In an Ileal Diverticulum (Meckel’s Diverticulum) - Gastric Perforation: Report of a Fatal Case

Introducción

El divertículo ileal (divertículo de Meckel) es una anomalía congénita que se encuentra en el ileon distal, ocasionada por el fracaso de la obliteración del yolk stalk. La edad más frecuente en la que se presenta esta anomalía es en la infancia, especialmente por debajo de los dos años de edad. Por lo tanto, se nota como una causa rara de obstrucción intestinal y mortalidad en la vida adulta. Presentamos un caso de un hombre de 26 años con dolor abdominal y vómitos durante 6 días, asociado a fiebre durante 3 días. La laparotomía de emergencia reveló diverticulitis ileal con obstrucción intestinal. Se realizó un ileocectomía con resección ileal y anastomosis ileoileal. Sin embargo, el paciente desarrolló disfunción renal conduciendo a Multiorgan Dysfunction Syndrome y falleció el cuarto día después de la intervención quirúrgica. Este anomafo anatómico es raro en pacientes adultos y es difícil de diagnosticar temprano debido a su presentación atípica, lo que resulta en alta mortalidad en ellos. Por lo tanto, consideramos este caso de interés.

Palabras clave: Divertículo ileal; divertículo de Meckel; resto ectópico gástrico; adultos; muerte.

Introducción

El divertículo ileal, también conocido como divertículo de Meckel, es la anomalía congénita gastrointestinal más prevalente (Turgeon & Barnett, 1990). Es un estado que resulta del fracaso de la obliteración del yolk stalk. Este ducto, que conecta el intestino medio con el sáculo vitelino, desaparece normalmente entre la quinta y sexta semana de la vida intrauterina. El fracaso de su obliteración puede causar diversas anomalías, como el polip de la umbilical, el conducto vitelino persistente y el divertículo ileal. Una revisión de la literatura muestra que esta anomalía desarrollamental se presenta en alrededor de 2% de la población (Leijonmarck et al., 1986). Se ha informado que este divertículo es encontrado más frecuentemente en niños y ocurre de manera igual en ambos sexos (Arnold & Pellicane, 1997). Soltero & Bill (1976) indicaron que la incidencia del divertículo ileal disminuye con el tiempo. Por lo tanto, si está presente en adultos, se convierte en una causa rara de obstrucción intestinal.

Aunque la laparotomía, la biopsia, la ecografía abdominal, la angiografía mesentérica superior se utilizan para diagnosticar divertículo ileal, la prueba de elección para detectar un resto ectópico dentro del divertículo es la imagen de Tc-99m (Williams, 1981). La intervención quirúrgica que trae el tratamiento definitivo para el divertículo ileal depende de la presentación del paciente. Se ha reportado que el riesgo de complicaciones postquirúrgicas a lo largo de la excisión de este divertículo es de alrededor del 10% (Moore & Johnston, 1976).

Caso Reporte

Este es un caso de un hombre de 26 años con dolor abdominal y vómitos por sobre una semana, que fue precedido por fiebre durante tres días. Antes de este viaje, el paciente había sido evaluado con USG abdomen que sugirió características de enfermedad aguda de la appendíces. Se realizó una laparotomía de emergencia y se realizó una ileocectomía con resección ileal y anastomosis ileoileal. Sin embargo, el paciente desarrolló disfunción renal conduciendo a Multiorgan Dysfunction Syndrome y murió el cuarto día después de la intervención quirúrgica. Este anomafo anatómico es raro en pacientes adultos y es difícil de diagnosticar temprano debido a su presentación atípica, lo que resulta en alta mortalidad en ellos. Por lo tanto, consideramos este caso de interés.

Palabras clave: Divertículo ileal; divertículo de Meckel; resto ectópico gástrico; adultos; muerte.
An emergency laparotomy was done which revealed ileal diverticulitis with small bowel obstruction. The diverticulum was located at the terminal ileum with adhesions to the sigmoid colon. While mobilising the base, the diverticulum perforated on touch which lead to the pouring of the ileal contents into the peritoneal cavity. Immediately suction was performed. It was observed that the omentum which had a compromised vascularity was found to be shifted towards the right ileac fossa. The surgical procedure involved local ileal resection with ileoileal anastamosis. Following the surgery a peritoneal wash was performed and a right abdominal flank drain was placed. After closing the abdomen in layers, the patient was shifted to the intensive care unit for further monitoring. Hence the major finding of the surgery was a perforated ileal diverticulum (Fig. 1). In the post operative period patient developed renal dysfunction leading to Multiorgan Dysfunction Syndrome (MODS) and died on the fourth post operative day.

The complications that can be present are inflammation, perforation, vesiculovascular fistula, intussusception, volvulus, hernia and malignancy being the rarest complication. It is discerned that malignancy is found only in 0.45-0.50% of the patients (DiGiacomo & Cottone). The most common benign tumour that is found to complicate a ileal diverticulum is leiomyoma (Weinstein et al., 1963).

