

Fellows' Corner

by Sadiya Sarij and Seymour Katz

CASE REPORT

A 20-year-old male with Down's syndrome presented with repeated episodes of painless melena and hematochezia over two months. There was no history of hematemesis, jaundice, or analgesic intake. He was taking a proton pump inhibitor, following his initial presentation with melena of unknown cause. His family history was noncontributory. Physical examination revealed pallor, pulse 110 and Down's facies, but was otherwise normal. The significant laboratory investigation revealed hemoglobin of 7.3 and hematocrit of 22 but was otherwise normal. The gastric aspirate was devoid of blood.

Two months prior, the patient had painless rectal bleeding, with hemodynamic instability requiring blood transfusions. An extensive gastrointestinal work-up, including upper endoscopy, colonoscopy, small bowel series, capsule endoscopy study and nuclear scan to rule out Meckel's diverticulum, was negative for the source of hemorrhage. The Meckel's Scan was repeated two weeks later and again was negative. The patient became clinically stable and was discharged home but returned four days later with active bleeding.

On this admission a CT angiogram revealed a 2 × 3 cm densely enhancing mass in the arterial phase and then washed out in the late phase imaging. There was a small amount of air in the periphery of the lesion suggesting a diverticulum. Multi-plan reconstructions demonstrated an enlarged feeding artery (Figure 1).

At laparotomy, approximately 2 feet proximal to the ileocecal valve region, the culprit lesion was revealed. The pathology report confirmed the diagnosis, 3 × 3 cm with ectopic gastric and pancreatic tissue associated with ulceration.

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Questions

1. What are the clinical predictors of a poor outcome in gastrointestinal bleeding?
2. What are the advantages of preoperative diagnosis of acute lower gastrointestinal bleeding?
3. What are the presenting symptoms and potential complications of Meckel's Diverticulum?
4. How can Meckel's Diverticulum be diagnosed preoperatively?
5. What aspects of CT angiography allow the radiologist and clinician to better investigate the source of gastrointestinal bleeding?

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Figure 1.

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Answers

1. Clinical predictors of a poor outcome are recurrent episodes of bleeding or persistent severe bleeding, in-hospital status, shock on presentation or hemodynamic instability, high transfusion requirements, advanced age, and major co-morbidities, including metastatic cancer, sepsis, cardiac, hepatic, pulmonary, and/or renal disease. Clinical risk assessment determines management. Patients require close monitoring in an ICU setting if they have active bleeding, persistent hemodynamic derangement despite fluid resuscitation, serious co-morbid medical illness, or evidence of advanced liver disease.

2. Up to 10% of patients require urgent surgery to arrest uncontrolled hemorrhage. The need for emergent surgery decreases with early diagnosis of severe gastrointestinal hemorrhages. Preoperative localization of the bleeding site allows limited resection of the bleeding segment (of small intestine or colon). When accurate localization is not possible or when emergency surgery is required for massive or recurrent hemorrhage, extensive resection results in higher morbidity and mortality than limited resection.

3. Patients with Meckel's diverticulum usually are asymptomatic but 2 percent have some complication in their lifetime. Sixty percent of patients with complications are younger than ten years of age. In adult patients, the prevalence of complications ranges from 26 to 53%. Meckel's diverticulum may cause perforation, hemorrhage from peptic ulceration, inflammation, intestinal obstruction from diverticular inversion, volvulus, torsion, intussusception, inclusion of the diverticulum in a hernia and development of neoplasia within the diverticulum. Ileo-ileal intussusception into the patent duct appears clinically as an ileal prolapse at the umbilicus.

4. This case report demonstrated Meckel's Diverticulum diagnosed by computed tomography (CT) Angiography after multiple hospital admissions for hematochezia. and examinations failed to establish a diagnosis. The diagnosis of Meckel's diverticulum is difficult and it is rarely made before surgery where it is an incidental finding at laparotomy for other conditions or as an autopsy finding. Barium studies of the small intestine are inadequate for evaluation of acute bleeding. The

Meckel's scan is considered a technique of choice in children since symptomatic diverticula in children contain ectopic gastric tissue. However, the accuracy falls dramatically in adults. Angiography of the mesenteric artery is a useful diagnostic technique, but bleeding may be inadequate at the time of the angiography and spatial limitations may obscure the visualization of the characteristic blood supply to the diverticulum. It is difficult to demonstrate the bleeding site of a Meckel's Diverticulum with this technique alone. CT angiography correlates the angiographic information with anatomy by recreating a three-dimensional view.

5. One of the most compelling advantages of CT angiography is the ability to provide information which previously required several radiological studies. This advantage stems from optimization in data acquisition, image processing, and image display. With the advent of thin section, high resolution multidimension CT, it is possible to perform angiographic studies using water, MC (methyl cellulose) or other low HU (Hounsfield Units) contrast to visualize the bowel, followed by a rapid IV bolus. Arterial and venous phase images are acquired. Scanning is in the late arterial phase so the proximal and distant veins are opacified as well as the mucosa. In investigating gastrointestinal bleeding, CTA provide fast, reliable, and accurate results. ■

References

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