Complicated Meckel’s diverticulum

Ahmad Solyman Ahmad, Yasser Abdel Razek Mohamed, Mazin Abdullah Arif, Albroumi Said Abdullah

ABSTRACT

Introduction: Meckel’s diverticulum is rare among the general population. Symptoms are varied, the diagnosis is often difficult and the abnormality is usually an incidental finding in laparotomies. Undiagnosed Meckel’s diverticulitis harbor a considerable probability of complications; including perforation and peritonitis.

Case Series: Herein, we report two cases, first case was a 27-year-old male presented with non-specific lower abdominal pain and nausea. Meckel’s diverticulitis was on top of the differential diagnosis by CECT scan of the abdomen. He underwent surgical resection of the Meckel’s diverticulum and appendectomy. The second case was 47-year-old male presented with epigastric pain shifted to the right lower abdomen and one episode of vomiting. The erect abdominal radiograph revealed pneumoperitoneum, which necessitates urgent laparotomy and diverticulectomy.

Conclusion: Meckel’s diverticulum cases are the most common gastrointestinal congenital anomalies despite its relative rarity, but should be pursued in diagnosis and treated surgically because of the high rate of inflammation, intestinal obstruction and perforation.
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Keywords: Intestinal obstruction, Meckel’s diverticulum, Perforation, Pneumoperitoneum

How to cite this article


Article ID: Z01201608CS10075AA

doi:10.5348/ijcri-201614-CS-10075

INTRODUCTION

Meckel’s diverticulum is a remnant of omphalomesenteric duct. Small percentage of Meckel’s diverticula become symptomatic when it bleeds, typically due to presence of ectopic gastric mucosa rarely, diverticulum contains rests of pancreatic tissue Incidence: 2% of general population, Found within 2 feet of ileocecal valve. Most have clinical symptoms before two years of age (Rule of 2s). Embryologically, it is a result of partial obliteration of the omphalomesentric duct during the fifth week of gestation and contains the three layers of the small intestine, so that it is a true diverticulum. Usually, it measures about 1 and 10 cm in length [1].

Meckel’s diverticulum is the most common one of omphalomesentric duct anomalies, which also includes umbilicoileal fistula, umbilical sinus, umbilical cyst, and fibrous cord connecting ileum to umbilicus. This finding is clinically significant because this band can cause obstruction or volvulus [2]. Meckel’s diverticulum
is equal in incidence among genders, despite the higher complication rate in males and has no association with other major congenital malformations. However it is more founded in patients with Crohn’s disease than in the general population [2, 3].

CASE SERIES

Case 1

A 27-year-old male presented with a non-specific abdominal pain and nausea, mainly at the right iliac fossa, since three hours. There was no associated fever.

On examination the abdomen was soft, with mild tenderness at the lower abdomen without rigidity or guarding.

On investigation, white blood cell count was 5.77x10^3/μL and hemoglobin was 13.4 g/dl.

Initial ultrasonography examination was inconclusive as there was a slight prominence of gut loops with some localized fluid like collection in right iliac fossa. Contrast-enhanced computed tomography (CECT) of abdomen and pelvis was advised for further evaluation. The CECT scan of abdomen and pelvis showed a blind end bowel loop, containing air fluid level, emerging from the distal ileum; localized fluid collection with air fluid level as well as multiple regional mesenteric lymph nodes averaging 8.5 mm are seen adjacent to this loop; the appendix measures 8 mm in cross-sectional diameter. These findings were accompanied by dilated small bowel loop, measures 42 mm in diameter; likely ileus. Therefore, the possibility of Meckel’s diverticulitis and or appendicitis, with possible perforation was considered (Figure 1A–B).

The surgical interference confirmed the diagnosis of a complicated Meckel’s diverticulum by inflammation with a gangrenous portion. The Meckel’s diverticulum was resected along with the secondarily inflamed appendix. Anatomical closure of the small bowel into two layers was implemented.

Case 2

The second case was 47-year-old male, presented with epigastric pain shifted to the right lower abdomen and one episode of vomiting.

