CLINICAL VIGNETTE

Superior Mesenteric Artery Syndrome

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Case

A 24-year-old female with a past medical history of bipolar disorder presented to the emergency room with 3 days of severe, sharp, epigastric abdominal pain, nausea, and vomiting. She described the pain as constant but worsened by meals increasing from 4/10 to 8/10. She had a recent acute diarrheal illness with her weight dropping from 92lbs to 84lbs. Her only medication was escitalopram. She had no prior surgeries.

Vital signs included temperature 37.6^{o}C, pulse 76, and blood pressure 106/76. She was thin and uncomfortable. Her abdomen was tender to palpation in the epigastrium and right upper quadrant. She had normoactive bowel sounds and no organomegaly or masses.

Her initial labs included a hemoglobin of 12.6gm/dL, normal liver biochemical tests, electrolytes, and lipase.

Her CT scan was notable for dilation of the 1st and 2nd portion of the duodenum (Figure 1) with narrowing at the level of the superior mesenteric artery consistent with superior mesenteric artery syndrome.

She was placed on parenteral nutrition with Ensure as tolerated and regained weight to her baseline over 3 weeks. At that time, she was able to tolerate a normal diet and remained asymptomatic off parenteral nutrition.

Discussion

Superior mesenteric artery syndrome is characterized by compression of the third portion of the duodenum between the aorta and the superior mesenteric artery (SMA). This condition is associated with a narrowed angle between the aorta and the SMA, which is normally between 38^{o}C and 65^{o}C. The angle is affected in part by a mesenteric fat pad.[1] In periods of rapid weight loss or with certain anatomical defects, this angle is further narrowed and results in duodenal compression. The incidence of SMA syndrome is reported between 0.2% and 0.78%.[2] Risk factors include conditions that result in rapid weight loss (eg, AIDS, burns, bariatric surgery, and eating disorders).

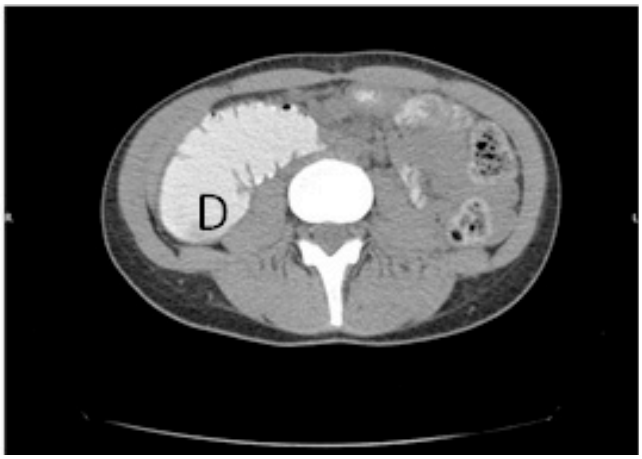
The diagnosis of SMA syndrome can be difficult to establish as the symptoms are non-specific and thus requires a high index of suspicion. Patients with acute SMA syndrome may present with classic obstructive symptoms with acute abdominal pain, nausea, and vomiting; however, others may have chronic symptoms related to intermittent obstruction, including post-prandial abdominal pain, weight loss, and nausea. Plain radiographs may suggest the diagnosis with a distended, air-filled stomach and duodenum. Oral contrast enhanced imaging (CT or upper GI series) will show contrast filling the distended 1st and 2nd portions of the duodenum with narrowing and often failure of contrast passage at the 3rd portion. Confirmatory testing can be done with CT angiography demonstrating duodenal distention with a narrowed aortic-SMA angle of $\leq$25^{o}.[3]

Conservative treatment of SMA syndrome initially includes gastric decompression with placement of a nasogastric tube and correction of any electrolyte abnormalities. Restoration of a normal aortic-SMA angle is achieved with nutritional support either enteral feeding via a nasojejunal tube that extends distal to the level of obstruction or parenteral nutrition. In patients with more chronic symptoms or with recurrent episodes, conservative management is less likely to be effective, and surgery should be considered. Surgical options include laparoscopic duodenojejunostomy or the Strong procedure in which the duodenum is mobilized by dividing the ligament of Treitz and then repositioned so it no longer lies between the aorta and SMA.[4]

Summary

The SMA syndrome is a rare cause of intestinal obstruction and requires a high index of suspicion. It should be suspected in patients with a recent history of rapid weight loss. The diagnosis can be made with imaging studies showing gastric and duodenal distention with narrowing at the third portion of the duodenum in associated with an aortic-SMA angle of $\leq$25^{o}. Most cases will respond to conservative management with decompression and nutritional support with surgical correction reserved for treatment failures or chronic/recurrent episodes.

Figure 1: CT scan showing a dilated 1st and 2nd portion of the duodenum (D) with narrowing of the duodenum between the SMA and aorta.



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