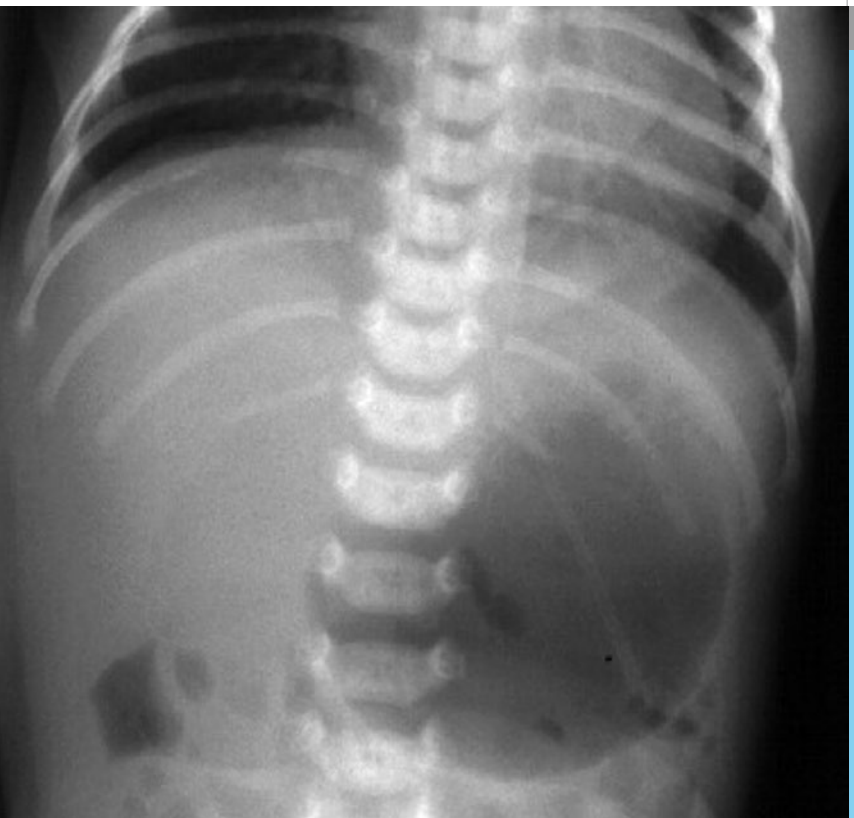
SWISS SOCIETY OF NEONATOLOGY

Cow's milk-induced subacute abdomen in a neonate



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This 4-day-old female infant was admitted to the neonatal intensive care unit because of respiratory distress and metabolic acidosis. Pregnancy, delivery and the first days of life had been unremarkable. On the maternity ward, the girl had been fed with breast milk and infant formula.

Physical examination revealed tachypnea, grunting and high-pitched bowel sounds. Laboratory studies showed metabolic acidosis with respiratory compensation (pH 7.40, pCO2 3.6 kPa, pO2 9.1 kPa, standard bicarbonate 18 mmol/l and base excess -7.8 mmol/l). The next day, the girl developed bilious emesis. The abdomen was slightly distended and tender. Stools were normal. Feedings were discontinued and antibiotics were started. Laboratory tests showed a white cell count of 16.4 G/l without left shift and a C-reactive protein of 13.1 mg/l. Enterocolitis, volvulus or M. Hirschsprung were considered in the differential diagnosis. Ultrasound and X-ray showed distended loops of small bowel with absence of air in the colon and rectum (Fig. 1, 2). Later, an upper gastrointestinal series and contrast enema showed distended loops of small bowel without evidence for intestinal obstruction (Fig. 3, 4).

