

Case Report

A Rare Complication of Meckel's Diverticulum

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Abstract

Meckel's diverticulum was the commonest GIT congenital anomalies that occur due to failure of vitelline duct to obliterate and result in formation of true diverticulum. Mostly MD is asymptomatic and main presentation in children is hemorrhage and diverticulitis, while in adult usually with complication in form of perforation, torsion, intestinal obstruction. Axial torsion at the base was the rarest complication.

Case presentation: Our case was two years' male patient presented with severe abdominal pain and vomiting and signs of peritonitis abdominal ultrasound reveal inflamed meckel's with edematous wall and pelvic collection. Patient diagnosed as meckel's diverticulitis with perforation, Intraoperative we found gangrenous, perforated MD, with torsion at its med way. Wedge resection was done, Patient smoothly post-operative and discharge after 6th days.

Conclusion: MD should be kept in mind during diagnosis of acute abdomen, while majority of cases are asymptomatic and symptoms mostly of complication, Early diagnosis will prevent most of the serious complication and decrease morbidity and mortality which occur by delay diagnosis. Surgery is the main treatment in the form of wedge resection, diverticulectomy, or resection of intestine.

Keywords: Meckel's diverticulum; Torsion; Surgery

Introduction

Meckel's Diverticulum (MD) is the most common congenital anomaly of the gastrointestinal system [1]. MD has prevalence of approximately 0.3 to 2.9 percent in general population, and in systematic review about 1.2 percent among 31,499 autopsies in seven studies [2].

The majority of MD were clinically silent and the symptoms (4 to 6 percent) are always due to complication [1,3].

The most common complications of MD include obstruction (due to intussusception or volvulus), followed by hemorrhage, perforation, diverticulitis, and intussusception [4,5].

The management of symptomatic non complicated MD usually controversial, some authorities suggested to left it, while others prefer resection. A recent systematic review suggested a move towards resection in all or those with high-risk factors for classical MD [6].

axial torsion and gangrene formation is the most uncommon complications recorded in the literature, and the main treatment is surgery [7].

Case Presentation

Male patient 2 yrs. old brought to emergency department complain of severe abdominal, colicky, intermittent, and progressive pain, for about three days, last day morning pain become continuous, associated with nausea and vomiting and high grad fever.

On examination, patient was looking ill, feverish and toxic. Vital signs: Blood pressure 130/70 mmHg, pulse 126 bpm, temperature 38.5 C and respiratory rate 26/m.

On abdominal examination, abdomen was tender at periumbilical, and lower abdominal area, right iliac fossa and suprapubic, rebound tenderness was strong positive, associate with guarding, no distension and bowel sound were sluggish.

Laboratory investigation: Hb. 9.54, WBC 9.22 $\times 10^9/L$ with 80% Neutrophils and CRP 179.

Abdominal ultrasound show (Inflamed ileal segment and Meckel's diverticulum can be seen inflamed showing diffuse walls thickening and surrounding by echogenic inflammatory fat and reactive regional LNs associated with moderate amount of high echo intraperitoneal collection) and patient diagnosed as acute Meckel's diverticulitis with perforation.

The patient was given saline and broad-spectrum intravenous antibiotics then prepared for surgery and immediately laparotomy was performed through lower midline incision. During exploration, 40 cm proximal to ileocecal valve, in the anti-mesenteric area, we found gangrenous, perforated MD with purulent collection in the peritoneal cavity due to axial torsion and strangulation at the mid of its length Figure 1.

Wedge resection of diverticula was done and suturing the defect of small bowel and wash of the peritoneal cavity with 3-liter Saline and pelvic drain were inserted.

Post-operative course, patient pass smoothly without complications and start oral fluid after 72 hours and discharge at 6th post-operative day. Follow up done after 7 then 14 days in outpatient clinic without any complication.

Discussion

Meckel's diverticulum is the most common GIT congenital anomaly [1]. Occur due to the failure of the vitelline duct to close, it results from incomplete obliteration of the vitelline duct leading to

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Figure 1: Axial Torsion of Meckel's Diverticulum in its mid of length with gangrene and perforation A, Before C B, After Resection

the formation of a true diverticulum of the small intestine [8,9]. MD found in 1% to 3% of general population [1].

