Case 13998

Meckel's Diverticulum Volvulus: A rare cause of intestinal obstruction
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Section: Abdominal imaging
Area of Interest: Abdomen
Procedure: Diagnostic procedure
Imaging Technique: CT
Special Focus: Obstruction / Occlusion Case Type: Clinical Cases
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Patient: 77 years, male

Clinical History:

A 77-year-old male presents to the emergency room with abdominal pain and vomiting for the last 5 days. Physical examination showed abdominal swelling and diffuse tenderness. There was no evidence for peritonitis. The patient referred an inability for food intake but no constitutional symptoms.

Imaging Findings:

Duodenum and all small-bowel loops were severely dilated (not the stomach, since a nasogastric tube was placed). In the transition between normal and dilated loops at the level of the distal ileum (approximately 5 cm away from the ileocecal valve), a circumferential thickening of the bowel wall (about 2 cms length) with an associated endoluminal polypoid-like image was found. No adenopathies were present. The large bowel and the terminal 5 centimetres of the ileum were collapsed. Surgical examination revealed a mechanical intestinal occlusion secondary to a Meckel Diverticulum volvulation, with no signs of ischemia or perforation.

Discussion:

Meckel's diverticulum (MD) consists of all three layers of the bowel wall and therefore represents a true congenital diverticulum. It is usually located on the anti-mesenteric border of the ilium and occurs in about 2% of the population [1].

MD may contain abnormal gastric mucosa and pancreatic tissues. Clinical manifestations range from asymptomatic to mimic common abdominal disorders such as appendicitis, Crohn's disease or peptic ulcer disease. The vast majority of Meckel's diverticuli are asymptomatic and incidentally found during surgery. Its most common complication in adults is bowel obstruction [2].

In the setting of intestinal obstruction, the most useful feature for the diagnosis of an MD on abdominal radiographs is the visualization of enteroliths, which most commonly manifest as peripheral calcification with a radiolucent center [3].

CT plays a key role in the evaluation of patients with intestinal obstruction. However, its ability to accurately identify an MD as the cause of intestinal obstruction is limited. MD may produce obstruction by diverticular inversion causing luminal obstruction or leading an intussusception, volvulus from persistent attachment to the umbilicus, adhesions or
congenital mesodiverticular bands, diverticulitis, foreign body impaction, diverticulum inclusion into a hernia, neoplasm or formation of a true knot. In addition to the visualization of a blind-ending diverticular sac at obstruction level, a high degree of suspicion is required. MD manifests as a blind-ending, tubular, or sausage-shaped structure communicating with the small intestinal lumen [4]. Fluid, air, enteroliths, or mixed attenuation fecal-like material may be present within the diverticulum.

The diagnosis of obstruction caused by volvulus from persistent fibrous attachment to the umbilicus, adhesions, or mesodiverticular bands is usually not possible with CT unless the diverticulum is identified. In this setting, the CT features are similar to those of small intestinal obstruction secondary to postoperative adhesions [5].

Technetium-99m pertechnetate scan, abdominal ultrasound and barium studies have also been proven to be useful in the diagnosis of MD [6]. Following its diagnosis, diverticulectomy should be warranted in all symptomatic cases.

For those cases which remain asymptomatic, there is no evidence supporting elective resection of Meckel's diverticulum. Avoiding surgery in case of asymptomatic MD reduces the risk of postoperative complications caused by unnecessary surgical intervention [7].

In spite of being the most common congenital condition of the GI tract, the clinical diagnosis of MD is extremely hard to establish. Although useful identifying the cause of bowel obstruction, the CT scan will often miss the diagnosis of Meckel's diverticulum [8].

**Differential Diagnosis List:**
- Meckel's Diverticulum Volvulus
- Mechanical Intestinal Occlusion secondary to Inflammatory Disease
- Mechanical Intestinal Occlusion secondary to Neoplasm

**Final Diagnosis:** Meckel's Diverticulum Volvulus

**References:**

Description: Duodenum and all small-bowel loops were severely dilated.

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