MECKEL'S DIVERTICULUM MISDIAGNOSED AS A SMALL INTESTINAL POLYP

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ABSTRACT Background: Meckel's diverticulum is the most common congenital abnormality of the small intestine, with an incidence about 2% of the population. It is asymptomatic in most cases. When symptomatic, it's most common clinical presentation is bleeding in children and intestinal obstruction in adults. Small intestinal polyps are a challenging clinical problem. They present with various symptoms and their diagnosis is difficult due to limitations in radiographic and endoscopic detection. **Case Summary:** We present a case of a 25–years old male patient with chronic intermittent abdominal pain, who was admitted to our department for an elective laparoscopic resection of a small intestinal polyp, diagnosed via CT and MRI enterography. However, laparoscopy revealed a Meckel's diverticulum and no other pathology of the small intestine. **Conclusion:** Both Meckel's diverticulum and small intestinal polyps are rare conditions and their differential diagnosis is challenging. A high clinical index of suspicion is demanded, as well as accurate radiographic and endoscopic tests in order to diagnose and therefore treat symptomatic patients.

KEYWORDS Meckel's diverticulum, small intestine polyp, misdiagnosed Meckel's diverticulum

INTRODUCTION

Meckel's diverticulum is a congenital abnormality that is found in 2% of the population. It is most frequently found in children within the first two years of their life. It is rarely found in adults. [1] Diagnosis of symptomatic Meckel's diverticulum is difficult, especially in adults. Plain abdominal radiography, CT scan and ultrasonography are of limited diagnostic value. The data for the specificity and sensitivity of MR Enterography in this condition are scant. In children, the most accurate diagnostic test is scintigraphy with sodium Tc-pertechnetate. However, in adults, this test is less accurate, because of the reduced prevalence of ectopic gastric mucosa within the diverticulum.[2] Small bowel polyps present with vague and heterogeneous symptoms and their detection is a clinical challenge due to limitations in radiographic and endoscopic tests. MR enterography, video capsule endoscopy and double-balloon enteroscopy are considered to be very sensitive, but their sensitivity depends on the size and location of the lesions.[3]

We present a rare case of Meckel diverticulum in a young adult that has been misdiagnosed preoperatively.

CASE REPORT

A 25-year old male patient was admitted to our department for elective laparoscopic resection of a small intestinal polyp. He suffered from intermittent abdominal pain for three years. Each episode of abdominal pain lasted for several hours and was accompanied by nausea and abdominal bloating. He did not complain about vomiting while gases' and stools' passage was unobstructed. The patient requested multiple times urgent medical help and underwent several imaging and laboratory tests without reaching a definitive diagnosis. These episodes were self-limited, and he was never hospitalized. Among other tests such as plain abdominal radiography and an abdominal

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ultrasound that did not manage to reveal any abnormalities, he underwent a CT Enterography. This study revealed an outgrowing intraluminal mass with smooth margins, sized about 2 cm located in the proximal ileus. (Figure 1)

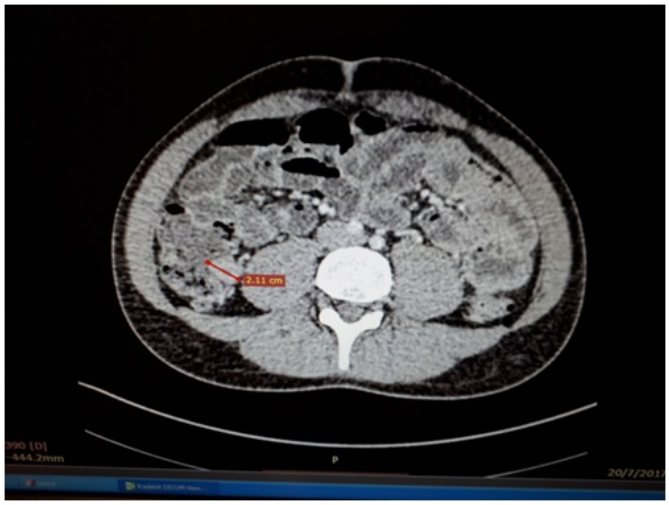

Figure 1: CT scan showing the misdiagnosed diverticulum. Radiologists suggested that it was likely a intestinal polyp.

Afterwards, the patient underwent Magnetic Resonance Enterography, which confirmed the previous findings and diagnosed a small intestinal polyp. Capsule endoscopy camera was not able to add any further information about the nature of the intraluminal mass, due to quick transit.

A patient submitted to an elective operation. During laparoscopy, a Meckel's diverticulum was found, about 1m proximally to the ileocecal valve. (Figure 2)

Figure 2: Intraoperative photo of the ileum during laparoscopy.