Upon withholding feedings, emesis stopped and meteorism diminished. Subsequently, the baby was fed with her mother's breast milk and pooled human milk. The infant gained weight and the abdomen was

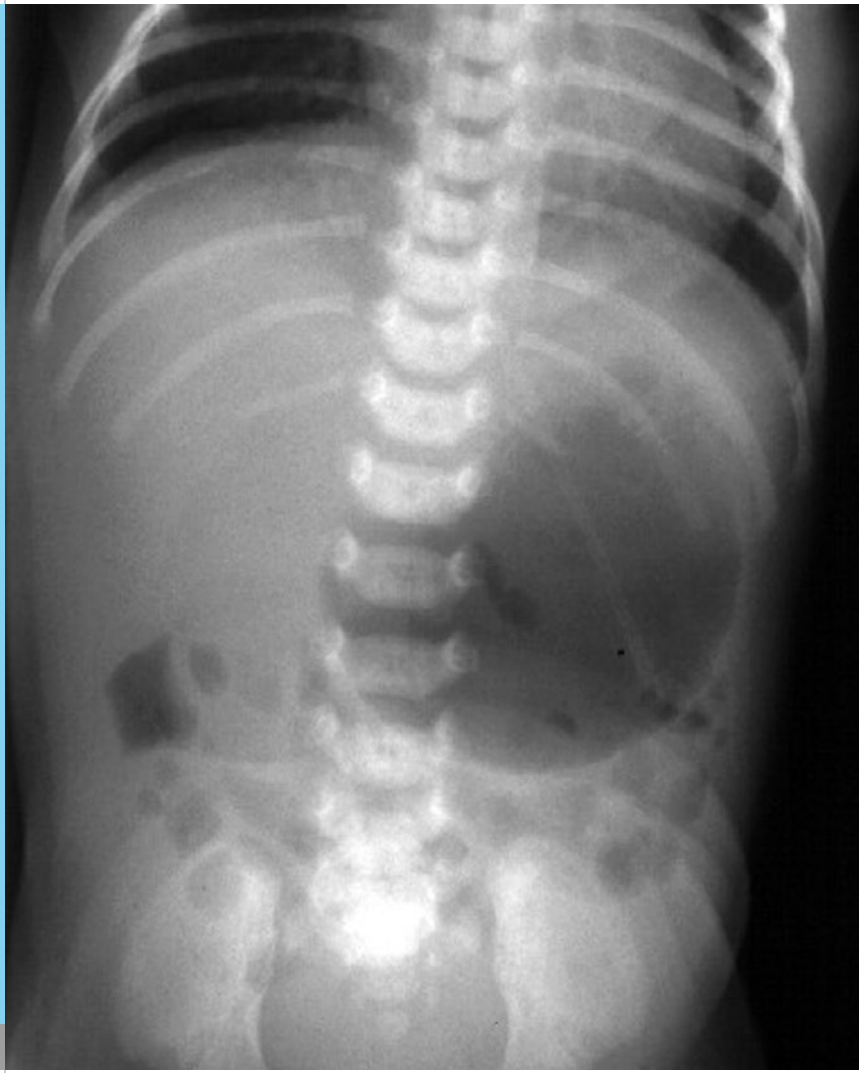


Fig. 1

Plain abdominal x-rays with dilated stomach.

