

Milk-Induced Enterocolitis in Monozygotic Twin Neonates

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Reports of milk protein-induced enterocolitis are increasing, but few describe the condition in twins. Twin Japanese girls developed bloody diarrhea on day 4 and were transferred to the NICU in our hospital. Surgical disorder and infection were initially suspected, but the correct diagnosis was reached after 12 days of hospitalization.

Key Words: Milk protein-induced enterocolitis, Newborn, Twin.

Milk protein-induced enterocolitis of infancy is believed to have a good prognosis(1,2). However, diagnosis is difficult because the characteristic initial symptoms are nonspecific, and the result of testing for cow's milk-specific immunoglobulin (Ig) E antibody is not always positive. The criteria for food protein-induced enterocolitis syndrome were established by Powell in 1978(3), however, the etiology remains unclear. Obstructive intestinal disease is sometimes incorrectly suspected, resulting in unnecessary abdominal surgery(4,5). We report milk protein-induced enterocolitis in monozygotic twins, pointing to a probable genetic cause.

CASE REPORT

Twin Japanese girls (gestational age 37 weeks) were delivered by cesarean section because of premature rupture of membranes in their 26-year-old mother. Birth weight was 2492 and 2646 g respectively. Apgar scores at 1 minute was 9 and 8, respectively. Feeding was initiated at day 1 with a commercial cow's milk protein-based formula. On day 4, both newborns had two episodes of bloody stools. On day 7, both developed abdominal distension and bilious vomiting. Physical examination revealed slightly ill child, and normal respiratory rate, heart rate, and blood pressure. Patient 2 had a slightly elevated

temperature (37.8°C). Abdomen was soft but mildly distended, and bowel sounds were slightly decreased in both patients. Hematological and serum biochemical examinations revealed hyperbilirubinemia and elevated C-reactive protein (CRP). Abdominal radiography showed gas defects in the small intestine and colon of both patients. Stool cultures for Salmonella, Shigella, Campylobacter, and Yersinia were negative. Family history of atopy was limited to allergic rhinitis in the mother, with no bleeding diathesis. Barium enema findings suggested the presence of colonic inflammation in patient 2, with no suggestion of stenosis or malrotation.

Both neonates were admitted to the NICU, feeding was stopped and empirical antibiotic treatment was initiated for the suspected infection. Bilious vomiting and bloody stools stopped immediately and CRP became negative, feeding with breast milk was restarted on day 12 after the mother eliminated cow's milk and foods containing cow's milk from her diet. Initially, no clinical symptoms were observed with breastfeeding. However, when cow's milk protein-based formula was provided on day 17, vomiting recurred in both neonates. Symptoms resolved after suspending cow's milk formula supplements. Cow's milk allergy was thus suspected and blood examination was performed.

Serum IgE and milk-specific IgE antibody (CAP-RAST) were elevated in both cases (patient 1: IgE 5.4 IU/mL, milk CAP-RAST 0.39 UA/mL; patient 2: IgE 15 IU/mL, milk CAP-RAST 0.47 UA/mL) and milk allergy was diagnosed. Hydrolyzed casein-based formula was gradually introduced on day 19; there was no recurrence of bloody stools. The twins were discharged to home on day 36.

Serum IgE and milk CAP-RAST both decreased at 1 month after first examination. The twins were mainly breastfed, with the occasional addition of hydrolyzed casein-based formula. Foods containing milk were re-introduced to the patients' diet at 12 months, and milk was re-introduced at 15 months. At 4 years of age, the twins do not have any other food allergies, atopic dermatitis, or bronchial asthma.

DISCUSSION

Reports of early-onset milk allergy with bloody diarrhea in infancy are increasing(6,7), but few describe the condition in monozygotic twins. The role of genetics in the etiology of such cases is unclear.

In our patients, total IgE and cow's milk CAP-RAST were both initially elevated and became negative 1 month after eliminating milk from their diet. These findings supported the diagnosis. However, diagnosis of milk protein-induced enterocolitis of neonates can be difficult, as initial symptoms are nonspecific and the results of cow's milk CAP-RAST and skin prick tests are not always positive. Measurement of eosinophil-derived neurotoxin (EDN) in feces(8) and the lymphocyte stimulation test (LST) are reportedly useful for supporting diagnosis(9). It is reported that LST is frequently positive for cow's milk allergy, but is not sufficiently specific to be a reliable diagnostic examination.

Little is known about the immunopathogenesis of enterocolitis syndrome and allergic eosinophilic gastroenteritis. Evidence suggests the possible involvement of T cells that produce TH2-type cytokines when stimulated with milk proteins(10).

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