Our case also had IgE-mediated food allergy related to eggs.

Lentils, chickpeas, beans and peas are consumed cooked. Both lentils and peas preserve their allergenic features after being boiled.<sup>3,9</sup> The SPT has revealed that the swelling was larger with the boiled preparation compared to the commercial preparation for both lentils and chickpeas. Boiled chickpea preparation values have been reported as follows: sensitivity 97%, specificity 85%, positive predictive value 89%, and negative predictive value 89%.<sup>3</sup> We performed an SPT with boiled chickpea water and the chickpea itself on our patient as we did not have the commercial chickpea preparation available. We found positivity with both.

Eliminating the food from the diet is required for food allergies. We eliminated both chickpeas and eggs from our patient's diet. We also provided an anaphylaxis action plan and adrenaline auto-syringe training to his family. Follow-up a year later with full elimination of eggs and chickpeas

showed continuing chickpea and egg sensitivity on the SPT. Full elimination in the patient's diet is therefore continuing.

We wanted to use this case to emphasise concurrent legume and egg allergies, both consumed often in our country.

## References

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## Occupational allergic contact dermatitis from monoethanolamine in a metal worker

To the Editor:

Water-based metalworking fluids (MWF) are complex mixtures consisting of a lubricating component and other substances such as emulsifiers, corrosion inhibitors, antimicrobial agents and antioxidants. The MWF concentrates are mixed with water and used for cooling and lubricating as well as for removing metal chippings formed in the machining process.

Several MWF ingredients may cause irritation as well as allergic contact dermatitis.<sup>1–3</sup> The most common causes of occupational allergic contact dermatitis in metalworkers have been alkanolamines, formaldehyde, formaldehyde releasers, and colophonium.<sup>4,5</sup> However, in recent years, other ingredients of MWF may also cause contact allergy<sup>1,4,5</sup> such as diglycolamine or monoethanolamine (MEA).

MEA is used in aqueous solutions for scrubbing certain acidic gases. It is used as feedstock in the production of cosmetics, soaps, textiles, paints, hair dyes, emulsions in pharmaceutical formulations and disinfectants used for sterilisation of dental instruments.

A 49-year-old man had worked in maintenance in a metalworking plant for 15 years and developed micropapular eruptions with exudation and vesicles after about nine years. The lesions were very pruritic and located in abdomen, legs and arms and genitals. While he was away from work, the dermatitis slowly improved and 15 days after resumption of work he again developed dermatitis in the same areas. The patient had no history of atopy or allergy and did not present symptoms of rhinoconjunctivitis and

asthma. He was in constant and chronic contact with soluble oil as MEA, triethanolamine, glutaraldehyde and low concentrations of different metals such as aluminium or titanium dioxide.

Biopsy of the skin lesions revealed oedema of the superficial dermis with parakeratosis focus, vesicle intraepidermal and perivascular infiltrate of lymphocytes.

Patch testing was performed using the standard series of the GEIDC (Grupo Español Investigación Dermatitis de Contacto [Spanish Contact Dermatitis Research Group]) and MEA at 5% aqua and ethanol, MEA at 2% pet, triethanolamine at 2.5% pet, glutaraldehyde at 0.2 and 0.5% aqua, titanium oxide at 5% pet. and aluminium chloride at 2% pet. The patches were applied to the patient's upper back using Curatest (Lohmann, Martí Tor, Barcelona, Spain) and removed after 48 hours. Readings were carried out at 48, 72 and 96 hours, as recommended by the International Contact Dermatitis Research Group.<sup>6</sup> Both patch tests with MEA showed positive reactions (+++) with erythema, oedema and confluent vesicles (Figure 1) at 48 and 72 hours. The reaction was decreasing (++) at 96 hours. There were negative results to all standard series and to the rest of the products tested. Twenty control subjects (10 atopic and 10 non-atopic) underwent patch testing and all proved negative.

Most metalworker dermatitis is irritant, but occasionally, relevant allergens are found. In fact, MEA is one of the most frequent allergens in MWF and in the last 10 years several cases have been reported in metal workers who have been exposed to this product.<sup>5,7,8</sup> MEA is used in the production of different products and so it can also cause allergic contact dermatitis in other jobs such as dental nurse<sup>9</sup> and hairdresser, although it is not a major allergen.