Dual Pathology in a Patient with Right Lower Quadrant Pain

Gary B. Deutsch, MD¹ Sandeep Anantha Sathyanarayana, MD¹ Jeffrey Nicastro, MD¹
Ernesto Molmenti, MD¹ Gene Coppa, MD¹ Eugene Rubach, MD² Barak Friedman, MD³

¹ Department of Surgery, Hofstra North Shore-Long Island Jewish Health System, Manhasset, New York

² Department of Surgery, St. Francis Hospital, Catholic Health System of Long Island, Roslyn, New York

³ Department of Radiology, North Shore-Long Island Jewish Health System, Manhasset, New York

Address for correspondence and reprint requests Gary B. Deutsch, MD, Resident in General Surgery, North Shore-Long Island Jewish Health System, 300 Community Drive, Manhasset, NY 11030 (e-mail: gdeutsch@nshs.edu).

Int J Angiol 2012;21:155–158.

Abstract

Keywords

- Meckel diverticulitis
- carcinoid
- appendix
- abdominal pain
- diverticulitis
- malignancy
- resection

Meckel diverticula are remnants of the omphalomesenteric duct. They have 2% incidence in the general population, are usually asymptomatic, and tend to be diagnosed incidentally. The generally held principle had been that asymptomatic cases do not require resection, as exemplified by a 2008 systematic review of over 200 studies. However, a recent series reported an increased risk of malignancies, and recommended mandatory resection. We present a case of Meckel diverticulitis with concurrent infiltrative appendiceal carcinoid in a patient with right lower quadrant pain.

A 51-year-old woman with known gastroesophageal reflux disease and no previous surgeries presented with a 24-hour history of vague abdominal pain associated with mild nausea. She denied any emesis, palpitations, flushing, dyspnea, or changes in bowel or bladder habits. On physical examination, she was afebrile with mild to moderate epigastric tenderness. Her white blood cell count was 13000/μL and hemoglobin level was 12.7 g/dL. An enhanced abdominal computed tomography (CT) with oral and intravenous contrast showed a long dilated debris-filled blind-ending loop of bowel (red arrows—► **Fig. 1**) and adjacent mesenteric fluid (green arrow—► **Fig. 2**). The appendix was not visualized.

Given the abdominal tenderness and leukocytosis, a diagnostic laparoscopy was undertaken. A Meckel diverticulum (MD), dilated, severely inflamed, and firmly impacted with stool was identified ~60 cm proximal to the ileocecal valve. Further evaluation of the abdomen revealed a 1.5-cm mass at the tip of an uninflamed appendix. Both the MD (together with adjacent small bowel) and appendix were resected laparoscopically. Microscopic examination revealed Meckel diverticulitis as well as an appendiceal carcinoid infiltrating

the wall and surrounding adipose tissues, with a positive proximal resection margin. The patient subsequently underwent a laparoscopic right hemicolectomy with regional lymphadenectomy. She had an uneventful postoperative course and was discharged free of symptoms.

Discussion

Meckel's diverticula are remnants of the omphalomesenteric duct. They have 2% incidence in the general population, are usually asymptomatic, and tend to be diagnosed incidentally. The generally held principle had been that asymptomatic cases do not require resection, as exemplified by a 2008 systematic review of over 200 studies.¹ However, a recent series reported an increased risk of malignancies, and recommended mandatory resection.²

The diagnosis and management of symptomatic MD (encountered in 2 to 4% of patients³) is relatively straightforward. Acute massive (and less frequently indolent) gastrointestinal bleeding is the most common presenting complaint in patients under 2 years of age.⁴ Intestinal obstruction is the

Fig. 1 A/B Axial/coronal computed tomography imaging of the abdomen with oral and intravenous contrast demonstrating a long dilated debris-filled blind-ending loop of bowel marked by a red arrow.