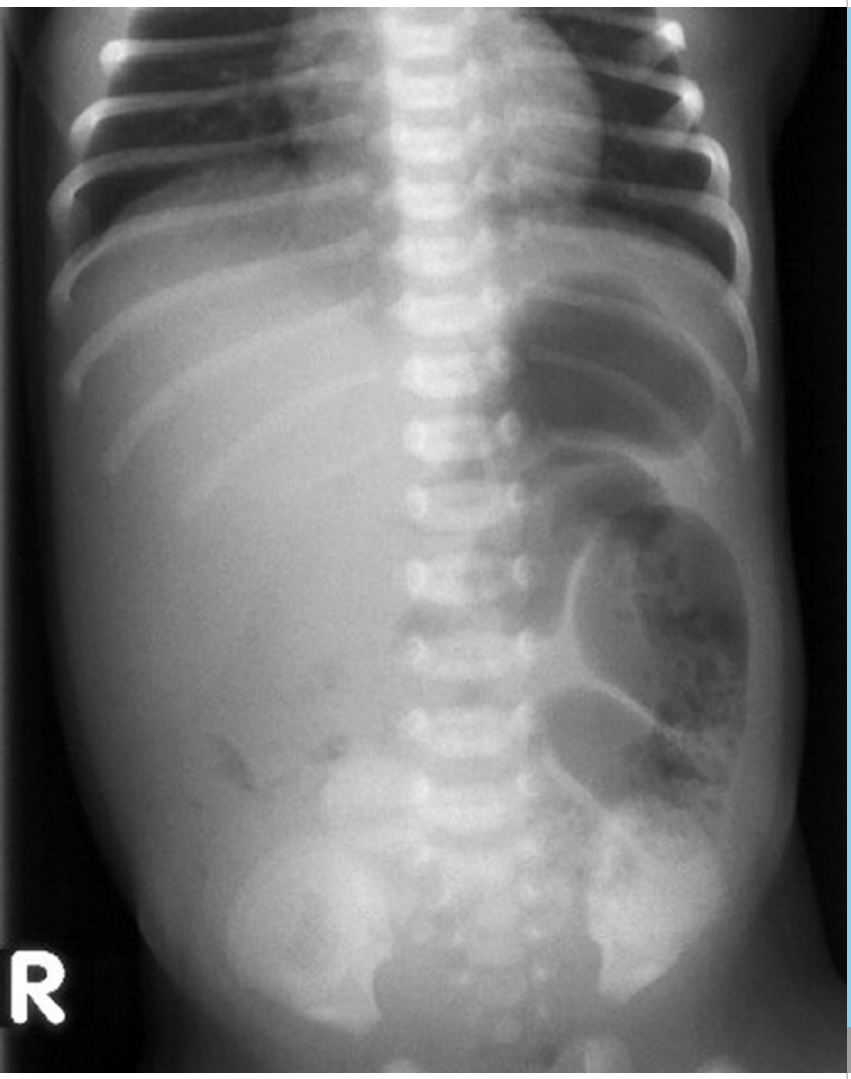


Fig. 2

Plain abdominal x-rays with dilated loops of small bowel and no air in the rectum.

