

Superior Mesenteric Artery Syndrome presenting with Acute Intestinal Obstruction: A Report of Two Cases and Review of Literature.

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Abstract: We report two cases of superior mesenteric artery syndrome managed successfully by duodenojejunostomy. We had a chance to get these cases of an interval of 20 days and both had an acute presentation. Diagnosis of the condition was made on CECT abdomen and was confirmed at laparotomy.

INTRODUCTION

Superior mesenteric artery syndrome (SMA syndrome, also known as Wilkie's syndrome) is a rare condition first described in 1861, by Rokitsansky¹. It occurs when the third (transverse) portion of the duodenum gets entrapped under the superior mesenteric artery. Anatomically, the duodenum passes across the abdominal aorta just below the origin of the SMA. In some cases, various structural anomalies change the angle between the superior mesenteric artery and the aorta (which is normally 45°). This change creates pressure to the duodenum, resulting in to obstruction of its lumen. In the medical literature, there are over 400 cases of SMA syndrome reported, constituting this an unusual cause of upper intestinal obstruction².

The syndrome is typically caused by an angle of 6°-25° between the abdominal aorta and the superior mesenteric artery, in comparison to the normal range of 38°-56°, due to a lack of retroperitoneal and visceral fat. In addition, the aortomesenteric distance is 2-8 millimeters, as opposed to the typical 10-20³.

CASE REPORTS

CASE 1

A 23 years old male was admitted to our hospital with recurrent episodes of Profuse bilious vomiting of partially digested food for last six days.

He was treated for vomiting by some local practitioner without any relief. Similar such episodes in past were not present in history. On examination, the patient was 178 cm tall, asthenic with body weight of 50 kg. Abdomen was distended more so in upper abdomen. Ausculto-percussion and succussion splash test gave a clinical impression of gastric distension. Routine laboratory values were unremarkable. Barium meal follow through examination revealed complete stricture in the 3rd part of duodenum with grossly distended stomach. No contrast flowed past the stricture till 2 hrs. The stomach was grossly distended and was extending up to pelvis, even though the gastric secretions (bilious) were aspirated through the nasogastric tube before injecting the barium, there were still lot of secretions present in stomach. The duodenum was dilated up to 3rd part (Fig. 1). Contrast enhanced computed tomography (CECT) scan detected grossly distended stomach and 1st, 2nd and proximal 3rd parts of the duodenum with abrupt smooth tapering of the third part of the duodenum as it crosses the midline between the aorta and superior mesenteric artery. The small bowel loops distal to it and the large bowel loops appeared collapsed (Fig. 2).



Fig. 1



Fig. 2

The above imaging findings and clinical presentation correlated the diagnosis of SMAS (superior mesenteric artery syndrome). Conservative trial was attempted with nasogastric decompression, I V fluids, but symptoms remained refractory.

Exploratory laparotomy confirmed compression of the D3. There was no evidence of any other cause of obstruction. A side-to-side retrocolic Duodenojejunostomy bypass was done. The patient recovered uneventfully. During follow up, he remained symptom free.

CASE 2

A 17 years old female was admitted to our hospital with recurrent episodes of profuse

bilious vomiting for last five days. She was admitted under medicine department as a case of persistent vomiting. Similar such episodes in past were not present in history. On examination, the patient was 155 cm tall, asthenic with body weight of 43 kg. Abdomen was distended more so in upper abdomen.

Auscultation-percussion and succussion splash test gave a clinical impression of gastric distension. Routine laboratory values were unremarkable. Contrast enhanced computed tomography (CECT) scan detected significantly distended stomach and 1st, 2nd and proximal 3rd parts of the duodenum with abrupt transition and decreased aortomesenteric distance. Terminal duodenum, small bowel and colon appeared collapse (Fig. 3). The above imaging findings and clinical presentation confirmed the diagnosis of SMAS. Conservative trial was attempted with nasogastric decompression, I V fluids, but remained unsuccessful so, surgical intervention was planned. Exploratory laparotomy confirmed compression of the D3 and ruled out other causes of obstruction. Stomach was grossly dilated and was reaching upto pelvis (Fig. 4). Proximal to superior mesenteric artery, duodenum was found grossly dilated (Fig. 5). A side-to-side retro colic Duodenojejunostomy bypass was done. The patient recovered uneventfully. During follow up, she had persistent symptoms of fullness, vomiting and nausea. On 8th post-operative day gastrograffin study was done which revealed normal anastomosis without any leak and dye passed on to small and large intestines normally. Size of the stomach had reduced to half of what it was seen on previous CT scan but still it was distended. She was given tablet metoclopramide twice a day. There was progressive decrease in symptoms over next 10 days.



Fig. 3



Fig. 4



Fig. 5

DISCUSSION

SMA syndrome is quite rare. The precise incidence of this entity is unknown. In a review of the literature, approximately 0.013-0.3% of the findings from upper GI tract barium studies support a diagnosis of SMA syndrome. No racial differences have been identified. The SMA syndrome usually occurs in older children and adolescents. In one report by Geer, 75% of the cases occurred in patients aged 10-30 years. Due to the general nature of the symptoms, it is difficult to estimate the frequency of cases in the general population. More females are affected by SMA syndrome. In one large series of 75 patients with SMA syndrome, two thirds of the cases involved women, with an average age of 41 years; one third of cases involved men, with an average age of 38 years. Thus, it does not seem to be more common in any particular race; however seems to strike women about twice as often as men. The syndrome usually occurs in older children and teenagers. About 3/4 of all cases occur between the ages 10 and 30^{4,5}.

SMAS is found more commonly in females than males and typically affects individuals of slender built after acute weight loss. Symptoms of SMAS are similar to those of small bowel obstruction and include vomiting, nausea, early satiety, anorexia and abdominal pain².

The presentation of SMA syndrome can be chronic, intermittent or acute, and can result in either complete or partial duodenal obstruction. Patients often present with chronic symptoms related to the upper abdomen. These may include: epigastric (upper mid-abdominal) pain, nausea, eructation (belching), vomiting of large quantities of bilious or partially digested material, discomfort after meals, early satiety (loss of appetite) and subacute small bowel obstruction. These symptoms are often relieved by lying down on the left side, prone (face down), or with the knees to the chest; they can be aggravated in the supine (face up) position^{6,7}. SMAS should be differentiated from SMA-like-syndrome (mega duodenum) found in several neuropathic and connective tissue disorders⁸.

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