MD located on the anti-mesenteric border of ileum 2 ft. proximal to the ileocecal junction. It is name regard for Johann Meckel, who illustrate it with detail in 1809, its usual size is 2.9 cm in length and 1.9 cm in width [10,11]. MD usually contain ectopic tissues like gastric or pancreatic mucosa [1].

MD prevalence is approximately 0.3 to 2.9 percent in general population, and in systematic review about 1.2 percent among 31,499 autopsies in seven studies [2, 8].

The clinical presentation of MD can vary with little specificity. There was a 'rule of 2's' has been seen in MD i.e, 2 inches long and 2 feet from the ileocecal valve, occur in 2% of the population, usually present in the first 2 years of life and M:F was 2:1. Most cases of MD are asymptomatic, see Table 1 [12,13].

Table 1: The Rule of 2 for Meckel's diverticulum.

The "Rule of 2" for Meckel's Diverticulum
MD is found in 2% of the population
Typically, at the age of 2 years or in the first 2 years of life
Male-female ratio 2:1
The most common location being 2 feet (60 cm) from the ileocecal valve, approximately 2 inches long (5 cm)
Two types of heterotopic mucosa (gastric or pancreatic)
Two types of symptoms: bleeding and obstruction

The majority of MD was clinically silent and the symptoms (4 to 6 percent) are always due to complication. The most common complications of MD include obstruction (due to intussusception or volvulus), followed by hemorrhage, perforation, diverticulitis, and intussusception [4,5].

The most common symptom at presentation was abdominal pain (98%), followed by vomiting (58%), fever (33%), distension (33%), obstipation (23%), and diarrhea (10%). White cell count was raised in majority of patients (42/47=89%).C-reactive protein was not frequently measured but when it was done, the result was abnormal (12/15=80%) [1,3,14].

Clinical features mainly associated with: Age <50 years, Male sex, Diverticulum length greater than 2 cm and Presence of histologically abnormal tissue, have high risk for complication, see Table 2 [1,3].

Malignancy due to diverticulum mucosal transformation was extremely rare (0.5% - 1.9%). Carcinoid tumors, gastrointestinal stromal tumors GIST, adenocarcinoma and sarcoma could be found [15,16].

Table 2: Risk factors that should lead to MD prophylactic resection.

Risk factors in adults to a prophylactic resection
Age <50 years
Male sex
MD length greater than 2 centimeters, Intra-diverticular tissue abnormalities (heterotopic mucosa, coprolith, inflammatory lesions)

Several imaging methods can be used for diagnosis of MD, such as X-ray, and CT scan which can detect signs of complication such as intestinal obstruction and pneumo-peritoneum with the presence of perforation, or gas-filled diverticulum. CT scan has a high diagnostic value, it illustrates intestines full of gas, and distinguish MD from a normal intestine in this method [17,18].

Technetium-99 m was one of the appropriate diagnostic methods can be used, which absorbed by the heterotopic mucus of the stomach and can be very helpful in diagnosis [17].

Among patients with torsion of MD, definitive surgical management was achieved with segmental resection (54%) if ileum affected by gangrene or narrowing, diverticulectomy (25%) followed by wedge resection (8%). Ileocecal resection may need as the MD located few cm from the IC valve [14].

In our case; we depend on clinical examination and abdominal ultrasound, and decide urgent laparotomy when we found signs of peritonitis and patient's condition which confirm the possibility of perforation. Just we resuscitate the patient, we urgent perform the surgery.

This patient came late; MD was 4 cm long and twisted at the mid, which strangulated then perforate with spillage of bowel content and develop peritonitis. While we found normal base of diverticulum, we perform wedge resection and suturing of bowel and clean the peritoneal cavity with saline.

Excision of the twisted diverticulum with or without wedge resection of the involved ileum is the procedure of choice [19].

Mortality due to Meckel's diverticulum is low (<0.001%) and is more common in the pediatric population [20].

Conclusion

MD should be kept in mind during diagnosis of acute abdomen, while majority of cases are asymptomatic and symptoms mostly of complication, Early diagnosis will prevent most of the serious complication and decrease morbidity and mortality which occur by delay diagnosis. Surgery is the main treatment in the form of wedge resection, diverticulectomy, or resection of intestine.

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