CASE REPORT

Spontaneous perforation of Meckel's diverticulum: A rare entity

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Abstract

Meckel's diverticulum is the most common gastrointestinal tract's congenital abnormality. Spontaneous perforation of Meckel's diverticulum is very rare and can mimic acute appendicitis. Here we report the case of an 11-year-old male patient, who was presented to the Surgical A unit of Ayub Teaching Hospital, Abbottabad on 21st January, 2021 with one-day history of abdominal pain, predominantly in the periumbilical area and right iliac fossa, associated with nausea. On physical examination his abdomen was tense, tender with guarding and generalized rigidity. A provisional diagnosis of perforated appendix or enteric perforation of a hollow viscus was made. The patient had an emergency laparotomy, where a perforated Meckel's diverticulum was discovered. Resection of the portion of gut containing Meckel's diverticulum was done along with primary anastomosis. Heterotopic gastric mucosa of diverticulitis, associated with perforation was confirmed on histopathology. The patient made an uneventful recovery during postoperative period. This case report is an interesting and an unusual case of Meckel's diverticulum complication. It highlights the importance of considering Meckel's diverticulum as a differential diagnosis in every patient presenting with acute abdomen in this age group.

Keywords: Meckel's diverticulum, perforation, laparotomy, appendix, omphalomesenteric duct.

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Introduction

Meckel's Diverticulum is the commonest gastrointestinal tract's congenital anomaly, resulting from the failure of obliteration of the proximal part of omphalomesenteric duct.[1] It originates from the anti-mesenteric border of ileum and its blood supply is from superior mesenteric artery.[2,3] It was first described in 1809 by a young German anatomist, Johann Friedrich Meckel. It is found in 2% of the population with lifetime complication rate around 4-16%.[4] The complications of Meckel's diverticulum include haemorrhage, obstruction, intussusception, volvulus, inflammation, malignant transformation and perforation being the rarest one.[5-7] Due to variety of clinical presentations, Meckel's diverticulum is difficult to diagnose preoperatively. So, it is essential to keep MD in the list of differential diagnosis in paediatric age group patients, presenting with acute abdomen.[7]

We describe a case of a patient who presented to us with acute abdomen and he was diagnosed intra-operatively to have a perforated Meckel's diverticulum.

Case Report

An 11-year-old boy presented to the emergency department with the history of abdomen pain and nausea for one day. Pain started in epigastrium and then shifted to periumbilical region and right iliac fossa. It was sudden in onset and its intensity was increasing gradually over the passage of time. The pain was associated with nausea and anorexia. He had previous history of worm infestation; for which he was medicated one year ago. There was no history of vomiting, altered bowel habits or per rectal bleeding. There was no history of typhoid, tuberculosis, fever, weight loss and night sweats. On general physical examination, patient was pale looking with tachycardia, tachypnoea and normal blood pressure and temperature. Abdominal examination revealed tense, tender abdomen; more in peri-umbilical area and right iliac fossa with generalized guarding. Rectal examination was normal. Complete blood profile showed total leukocyte count of 15000/mm^3. An abdominal X-ray showed air under right hemi-diaphragm and ultrasound revealed free fluid in peritoneal cavity. Hence, provisional diagnosis of peritonitis secondary to perforated appendix or enteric perforation of a hollow viscus were made. After initial resuscitation, a plan for an emergency exploratory laparotomy through right transverse supraumblical incision was made. Per-operatively, around 200 ml turbid fluid was found along with a normal looking appendix. A perforated Meckel's diverticulum at anti mesenteric border of ileum attached to undersurface of umbilicus was found (Figure). Resection of the portion of gut containing Meckel's diverticulum was done and single layer submucosal primary anastomosis was made with polyglactin 4-0 suture after washing the abdominal cavity with 5 liters of warm 0.9% normal saline and abdomen was closed in layers after placing a drain in

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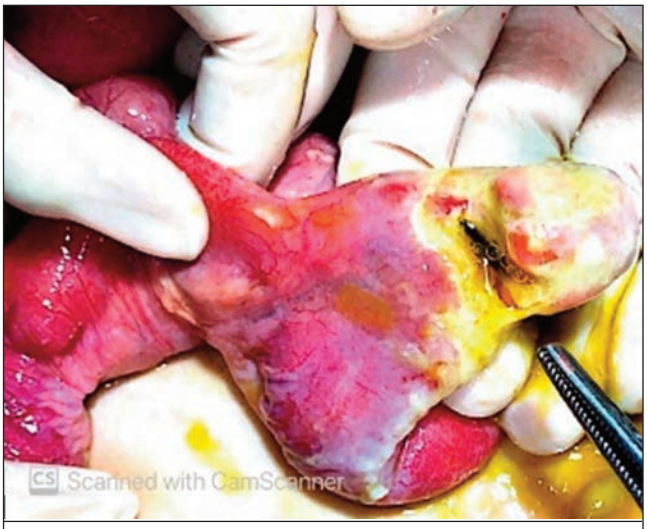

Figure: Perforated Meckel's diverticulum.

the pelvis. Nasogastric tube was inserted at OT table and patient was kept Nil Per Os for 5 days, post-operatively. Patient was stable and his recovery remained uneventful during post-operative period. Drain was removed and oral intake was started on 3rd and 6th post-operative day, respectively. Patient was discharged on 7th post-operative day. Histopathology report of resected portion revealed Meckel's diverticulitis with perforation, associated with gastric heterotopia. Clinical follow-ups after one and four weeks were unremarkable. Informed consent was taken from patient's father to publish this case.

Discussion

Meckel's diverticulum is a true diverticulum, as its wall contains all the layers of small intestine.[8] It generally follows the Rule of 2's: present in 2% of the population, within 2 feet of ileocecal valve, length of 2 inches, wall contains 2 types of heterotopic mucosa i.e. gastric and pancreatic, present before 2 years of age and male to female ratio is 2:1.[9]

Heterotrophic tissue is found in 60% of the cases of Meckel's diverticulum. among which 40-60% contains gastric while about 9% contain pancreatic tissue.[5] Previous studies indicate that the presence of foreign body or diverticulitis secondary to gastric heterotopia is a common causes of Meckel's diverticulum perforation.[5,9] Similar finding was found in our case; where the cause of perforation was diverticulitis associated with gastric heterotopia.

Meckel's diverticulum is usually asymptomatic and becomes symptomatic when an associated complication occurs. In the paediatric age group, gastrointestinal bleeding is a common presentation while obstruction is common among adults. Perforation is a rare presentation among both age groups.[2] Clinical presentation mimics acute appendicitis. making it difficult to diagnose pre-operatively.[7] The diagnostic modalities that help in diagnosis of Meckel's diverticulum include ultrasound, CT abdomen and Tc-99m scan; latter being the most accurate modality.[5] In our study it was diagnosed per operatively.

Conclusion

Perforation of Meckel's diverticulum is an uncommon phenomenon and is difficult to diagnose because of its clinical presentation that mimics acute appendicitis. Perforated Meckel's diverticulitis is an important diagnosis to be considered in patients with pneumoperitoneum, especially in this age group.

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