The diverticulum was 3cm long, and its lumen was about 2cm wide. The whole ileus was palpated through the sub-umbilical incision, and no other pathology was revealed. A 12cm long part of the ileus was resected, and the intestinal continuity was restored with a side-to-side stapled anastomosis. (Figure 3 and 4)

The postoperative course of the patient was uneventful, and he was discharged the day after the operation. Histological

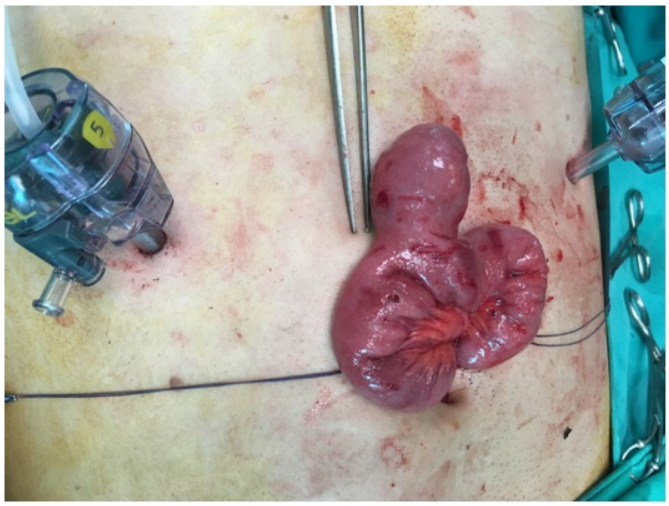

Figure 3: Intraoperative photo of the specimen prior to its resection.

examination of the removed specimen confirmed our intraoperative diagnosis that the present lesion was Meckel's diverticulum that contained fundic type gastric heterotopias, as well as ectopic pancreatic tissue.

The patient was followed-up clinically at 3rd, 6th and 12th month after the operation and he remained symptom-free.

Figure 4: Meckel's diverticulum is clinically obvious in the removed specimen.

DISCUSSION

Meckel's diverticulum is a true diverticulum of the small intestine. It is usually asymptomatic, especially in adults.[4] Its complications are typically related to obstruction, bleeding and inflammation. Inflammation with or without perforation is found

in 20-30% of symptomatic patients.[5] Bleeding is more common among pediatric patients, whereas obstruction is more prevalent in adults.

Obstruction most commonly is caused by intussusception, as a result of Meckel's diverticulum falling into small bowel's lumen and therefore becoming a lead point, allowing the intussusception. [6] In more rare cases it has been described the ileum to be entrapped by a Meckel's diverticulum causing obstruction[6], or the diverticulum being entrapped in a hernia. Obstruction may also happen when a part of the bowel is trapped inferior to the mesodiverticular band. [7] Other possible mechanisms are diverticulum lithiasis, volvulus and axial torsion of the diverticulum.

Few cases report an inverted Meckel's diverticulum. It is interesting though that in such cases, besides causing obstruction and intussusception, the diverticulum can simulate a pedunculated small intestinal polyp. [8] To be noted that in the case that we present, at the time of the operation, the diverticulum was not inverted.

In general, small bowel polyps are symptomatic in 40-70% of the patients. The symptoms vary between anaemia, occult blood loss, abdominal pain, intermittent obstruction, vomiting and unexplained weight loss. [9]

Many imaging studies can be used to diagnose a patient with a suspected symptomatic Meckel's diverticulum.

Plain radiography is of limited value. It may be normal, or its findings may be non-specific, such as indications of small bowel obstruction or enteroliths[10] Ultrasonography is also of limited value. However high-resolution sonography may reveal a blind-ending thick-walled loop of bowel, connected to a normal peristaltic loop of small bowel. [11] CT most common findings in symptomatic patients are free fluid, soft tissue stranding and small bowel obstruction. [12] On the other hand, special imaging protocols with sub-1mm imaging sections are required to identify asymptomatic Meckel's diverticula. [13] CT enterography provides better visualization of the small bowel and, therefore is more sensitive in diagnosing uncomplicated Meckel's diverticula. [10] CT angiography is useful in cases where the symptom is acute active bleeding. In such cases active extravagation may be recognized, when bleeding occurs with a minimum rate of 0,5 ml/min.[14] In cases of chronic gastrointestinal bleeding, angiography may reveal persistent vitellointestinal artery. The sensitivity of the Tc-99 m pertechnetate scintigraphy is 85% in children and 54–63% in adults and may be falsely positive in other conditions when acute inflammation of the intestine exists. It is even less useful for patients whose symptoms do not include gastrointestinal bleeding.[13] Magnetic resonance Enterography seems to be very sensitive and accurate in the hands of experts and also has the advantage of not exposing the patient in ionizing radiation. [13] However, there are limited data in the literature, and until now MRE is not the gold standard in diagnosing Meckel's diverticulum.