Of the malignant tumours, sarcoma is the commonest, followed by carcinoids and adenocarcinomas (DiGiacomo & Cottone). The first report of a sarcoma was a fibromyosarcoma arising in a ileal diverticulum by Fried in 1902 (Fried, 1902). Most of the patients are asymptomatic and hence are diagnosed incidentally. If symptomatic, they present with symptoms that are similar to that of acute appendicitis like nausea, vomiting, pyrexia and abdominal pain. In patients with ileal diverticulum with upper gastrointestinal bleed, hematochezia or melena is usually present. However, it is pointed out that the most common presentation is obstruction in pediatrics and bleeding in adults (Park et al.).

**DISCUSSION**

Ileal diverticulum is an embryological abnormality which belongs to a spectrum of anomalies that occurs due to a persistent yolk stalk. Wilhelm Fabricius Hildanus was the first to describe the diverticulum in the year 1598 (Haber, 1947). However the diverticulum is named after Johann Friedrich Meckel who first reported its anatomy and embryology (Meckel, 1809). Over fifty years about 1467 cases from various age groups have been reported (Park et al., 2005). However reports on ileal diverticulum being fatal in adults are rare.

The diverticulum is known to classically follow the rule of 2’s. It occurs in about 2% subjects measuring about 2 cm in length and is situated about 2 feet away from the ileocecal valve. It commonly presents in the first two years of life may contain two types of epithelial tissue. However an exception has been reported where the ileal diverticulum measuring 4.3 cm x 2.1cm, presented itself 58cm proximal to the ileocecal junction (Madhyastha et al., 2007). In this present study, the diverticulum found in the patient was about 3 cm long. Histologically, it contains all the three layers of the intestinal wall namely mucosa, submucosa and muscularis propria. Nevertheless literature has reported that heterotopic rests of gastric and colonic mucosa or pancreatic, duodenal, jejunal, hepatic or endometrial tissue may be present (DiGiacomo & Cottone, 1993; Williams; Garretson & Frederich, 1990). Gastric and colonic ectopic tissues can lead to complications like ulceration of the diverticulum which causes an upper gastrointestinal bleed. This is attributed to the pH variation in the diverticulum due to the presence the ectopic tissue.

Investigation most often is laparoscopy or laparotomy in case of an incidentally found asymptomatic diverticulum (Malik et al., 2010). When symptomatic, the ideal investigation that can be performed is Technetium Tc 99m-pertechnate radioisotope scanning. The usage of this scan is based upon the principle of administering pertechnate intravenously which in turn is taken up by the mucus-secreting cells of the gastric mucosa present in the ileal diverticula (DiGiacomo & Cottone). This is called ileal scan. Literature has proved that the scan has a sensitivity of 85% and a specificity of 95% in children and the sensitivity falls to 62.5% and specificity to only 9% in adults (Schwartz & Lewis, 1984). Hence the accuracy of the scan can be
improved by administering a combination of pentagastrin and glucagon thereby leading to an increased uptake of the isotope and cease peristalsis in the patient simultaneously (Hughes et al., 1998). Superior mesenteric angiography may be helpful in patients presenting with acute gastrointestinal bleeding and is effective when blood loss exceeds 0.5 mL/ min. This has an accuracy of about 59% (Khan et al., 2008). Another useful investigation is a biopsy of the diverticulum tissue. In our patient the histopathological examination of the tissue revealed a ileal diverticulum lined predominantly by gastric epithelium. The base of the diverticulum showed a perforation involving a portion of small intestine. The resected margin of the ileum showed congestion and submucosal oedema.

The approach to treatment of a ileal diverticulum depends on whether it is discovered incidentally or as a result of symptoms. There is a controversy in performing surgery on an asymptomatic diverticulum. A Mayo clinical study revealed that it is advisable to perform surgery on an asymptomatic patient if any one of the following criteria of the patient’s age lesser than 50, male sex, length of diverticulum more than 2 cm or presence of ectopic tissue within the diverticulum is present (Park et al.).

The various surgical approaches are diverticulectomy with suture closure of the base, wedge resection of the intestinal wall containing the diverticulum with suture closure or segmental resection of the intestine, including the diverticulum and end-to-end anastomosis which are often performed on patients complicated with haemorrhage to ensure adequate excision of the part containing gastric and the ulcerated ileal mucosa. Division of the fibrous band with or without diverticulectomy is also an available option. Recently laparoscopic techniques are increasingly being used for diverticulectomy and intestinal resection. With advancements in technology, therapeutic interventions such as intracorporeal resection or laparoscopic-assisted extracorporeal resection are being performed. Emergency laparoscopic management of ileal diverticulum was preferred in our patient as he had acute symptoms of abdominal pain. Postoperative complications, such as ileus, suture line or intestinal anastomotic leak, intra-abdominal abscess, and pulmonary embolism that occur in about 10% of the patients are responsible for increased mortality rate (Moore & Johnston).

CONCLUSION

The occurrence of ileal diverticulum in pediatric population is not a curiosity but its symptomatic occurrence in an adult is. The ectopic rests of gastric tissue, as seen in this patient, often cause bizarre presentations. Sound knowledge of anatomy, a high index of suspicion and an awareness of unusual presentations are necessary for prompt diagnosis and timely intervention.

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