On examination the abdomen was soft, with tenderness at the right iliac fossa. Yet, there was no rigidity or guarding.

On investigation white blood cell count was 9.79x10^3/μL and hemoglobin was 14.35 g/dl. The erect abdominal X-rays revealed pneumoperitoneum, which necessitated urgent laparotomy, perforated Meckel’s diverticulum diagnosis was surgically confirmed and diverticulectomy had been done (Figure 2A–B).

Histopathological examination described a blind ended small bowel segment, 1.5 cm in diameter and 3 cm in length with a 1 cm perforation rent. Normal bowel wall layers were found, with no detected heterotopic gastric or pancreatic tissues.

DISCUSSION

Meckel’s diverticulum is a remnant of omphalomesenteric duct found in 2–3% of autopsy series. Minority of Meckel’s diverticula become symptomatic. This is attributed to presence of ectopic gastric mucosa. Rarely, diverticulum contains rests of pancreatic tissue. The omphalomesenteric duct was connection between yolk sac and primitive digestive tract in embryogenesis.

Meckel’s diverticulum is the most common form of omphalomesenteric duct anomalies, which also includes umbilicoileal fistula, umbilical sinus, umbilical cyst, and fibrous cord connecting ileum to umbilicus.

There is a 4.2–6.4% lifetime risk of complications [3–5]. Common complications to MD are gastrointestinal bleeding, intussusception, obstruction and diverticulitis.

Meckel’s diverticulum usually measures 5–6 cm in length, positioned within 2 feet proximal to ileocecal valve. Enteroliths are found in lumen in some cases. The “Rule of 2s” refers to its 2% prevalence, 2-feet distance from the ileocecal valve, 2 inches length, containing one
or two types of heterotopic gastric or pancreatic tissue and usually symptomatic by the age of two years.

Histologically, it composed of same layers as adjacent small bowel but with addition of heterotopic gastric or pancreatic rests.

Meckel’s diverticulum frequently presented with gastrointestinal bleeding, ulceration, abdominal pain, or mass.

However, it may also presented as intermittent abdominal pain, occult fecal blood, hematochezia, small bowel obstruction and intussusception.

Perforation of Meckel’s diverticulum with hemoperitoneum in children is rare and serious.

Meckel’s diverticulum can be complicated with torsion, which may be present with nonspecific abdominal pain and mass Meckel’s diverticulum often become symptomatic before two years of age. 60% of patients come to medical attention before 10 years of age.

Males are equal to females in true incidence; however complications rate is higher in males.

Ectopic gastric mucosa is protruding into the lumen of the diverticulum and neoplasms show contrast enhancement [6]. The imaging of Meckel’s diverticulum is important to avoid the considerable risk of perforation and gross peritonitis because of the non-specific findings of the Meckel’s diverticulum and its clinical resemblance to appendicitis. Open or laparoscopic resection of the surrounding bowel and diverticulum are the proper surgical treatment.

CONCLUSION

Meckel’s diverticulum is one of the most common gastrointestinal anomalies, and requires rapid surgical treatment due to its common complications. It should be kept in differential diagnosis during radiological evaluation of patients presented with acute abdomen.

Acknowledgements
We would like to acknowledge the Executive Director of Nizwa Hospital, Oman, and all staff in Department of Radiology and Department of General Surgery for their continuous effort and assistance in the care and treatment of the patients.

Author Contributions
Ahmad Solyma Ahmad – Substantial contribution to conception and design, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published
Yasser Abdel Razek Mohamed – Substantial contribution to conception and design, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published
Mazin Abdullah Arif – Substantial contribution to conception and design, Analysis and interpretation of data, Drafting the article, Final approval of the version to be published
Albroumi Said Abdullah – Substantial contribution to conception and design, Analysis and interpretation of data, Drafting the article, Final approval of the version to be published

Guarantor
The corresponding author is the guarantor of submission.

Conflict of Interest
Authors declare no conflict of interest.

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