

A case of severe atypical food protein-induced enterocolitis syndrome

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A 4-year-old boy presented with a 9 h history of profuse blood-stained diarrhoea and progressive dyspnoea. He had a history of global developmental delay secondary to perinatal asphyxia and had been exclusively fed with extensively hydrolysed cow's milk formula via nasogastric tube or gastrostomy since birth. He suffered from eczema but was not known to have other allergic disease and had undergone Nissen's fundoplication for treatment of gastro-oesophageal reflux disease in infancy. Shortly before presentation, he had received unhydrolysed cow's milk for the first time. Within 2 h of commenc-

ing his first overnight cow's milk formula feed, he appeared uncomfortable and began to pass profuse watery stools every 10–15 min. These became blood-stained after a further 2 h, and feeding was stopped. On arrival at the emergency department, he was afebrile but hypotensive and acidotic, and in significant respiratory distress. His body temperature was 37.0°C, methaemoglobin was <2%, neutrophil and platelet counts were elevated to 26.4 and $615 \times 10^9/l$, respectively. He required 160 ml/kg of intravenous fluid resuscitation over the following 36 h for resistant hypotension, and inotropic support with dopamine, epinephrine and norepinephrine infusions. He was ventilated for 25 days, received inotropes for 17 days and haemofiltration for acute tubular necrosis for 34 days. There was myocardial

injury (peak troponin I 3.6 µg/l), rhabdomyolysis (peak creatine kinase 56 000 u/l), hepatic injury (peak alanine transaminase 3100 iu/l) and disseminated intravascular coagulation.

Extensive laboratory investigations failed to identify an infective cause for his illness. No metabolic defect was demonstrated. His total IgE was 6 kU/l, specific IgE to cow's milk was < 0.35 kU/l, and there was no peripheral eosinophilia.

He was initially treated for presumed septicaemia, with supportive care and broad-spectrum antibiotics. Three weeks after acute presentation, upper and lower gastrointestinal endoscopy and biopsies were undertaken. Macroscopically, there was mild haemorrhagic gastritis. Histological analysis of biopsy tissue from the

We describe a case of near-fatal food protein-induced enterocolitis syndrome to cow's milk in a 4-year-old boy. The case highlights the potential severity of this condition and its capacity to present beyond infancy.

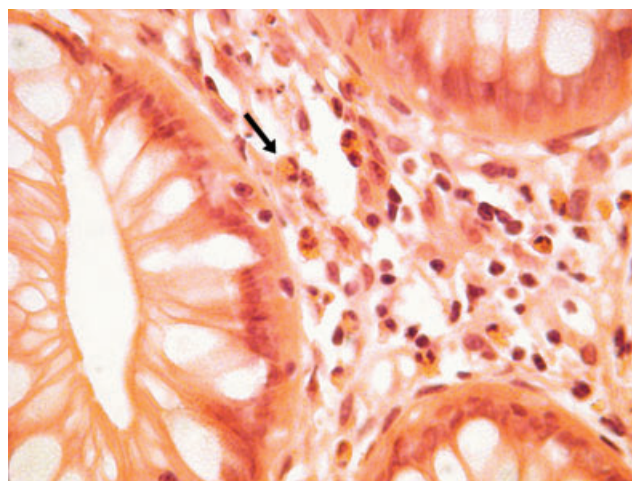


Figure 1 Eosinophilic infiltrate in the lamina propria of the large bowel. Marker shows an eosinophil.

descending colon revealed an increase in lamina propria eosinophil density, with occasional eosinophil clustering and presence in the glandular epithelium (see Fig. 1).

When enteral feeding was recommenced, he received an amino acid formula without further symptoms. Two months later, skin prick testing to cow's milk and other common dietary and aeroallergens were negative, as was atopy patch testing to cow's milk and soy.

Food protein-induced enterocolitis syndrome (FPIES) describes a clinical complex of vomiting, diarrhoea and systemic inflammatory response because of a non-IgE-mediated food allergy. FPIES is an uncommon but important cause of acute illness in infants, which is diagnosed on clinical grounds after exclusion of sepsis, metabolic disease or anatomical abnormality. This case falls outside published diagnostic criteria for typical FPIES, and the severity of the reaction precludes confirmation of the diagnosis by food challenge (1). However, atypical cases have been described (2), and the clinical history, presentation and histology in this case are strongly suggestive of FPIES to cow's milk. The late

presentation may relate to this child's unusual dietary management whereby he was first exposed to unhydrolysed cow's milk protein at 4 years of age, illustrating the possibility of FPIES to any food introduced for the first time beyond infancy. This is the most severe case reported to our knowledge, emphasizing both the gravity of the condition and the importance of its early recognition. FPIES is frequently misdiagnosed, and children often have several acute presentations before the diagnosis is established (3). In view of its potentially fatal clinical course and the recent increase in prevalence suggested by others (3), it is critical to consider the diagnosis in young children presenting with acute onset of gastrointestinal symptoms or shock.

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References

1. Sicherer SH, Eigenmann PA, Sampson HA. Clinical features of food protein-induced enterocolitis syndrome. *J Pediatr* 1998;**133**: 214–219.
2. Sicherer SH. Food protein-induced enterocolitis syndrome: case presentations and management lessons. *J Allergy Clin Immunol* 2005;**115**:149–156.
3. Mehr S, Kakakios A, Frith K, Kemp AS. Food protein-induced enterocolitis syndrome: 16-year experience. *Pediatrics* 2009;**123**:e459–e464.