Regarding small intestinal polyps, there is no standardized diagnostic strategy. CT is 80% sensitive for small bowel tumours. Newer techniques such as CT enterography and MR enterography are improving the method's sensitivity to 85-97%.[15] For carcinoid tumours, somatostatin receptor scintigraphy is 88% sensitive.[16] Endoscopic options depend on the location of the polyp. Upper endoscopy, push endoscopy and colonoscopy including terminal ileum cover a significant part of the small bowel. For lesions between proximal jejunum and terminal ileum, video capsule endoscopy as a non-invasive method and single or double balloon enteroscopy are appropriate diagnostic tests. Their sensitivity and specificity depend on the size and the location (epithelial or subepithelial) of the lesion.[15]

CONCLUSIONS

Both symptomatic Meckel's diverticulum and symptomatic small bowel polyp are rare conditions in adults. The differential diagnosis is difficult, especially in cases with non-specific and atypical symptoms. The usual imaging studies are of low diagnostic accuracy, and even more, detailed tests such as MRE and capsule endoscopy camera may fail to establish a correct and accurate preoperative diagnosis. Surgeons should always include in their differential diagnosis algorithm these entities although their rarity.

AUTHORS' STATEMENTS

Informed Consent

Written informed consent was obtained from the patient for publication of this Case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this Journal.

Disclosure Statement

There was no financial support or relationships between the authors and any organization or professional bodies that could pose any conflict of interests.

REFERENCES

1. Stone PA, Hofeldt MJ, Cambell JE, et al. Meckel diverticulum: ten-year experience in adults. South Med J 2004;97:1038–1041.

2. P. D. Thurley et al., "Radiological Features of Meckel's Diverticulum and Its Complications," Clinical Radiology 64, no. 2 (2009): 109–18.

3. de Latour RA, et al., Management of small bowel polyps: A literature review, Best Practice & Research Clinical Gastroenterology (2017).

4. Weinstein EC, Cain JC, RemineW. Meckel diverticulum: 55 years of clinical and surgical experience. JAMA 1962;182:251–253.

5. Park JJ,Wolff BG, Tollefson MK, et al. Meckel diverticulum. The Mayo Clinic experience in 1476 patients (1950–2002). Ann Surg 2005;241:529–533.

6. Sharma R, Jain V. 2008. Emergency surgery for Meckel's diverticu- lum. World J Emerg Surg 3:27.

7. Kopacova M, Vykouril L, Vacek Z, Tycova ´V, Ba ´rtova ´ J, Rejchrt Bures J. 2010. Inverted Meckel's diverticulum with ectopic pancreatic tissue as a source of severe gastrointestinal bleeding. J Gastrointest Surg 14:578–581.

8. Ming-Chang Ku and Yeu-Sheng Tyan, "Inverted Meckel's Diverticulum," The Journal of Emergency Medicine 46, no. 6 (2014): e177–78.

9. Zollinger RM, Sternfeld WC, Schreiber H. Primary neoplasms of the small intestine. Am J Surg 1986;151:654e8.

10. Elsayes KM, Menias CO, Harvin HJ, et al. Imaging manifesta- tions of Meckel's diverticulum. AJR Am J Roentgenol 2007; 189:81e8.

11. Mostbeck GH, Liskutin J, Dorffner R, et al. Ultra- sonographic diagnosis of a bleeding Meckel's di- verticulum. Pediatr Radiol 2000; 30:382.

12. Olson DE, Kim YW, Donnelly LF (2009) CT findings in children with Meckel diverticulum. Pediatr Radiol 39:659–663.

13. Shilpa Hegde et al., "MR Enterography of Perforated Acute Meckel Diverticulitis," Pediatric Radiology 42, no. 2 (2012): 257–62.

14. Mitchell AW, Spencer J, Allison DJ, et al. Meckel's diverticulum: angiographic findings in 16 patients. AJR 1998; 170:1329–1333.

15. Rabia A. de Latour, Saikiran M. Kilaru, and Seth A. Gross, "Management of Small Bowel Polyps: A Literature Review," Best Practice and Research: Clinical Gastroenterology 31, no. 4 (2017): 401–8.

16. Sainz-Esteban A, Olmos R, Gonzalez-Sagrado M, Gonzalez ML, Ruiz MA, García-Talavera P, et al. Contribution of 111 In-pentetreotide SPECT/CT imaging to conventional somatostatin receptor scintigraphy in the detection of neuroendocrine tumours. Nucl Med Commun 2015;36:251e9.