Axial Torsion and Gangrene of a Giant Meckel’s Diverticulum

Christos Limas, Konstantinos Seretis, Chrisostomos Soultanidis, Stavros Anagnostoulis

Pediatric Surgery Department, University General Hospital of Alexandroupolis, Greece

Abstract

A variety of complications are related to a Meckel’s diverticulum, including hemorrhage, intestinal obstruction and inflammation. Axial torsion and gangrene of Meckel’s diverticulum is the rarest of the complications that have been reported, with this being particularly true in case of children. We report a case of axial torsion and gangrene of a giant Meckel’s diverticulum in a 6 year old child.

Key words

Meckel’s diverticulum - axial torsion - gangrene

Case report

A 6-year-old Caucasian boy was referred to our department with a complaint of two days abdominal pain, associated with fever (38°C), nausea and anorexia. The clinical examination revealed pain in the right lower quadrant, as well as abdominal guarding and rebound tenderness. The leucocyte count was elevated at 17.6 × 10^9/L with 89 percent segmented neutrophils, 1 percent band cells and 4 percent lymphocytes. All other laboratory values were within normal limits. Plain abdominal x-ray depicted multiple air-fluid levels, while ultrasound examination was normal (Fig.1).

As acute appendicitis was diagnosed, an emergency appendectomy was planned. At exploration, the peritoneal cavity was filled with a seropurulent fluid, while the cecum and appendix appeared to be normal. Further exploration revealed a black, axially torsed gangrenous Meckel’s diverticulum, measuring 16×4×4cm, located 50cm proximally to the...
The patient recovered uncomplicated and was discharged on the 6th postoperative day. The postoperative course was uneventful.

**Discussion**

Meckel’s diverticulum results from incomplete involution of the most proximal portion of the vitelline or omphalomesenteric duct during the week 5-7 of fetal development. Incidence of Meckel’s diverticulum has been estimated in reports from autopsy and retrospective studies to range from 0.14 to 4.5 percent (1,2). Meckel’s diverticulum occurs on the antimesenteric border of the ileum and in 90 percent of the cases within 90 cm from the ileocecal valve, although there have been reported diverticula up to 180 cm from the ileocecal valve. The size is variable, but diverticulum typically presents as short and wide mouthed (on average it is 2.9 cm long and 1.9 cm wide). In our case, a diverticulum with such dimensions (16 × 4 × 4 cm), huge compared to the average proportions (3–6), represents a rare case itself.

The vast majority (>80 percent) of patients are asymptomatic. A person has a 6.4 percent lifetime risk of developing a complication related to the diverticulum (7), such as gastrointestinal bleeding, intestinal obstruction, diverticulitis, and intussusception or perforation (2,7,8). The incidence of complications is evenly distributed over all ages (1,7). Although no gender-based difference was found in studies that evaluated this condition as an incidental finding during operations (1), males are more prone to complications than females (1,7) and, therefore, Meckel’s diverticulum is more often diagnosed in males.

Axial torsion of a Meckel’s diverticulum is a rare complication (5,9-12). In addition to this, gangrene of Meckel’s diverticulum, secondary to axial torsion, as in our patient, is an extremely rare phenomenon, especially in children. It has been reported only five times in adults and twice in children in the past 35 years (13,14). However, it is the first time that this type of gangrene along with such an enormous size of diverticulum is described in the literature. Axial torsion of the diverticulum around its base, and consequently gangrene, has been related with attachment of the diverticulum to the umbilicus or to the ileal mesentery. Axial torsion of the diverticulum, around a narrow base can also occur (14). Post-inflammatory gangrene is infrequent, occurring only in case of late diagnosis, as the symptoms of diverticulitis are intense, leading to diagnosis and therefore to surgical treatment. In our case, axial torsion of the diverticulum occurred around its narrow base, resulting in compromised blood supply and gangrene. No attachment to adjacent anatomic structures was identified.

Although the postoperative outcome is generally good, preoperative diagnosis of Meckel’s diverticulum is usually quite elusive, both at clinical and imaging examination. Delay in the diagnosis of a complicated Meckel’s diverticulum can lead to significant morbidity and mortality. Therefore, a high index of suspicion is warranted to a correct and expeditious diagnosis of Meckel’s diverticulum, beneficial especially in patients with atypical presentation.

**References**