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CLINICAL VIGNETTE

A Case of Isolated Right Sided Colonic Ischemia

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Case

A 79-year-old female nursing home resident with advanced dementia presented to the emergency department with the chief complaint of abdominal pain, nausea and vomiting. Past medical history included a distant history of a cerebral vascular accident with residual left-sided weakness, previous right-sided carotid endarterectomy, chronic obstructive pulmonary disease, hyperlipidemia, and hypertension. Social history included a 100-pack year history of smoking.

Physical exam was difficult due to the patient's dementia and agitation. Her abdominal exam revealed diffuse abdominal tenderness without rebound or guarding. White blood cell count (WBC) at admission was 20,800, with a normal lactic acid level of 1.8 mmol/L. Creatinine at admission was mildly elevated at 1.2, with a low glomerular filtration rate of 43. A non-contrast computed tomography (CT) scan showed mild to moderate colonic thickening in the ascending colon and the proximal transverse colon.

Four months prior to this admission, the patient had presented to the hospital with similar symptoms of abdominal pain and vomiting. During that previous hospitalization, (CT) imaging revealed pneumatosis coli of the right side of the colon, extending to the hepatic flexure (Figure 1). Imaging also revealed a small amount of portal venous air. Lactic acid level was elevated at 4.7 mmol/L. The WBC was also elevated at 12.6. The patient was suspected of having isolated right-sided colonic ischemia, but given the patient's comorbidities, the family decided to treat her conservatively with broad spectrum antibiotics and supportive care. The patient improved clinically and was discharged on hospital day 10.

During the most recent admission, the risks, benefits, alternatives of different treatment options were discussed. Goals of care were also discussed in detail with the patient's family. While they did not want any aggressive measures such as surgery, they were willing to consider a mesenteric angiogram with possible stenting. The goal was to alleviate the patient's abdominal pain and to prevent future hospitalizations.

After hydration with intravenous fluids, the patient's GFR increased to >50. A CT angiogram of the abdomen and pelvis noted near-complete occlusion of the superior mesenteric artery (SMA) and inferior mesenteric artery (IMA) at their origins (Figure 2). Severe stenosis of the celiac artery at its origin was also noted.

Interventional radiology performed a mesenteric angiogram. The right radial artery was accessed, given the severe bilateral femoral and iliac artery stenosis visualized on the recent CT angiogram. Severe calcified stenosis was noted at the origin of SMA, and a 3mm balloon angioplasty was performed. This was followed by a 4mm x 24mm balloon-expandable Boston Scientific bare metal stent placement into the proximal SMA. Post deployment balloon dilation of the SMA stent was performed with a 4mm and 5mm balloon. There were no immediate complications following stent placement and the patient was discharged to her previous nursing home on hospital day 13.

As of this time, the patient had no further hospitalizations (11 month follow-up).

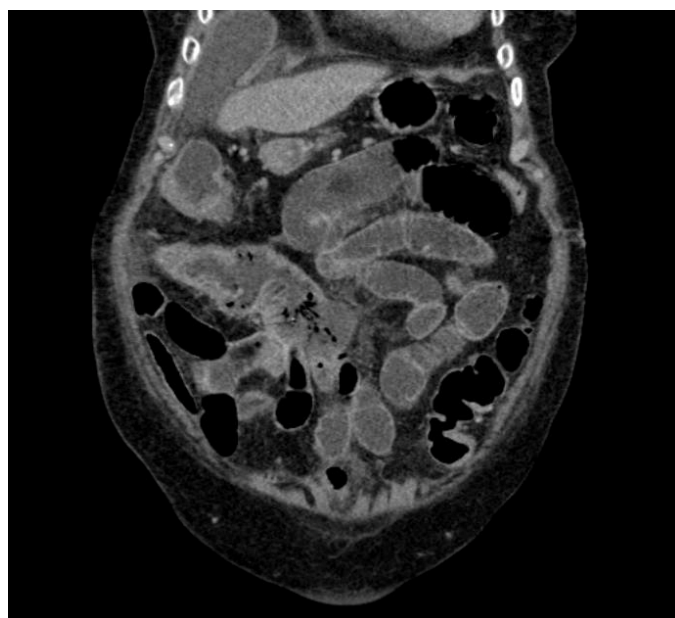


Figure 1



Figure 2

Discussion

The blood supply to the colon is by three blood vessels: The SMA typically supplies the cecum to mid-transverse colon, the IMA supplies the mid-transverse colon to the anorectum, and the superior hemorrhoidal artery (a branch from the internal iliac artery) supplies the downstream portion of the rectum.

Colonic ischemia (CI) occurs when reduced blood flow leads to the inability of the colon to perform normal cellular metabolism. CI can affect any section of the colon, although the left side is most commonly affected.¹

It is important to note that there is usually a difference in presentation between left-sided colonic ischemic vs isolated right sided colonic ischemia. Typical symptoms of left-sided colonic ischemia include the sudden onset of abdominal cramping or pain, fecal urgency/diarrhea, and the passage of blood within the first 24 hours of onset of symptoms. The classic symptoms usually follow in that order of sequence.^{1,2} In isolated right sided colonic ischemia, abdominal pain is a more common presenting symptom, whereas the passage of blood

and diarrhea are less common. It is estimated that isolated right sided colonic ischemia occurs in 9-25.2% of cases of colonic ischemia.^{1,3}

It is important to recognize the distinction between right colonic ischemia and ischemia involving other segments of the colon. Right colonic ischemia is associated with a longer length of stay, higher need for surgery (54.9% vs. 10.9%, $P<0.001$), and higher risk of death (22.5 vs. 11.9% $P=0.03$).^{1,4} Isolated right sided colonic ischemia is frequently the first sign of significant SMA disease, and possibly a precursor to impending acute mesenteric ischemia. Given that the SMA supplies the jejunum and ileum, this may be a heralding event of acute mesenteric ischemia, which can lead to bowel infarction and death if not recognized and treated early.⁵

CT angiography should be performed on any patient with suspected isolated right side colonic ischemia.⁵

Conclusion

Isolated right sided colonic ischemia has a worse prognosis compared with CI involving other colon regions.⁴ It is associated with a longer hospital stay, higher need for surgery, and higher risk of death. Recognition is important as isolated right sided colonic ischemia may be a precursor of a more serious event, such as acute mesenteric ischemia. CT angiogram is recommended in cases of suspected IRCI.

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