primary presentation in adults, usually associated with small bowel volvulus around the diverticulum. Local inflammation is less common, but still reported in up to 25% of patients.⁵ Many times these cases can be clinically indistinguishable from appendicitis.⁶ Differential diagnosis includes Crohn disease, colonic diverticulitis, perforated neoplasms, pelvic inflammatory disease (in female patients), and urachal remnants (when localized to the periumbilical region).^{7,8} Our patient's clinical presentation was not typical of symptomatic MD. Diagnosis can be facilitated by the presence of small bowel obstruction and visualization of a normal appendix.⁹ In this case, where neither was present, diagnostic laparoscopy was undertaken. The MD was found at its expected location (approximately 2 ft from the ileocecal valve) and resected. Full examination of the peritoneal cavity yielded a mass in the setting of an otherwise unremarkable appendix. While there have reports of carcinoid tumors within MD¹⁰ and appendiceal carcinoids mimicking MD,¹¹ we believe this is the first report of an incidental appendiceal carcinoid in the setting of Meckel diverticulitis. Some have hypothesized that an interaction between neural crest cells and endoderm during embryogenesis could account for the increased incidence of ileal carcinoids and MD.¹² Our case further confirms that all patients undergoing exploratory laparoscopy for unexplained

right lower quadrant abdominal pain should have a thorough evaluation of the entire peritoneal cavity in search of concomitant intra-abdominal pathologies.

Author Contributions

- Study concept and design: Deutsch and Anantha Sathyanarayana.
- Acquisition of data: Anantha Sathyanarayana.
- Analysis and interpretation of data: Deutsch, Anantha Sathyanarayana, Rubach, and Friedman.
- Drafting of the article: Deutsch.
- Critical revision of the article for important intellectual content: Anantha Sathyanarayana, Nicastro, Molmenti, Coppa, Rubach, and Friedman.
- Study supervision: Molmenti, Rubach, and Friedman.

Disclosures

The authors have no financial disclosures.

References

- 1 Zani A, Eaton S, Rees CM, Pierro A. Incidentally detected Meckel diverticulum: to resect or not to resect? *Ann Surg* 2008;247(2):276–281
- 2 Thirunavukarasu P, Sathiaiah M, Sukumar S, et al. Meckel's diverticulum—a high-risk region for malignancy in the ileum. Insights from a population-based epidemiological study and implications in surgical management. *Ann Surg* 2011;253(2):223–230
- 3 Novoa RA, Shaffer K. Meckel's diverticulitis presenting with abdominal pain and angina. *Radiology Case Reports*. 2008;3:166
- 4 Chan KW, Lee KH, Mou JW, Cheung ST, Tam YH. Laparoscopic management of complicated Meckel's diverticulum in children: a 10-year review. *Surg Endosc* 2008;22(6):1509–1512
- 5 Park JJ, Wolff BG, Tollefson MK, Walsh EE, Larson DR. Meckel diverticulum: the Mayo Clinic experience with 1476 patients (1950–2002). *Ann Surg* 2005;241(3):529–533
- 6 Karam AR, Birjawi GA, Sidani CA, Haddad MC. Alternative diagnoses of acute appendicitis on helical CT with intravenous and rectal contrast. *Clin Imaging* 2007;31(2):77–86
- 7 Enç F, Yorulmaz E, Melikoğlu L, et al. A case of Meckel's diverticulitis treated on the assumption of Crohn's disease. *Turk J Gastroenterol* 2010;21(2):175–178

Fig. 2 Axial computed tomography imaging of the abdomen with oral and intravenous contrast demonstrating mesenteric fluid and stranding marked by a green arrow.

- 8 Hernandez DM, Matos PP, Hernandez JC, Muñoz JL, Villasana LdeC. Persistence of an infected urachus presenting as acute abdominal pain. Case report. *Arch Esp Urol* 2009;62(7):589–592
- 9 Levy AD, Hobbs CM. From the archives of the AFIP. Meckel diverticulum: radiologic features with pathologic Correlation. *Radiographics* 2004;24(2):565–587
- 10 Moyana TN. Carcinoid tumors arising from Meckel's diverticulum. A clinical, morphologic, and immunohistochemical study. *Am J Clin Pathol* 1989;91(1):52–56
- 11 Summers HG, Loftus EV Jr, Sebo TJ, Durski JM. Appendiceal carcinoid mimicking a Meckel's diverticulum on Tc-99m pertechnetate imaging. *Clin Nucl Med* 2010;35(4):277–279
- 12 Grossmann I, Akkersdijk GJ. Carcinoid tumor in a Meckel's diverticulum: hypothesis on mutual embryological origin. *Int Surg* 2003;88(1):41–46