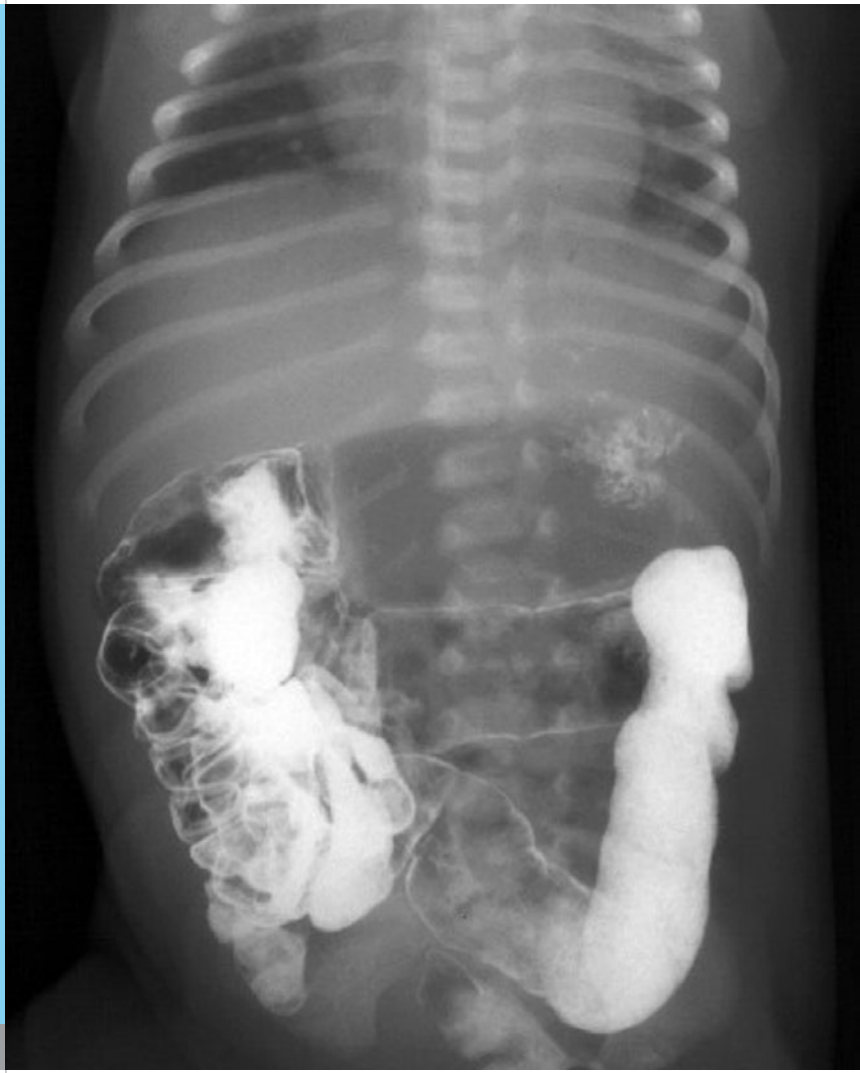


Fig. 3

Contrast studies of small and large bowel.

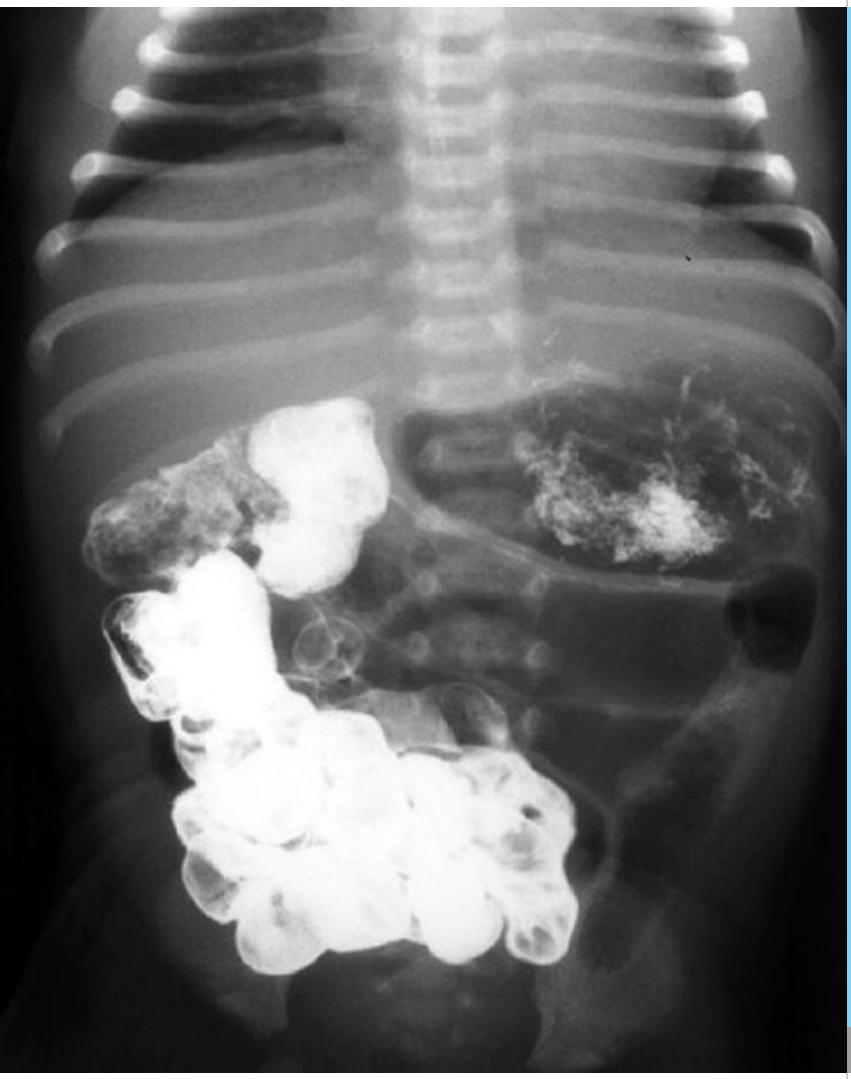


Fig. 4

Contrast studies of small and large bowel.

normal. When formula milk was reintroduced, emesis started again, her abdomen became tender and she ceased to gain weight. An increasing eosinophilia of 26% (absolute count 4.42 G/l) was noted. Assuming that she suffered from cow's milk allergy, the girl was given semi-hydrolyzed milk formula. Emesis stopped and the infant gained weight again.

