

Perforation of Meckel's Diverticulum by Foreign Body, A Rare Complication

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Rezumat

Diverticul Meckel perforat de un corp străin, o complicație rară

Diverticulul Meckel reprezintă o anomalie congenitală determinată de incompleta obliterare a ductului omfalo-mezenteric. Printre complicațiile determinate de acesta putem enumera hemoragia, ocluzia și inflamația, destul de rar fiind întâlnită perforația acestuia de către un corp străin. Dorim să aducem în discuție cazul unui bărbat în vârstă de 37 de ani prezentând semne și simptome de abdomen acut ce conduc spre diagnosticul de apendicită acută. Diagnosticul pozitiv a fost tranșat de laparoscopia exploratorie ce a decelat un diverticul Meckel inflammat și perforat de către un os de pui. Cazul a fost rezolvat laparoscopic, practicându-se diverticulotomie cu ajutorul unui stapler liniar Endo GIA și a prezentat o evoluție postoperatorie simplă, necomplicată.

Cuvinte cheie: diverticul Meckel perforat, corp străin, complicații, rezecție laparoscopică

Abstract

Meckel's diverticulum is a congenital disorder that results from an incomplete obliteration of the vitelline duct. Meckel's diverticulum may give rise to bleeding, intestinal obstruction

and inflammation; however, its perforation by a foreign body is an extremely rare life-threatening complication. We report on a 37-year-old male presenting symptoms and signs of acute abdomen with an initial suspicion of acute appendicitis. However, the right diagnosis was made only during exploratory laparoscopy when the appendix was found to be normal, whereas Meckel's diverticulum was found to be inflamed and perforated by a chicken bone. The patient was treated successfully with laparoscopic resection of the diverticulum, and had an uncomplicated postoperative course.

Key words: perforated Meckel diverticulum, foreign body, complications, laparoscopic resection

Introduction

Meckel diverticulum represents the most frequent congenital anomaly of the gastrointestinal tract (2% in necroptic studies) (1,2). It is a vestigial remnant of the omphalomesenteric duct that normally disappears between week 6th and 8th of pregnancy. It is located in the distal ileum on the antimesenteric side usually within about 45-60 cm of the ileocecal valve and is 3-5cm long (3). It was first described by Wilhelm Fabricius Hildanus in 1598, but researches regarding the anatomy and the embryology belong to Johann Friedrich Meckel, the Younger in 1809 (4). Normally it is asymptomatic but if symptoms occur, they appear until the age of 2. It is difficult to diagnose a Meckel diverticulum clinically and imagistically and it is often mistaken for other disorders like appendicitis, peptic ulcer, Chron disease, and therefore it has major implications in the abdominal pathology.

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Case presentation

We bring into discussion the case of a 37-year-old caucasian male without any medical history, that was admitted in to the Emergency Department with the following chief complaints: nausea, vomiting, generalised abdominal pain with maximum intensity in the right lower quadrant and melena. These symptoms started insidiously 24 hours before presentation and had a continuous intensification. Physical examination revealed abdominal pain on palpation with tenderness in the right lower quadrant that simulated acute appendicitis. The digital rectal examination found melena posing the question of an upper gastrointestinal bleeding. Routine blood tests found a slight leukocytosis (10.700) without any other modifications. Ultrasound examination revealed intestinal loops without peristalsis with mild distension in the right middle and lower quadrants of the abdomen. A small quantity of liquid located periappendiceal and in Morison's pouch was also identified. A provisional diagnosis of acute appendicitis with peritonitis was made and the patient gave his consent and was taken to the operating theatre for diagnostic laparoscopy under general anaesthesia. During laparoscopic examination of the abdomen a small/medium quantity of seropurulent liquid and false membranes disseminated through the abdominal cavity, especially in the midsection and pelvis, were identified. Exploration of the right iliac fossa revealed a normal appendix, and a Meckel diverticulum perforated by a foreign body (chicken bone) was seen next to the appendix. After a first irrigation of the abdominal cavity with betadine solution, laparoscopic diverticulectomy is made with the aid of an Endo GIA 12 mm stapler followed by an abundant washing and cleaning of the abdominal cavity and drainage of the pouch of Douglas. The postoperative evolution was simple, without complications and allowed the discharge of the patient on day 4.

Discussion

Uncomplicated Meckel diverticulum is totally asymptomatic. This anomaly is present in equal parts in both sexes, males and woman, but the complication rate is three times higher it males therefore it is more frequently discovered in males than females. Clinical symptoms appear as complications occur, in different percentages that vary based on the authors: 6.4%, 16%, 25% (1). The most common chief complaint is represented by painless melena caused by the ulceration and bleeding of the ectopic gastric mucosa in the Meckel diverticulum. Other complications are represented by obstruction and inflammation of the Meckel diverticulum (5). The Mayo Clinic experience with 1476 patients diagnosed with Meckel's diverticulum found that 238 of them had diverticular complications as the reason for presenting to the hospital with the prevalence of adult age (180 patients). The complications encountered were represented by: bleeding (38%), obstruction (34%), diverticulitis (22%), here being included 2 patients with perforation of the diverticulum by a foreign body (fish bone). In rare cases tumors like sarcoma, Burkitt lymphoma and adenocarcinoma were discovered in the Meckel's diverticulum (6). Diverticular perforation is a rare



Figure 1. Perforated Meckel diverticulum



Figure 2. The Endo GIA stapler is applied to the base of the diverticulum



Figure 3. The staple line on the ileum after resection

complication caused by: diverticulitis, ulceration of the adjacent ileal mucosa by the gastric acid produced by the ectopic gastric mucosa in the diverticulum (7), abdominal traumas (8), tumors (9) and round worms (10). A rare and unusual complication is the perforation of a Meckel's diverticulum by a swallowed foreign body (chicken bone, fish bone, toothpick) (11,12,13), a total number of 300 cases being reported in the literature (12). The majority of these foreign bodies pass through the digestive tract without problems but in a small number of cases perforation may occur (13,14). Usually the patient does not recall the ingestion of the foreign body and it is incidentally discovered imagistically or intraoperatively. The perforation mostly takes place in the terminal ileum and the colon, being rarely encountered in the Meckel diverticulum and the appendix. It is also a matter of differential diagnosis with right iliac fossa pain syndrome. Meckel's diverticulum is difficult to diagnose both clinically and imagistically, a real help being provided by the Tc-99m pertechnatate scintigraphy that identifies the bleeding ectopic gastric mucosa (15).

Conclusions

The perforation of a Meckel diverticulum by a foreign body is an extremely rare event and may have a bad prognosis in case of delayed diagnosis. This is why early recognition and treatment provide the best outcome for the patient.

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