Superior mesenteric artery syndrome: A diagnosis to be kept in mind (Case report and literature review)

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A R T I C L E   I N F O

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A B S T R A C T

INTRODUCTION: Superior mesenteric artery (SMA) syndrome or what is called Wiklie’s syndrome is one of the rare causes of small bowel obstruction. Its exact incidence is not known. It is due to decrease in Aortomesenteric angle.

CASE PRESENTATION: A thirty-four-year old male patient presented to our accident and emergency (department) with 3 days history of epigastric pain, which was not radiating anywhere. It had no aggravating or relieving factors. Patient complained of repeated attack of vomiting as well. Contrast enhanced Computed tomography (CT) showed duodenal obstruction caused by superior mesenteric artery compression on 3rd part of duodenum.

DISCUSSION: Superior mesenteric artery syndrome (SMA) is one of the rare causes of small bowel obstruction. Incidence of superior mesenteric artery syndrome reported in literature is ranging from 0.1 to 0.3%. The most common cause is significant weight loss which leads to loss of retroperitoneal fat. Treatment usually is conservative but surgical intervention should be considered if that failed.

CONCLUSION: Superior mesenteric artery syndrome is a rare cause of intestinal obstruction but should be kept in mind. Persistent vomiting after history of weight loss should raise the suspicion of this diagnosis. Upper GI endoscopy may be necessary to exclude mechanical causes of duodenal obstruction. Contrast enhanced CT scan is useful in the diagnosis of superior mesenteric artery syndrome and can provide diagnostic information.

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1. Introduction

Superior mesenteric artery (SMA) syndrome (Wiklie’s syndrome) is one of the rare causes of small bowel obstruction. Its exact incidence is not known. It is due to decrease in aortomesenteric angle with resultant duodenal obstruction. Several factors are responsible for such a condition but the most significant one is weight loss. Diagnosis is challenging but should be suspected based on clinical presentation. Conservative treatment has place in managing such cases. Failure of conservative management warrants surgical intervention. The case report has been written in line with the SCARE criteria [9].

2. Case presentation

A thirty-four-year old male patient presented to our accident and emergency department with 3 days history of epigastric pain associated with repeated attack of vomiting. Pain localized to the epigastric area with no relieving or aggravating factors. He denies any previous similar attack. No significant previous surgical or medical problem. Patient reported that he lost weight over the month preceding his symptoms. Examination revealed very thin patient with normal vitals. Abdominal examination showed mild tenderness with fullness over epigastric area.

Patient was admitted initially with provisional diagnosis of acute pancreatitis based on clinical features and high level of serum lipase (which increased from 200 to 915 U/L). Ultrasound abdomen was done in emergency room which revealed severe gastric dilatation reaching down to the pelvis raising the suspicion of gastric outlet obstruction (GOO) (Fig. 1). Patient was admitted and started on IV hydration and gastric decompression through nasogastric tube. Upper endoscopy done and showed dilated stomach and duodenum. The endoscopist could not be able to advance the scope beyond 3rd part of duodenum.

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Thereafter patient underwent contrast enhanced CT scan abdomen and pelvis that revealed severely dilated stomach and significant dilatation of the duodenum up to the level of the distal third part, abrupt narrowing (transition zone) seen just anterior to the abdominal aorta and posterior to the superior mesenteric artery (Figs. 2 and 3 as well as significant reduction of the aortomesenteric angle (measuring 11°) and aortomesenteric distance measuring about 5 mm (Fig. 4).

Conservative management was planned. During the course of treatment, the patient decided to travel back to his home country to and continue his treatment over there.

3. Discussion

Superior mesenteric artery (SMA) syndrome is one of uncommon causes of small bowel obstruction. In this syndrome, the 3rd part of duodenum will be compressed between SMA at its origin and abdominal aorta due to decreased angulation leading to partial or complete obstruction [1].

In normal anatomy the aortomesenteric angle and aortomesenteric distance is 25°–60° and 10–28 mm, respectively. Third part of duodenum courses posteroinferior in relation to SMA. Any loss in retroperitoneal fat might reduce that angle and leads to superior mesenteric artery syndrome [2,3].

Incidence of superior mesenteric artery syndrome reported in some previous studies ranging from 0.1 to 0.3% however the true incidence is unknown [2].

Several factors are listed which have an effect on aortomesenteric angle. The most common is significant weight loss which lead to loss of retroperitoneal fat. Superior mesenteric artery syndrome is most commonly associated with severe debilitating illnesses, such as malignancy, malabsorption syndromes, AIDS, trauma and burns [4].

Weight loss is not the only factor responsible for SMA syndrome. Surgical intervention that distorts the anatomy can lead to this syndrome. Corrective spinal surgery for scoliosis and esophagectomy in some occasion are among the causes. Moreover, congenital short ligament of Treitz suspending the duodenum in an abnor-
mally cephalic position has also been reported in literature as one of the causes [4].

Females aged between 10 to 40 years are more commonly affected [8]. Patient might present with acute symptoms of intestinal obstruction as in our case or more commonly with chronic symptoms as recurrent abdominal pain with cramps, early satiety and postprandial fullness. Sometimes pain will be aggravated with lying supine and get relieved in knee chest position. A maneuver increases the aortomesenteric angle with subsequent relief of bowel obstruction [5,6].

SMA syndrome diagnosis is challenging and often delayed due to its insidious onset. The diagnosis should be suspected based on clinical presentation and supported by radiological tests. Barium studies might show duodenal dilatation and sometimes gastric dilatation with slow gastroduodenojunal transit. Contrast-enhanced CT or magnetic resonance imaging can enable visualization of the vascular compression of the duodenum and precise measurement of the aortomesenteric angle and distance [7].

Treatment is usually conservative which include gastric decompression, fluid electrolytes imbalance correction and nutritional support either through total parenteral nutrition or post pyloric tube feeding (nasojugal tube). Conservative treatment focuses on nutritional support aimed at restoration of retroperitoneal fat and weight gain. Posturing maneuvers during meals and motility agents may be helpful in some patients [6,8].

If conservative treatment fails to relieve obstruction surgical procedures to bypass the obstruction should be considered. Duodenojjnostomy is the procedure of choice with success rate reaching up to 90%. Another simpler operation called Strong’s procedure which involves division of the ligament of Treitz with mobilization of the duodenum. Gastrojejunalostomy has been reported in literature in treating such condition but has increased postoperative complication like blind loop syndrome and recurrence of symptoms [8].

4. Conclusion

Superior mesenteric artery syndrome is rare cause of intestinal obstruction but should be kept in mind. Persistent vomiting after history of weight loss should raise the suspicion of this diagnosis. Upper GI endoscopy may be necessary to exclude other mechanical causes of duodenal obstruction. Contrast enhanced CT scan is useful in the diagnosis of superior mesenteric artery syndrome and can provide diagnostic information.

Conflicts of interest

No conflict of interest.

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Ethical approval

Written informed consent was obtained from the patient.

Consent

Written informed consent was obtained from the patient.

Author contributions

All authors have approved the final article.

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