Results of allergy testing to cow's milk were as follows: total IgE of 4.99 kIU/l (normal: <15kIU/l), lactalbumin 0.40 kU/l (normal: <0,35 kIU/l), beta-lactoglobulin < 0.35 kIU/l, casein < 0,35 kIU/l. Skin-prick testing showed a positive reaction for alpha-lactalbumin and beta-lactglobulin with negative atopy patch testing.

The clinical course, laboratory results and skin-tests were compatible with a diagnosis of cow's milk allergy with very early and severe onset of gastrointestinal symptoms. We also considered the much rarer diagnosis of eosinophilic gastroenteropathy. The case also shows that this diagnosis can only be confirmed by a re-challenge but not by any laboratory investigations, skin-prick testing or atopy patch testing.

Cow's milk allergy affects approximately 2% of all children younger than 2 years of age. It can also occur in exclusively breast-fed infants as cow's milk proteins are secreted into breast milk and can cause sensitization (Fig. 5) (1,2).

The onset of symptoms can be divided into immediate, intermediate and late reactions (Table). Carroccio et al. (3) described a fourth group of children with very delayed reactions after a challenge with cow's milk protein. In a cohort of 86 young children with cow's milk allergy on a cow's milk-free diet, 10 patients relapsed 4 to 26 days after re-challenge. Symptoms included constipation, persistent wheezing or exacerbation of atopic dermatitis.

Diagnosis of cow's milk allergy should be based on strict diagnostic criteria to avoid unnecessary dietary restrictions. The main principle of therapy is avoidance of the allergen. Soy milk is often used as a substitute. However, many children, especially those with gastrointestinal symptoms, will also be sensitized to soy protein. Alternatively, there are hydrolyzed milk formulas available, but 10% of the children with cow's milk allergy do not even tolerate hydrolyzed milk (4). For these patients, milk formulas based on amino acids (e.g., Neocate®, Pregomin® AS) can be provided.

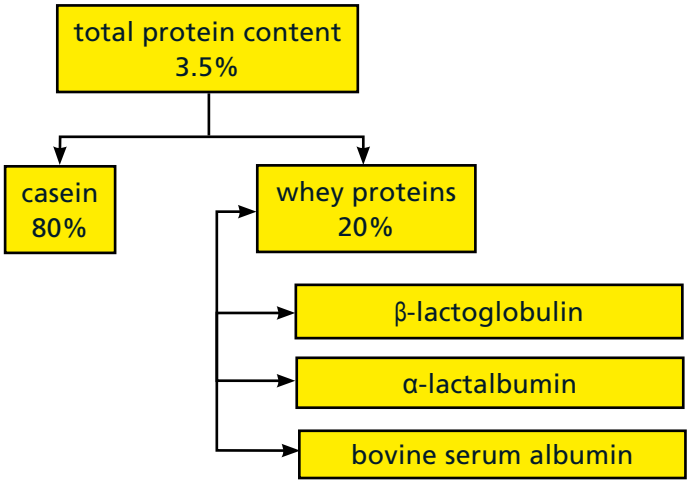
Timing	Clinical manifestations
Immediate reaction	Acute skin rash with perioral erythema, facial angioedema or widespread urticaria with or without signs of anaphylaxis (IgE-mediated)
Immediate reaction	Reaction occurs 1-24 hours after ingestion predominantly with gastrointestinal symptoms, including vomiting and diarrhea (IgE-mediated)
Late reaction	Reactions occur from 24 hours up to 5 days after a challenge and include atopic dermatitis, cough and wheezing (T-cell-mediated)

Table

Timing of allergic reactions cow's milk allergy.

Cow's milk protein composition.

Fig. 5



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