Superior Mesenteric Artery Syndrome

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ABSTRACT

We report a unique case of obstruction of the upper gastrointestinal tract diagnosed in a 15-year boy presenting with a 6-month history of persistent abdominal pain, epigastric fullness, repeated episodes of vomiting, and significant weight loss. The computed tomography (CT) scan of the abdomen with intravenous and oral contrast demonstrated the angle between the aorta and superior mesenteric artery (SMA) to be 15° and revealed the stomach and duodenum to be massively dilated, leading up to a diagnosis of SMA syndrome, which was successfully operated. SMA syndrome is a challenging diagnosis and must always be included in the list of probable diagnoses causing obstruction of the upper gastrointestinal tract.

Key Words: *Upper gastrointestinal obstruction, Superior mesenteric artery syndrome, Small bowel obstruction, Duodenojejunostomy.*

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INTRODUCTION

Described long ago, as a cause of small bowel obstruction (due to compression of 3rd part of the duodenum between the superior mesenteric artery (SMA) and aorta), SMA syndrome still remains a rather rare and underdiagnosed condition. The condition can be categorised as acquired, congenital, and idiopathic. The exact aetiology and pathophysiology have been studied extensively, but are still largely elusive. Aorto-mesenteric angle (less than 25° degrees) is often blamed to be the prime factor.[1]

Other factors that may be implicated in SMA syndrome development include sloughing of the cushioning fat pad between SMA and aorta (due to either marked weight loss or corrective scoliosis surgery), congenital factors such as an abnormal (hypertrophied or short) ligament of Treitz and/or abnormal SMA insertion.[2,3]

The condition has a maximum reported incidence of 0.3% and its presentation is rather non-specific. The few characteristic symptoms that do exist are painful (post-prandial) bloating, belching, and bilious vomiting. Conservative management for SMA syndrome often fails, and laparoscopic duodenojejunostomy proves to be safe and effective as the optimal definitive treatment.[4,5] Here, we present a unique congenital case of SMA syndrome in a 15-year boy.

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CASE REPORT

A 15-year boy of a thin built presented to the emergency department, complaining of persistent abdominal pain, epigastric fullness, repeated episodes of vomiting, and significant weight loss. Patient had history of abdominal pain for 6 months, for which he was being treated conservatively by general physicians. Food consumption aggravated the condition while vomiting (undigested food) offered relief. Previous history (15 days back) of undergoing conservative treatment for sub-acute intestinal obstruction was noted.

Over the course of disease, his vitals were within normal limits. Upon examining the abdomen, epigastric fullness and hyper-peristaltic bowel sounds were noted. Regular blood tests and urine for detailed analysis were sent to the laboratory and were normal. Ultrasonography (USG) of the abdomen showing gall bladder full of sludge and bilateral renal fullness. The patient had presented with an acute episode of nausea, vomiting, abdominal pain, and distension. The patient was passed with a nasogastric tube. All symptoms of epigastric pain were relieved as about 600 ml of greenish fluid was drained in a bag. The patient was admitted in the ward for further investigation.

Computed tomography (CT) of abdomen with intravenous and oral contrast was performed, which showed massive dilation of stomach, and the first and second parts of the duodenum with a point of transition at the second and the third parts of duodenum (Figure 1). The angle between SMA and aorta was 15°. The distended stomach was causing significant compression effect over the pancreas. The patient was diagnosed as SMA syndrome on clinical picture and constellation of imaging findings. A month--long attempt was made to manage the patient conservatively but, it failed.

After detailed discussion, we planned for a duodenojejunostomy, which he tolerated well. Intraoperative findings were: SMA compression noticed over 3rd part of duodenum, and dilatation of proximal duodenum. Duodenojejunostomy was done. At follow up of 6 weeks after surgery, the patient reported improvement in

his abdominal pain and distension.

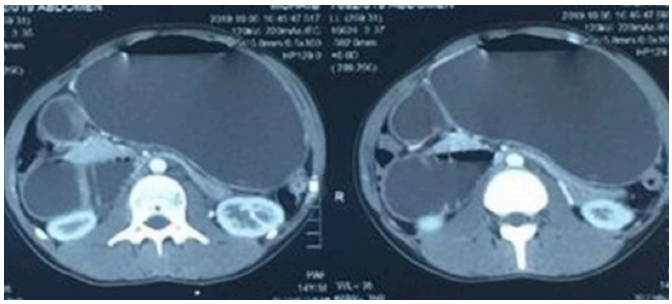

Figure 1: Massive dilatation of stomach on CT scan abdomen.

DISCUSSION

Though SMA syndrome is defined clearly, its low incidence and uncharacteristic presentation lead to it often being underdiagnosed and forgotten while listing probable diagnoses. The condition should ideally be considered likely among patients presenting with postprandial abdominal pain, anorexia, vomiting, or weight loss.[6]

Modern imaging modalities such as CT and MR scans can help establish definite diagnoses and facilitate more appropriate treatment by offering more insight into the underlying condition. The published evidence suggests that a more conservative management approach should be adopted as a first-line treatment. Advancements in conservative treatment methodologies also have improved the treatment outcome over the years.[7,8]

In addition to medical management, surgical interventions have a more refined role than before; however, owing to the lack of comparative evidence, a gold standard surgical method is not unanimously agreed upon to date. However, duodenojejunostomy is a good surgical procedure with superior outcomes more often reported.[9]

Strong's procedure is a favoured method due to its less invasive nature and greater effectiveness in selected cases. Both, duodenal mobilisation (Strong's procedure) and laparoscopic duodenojejunostomy have the potential to improve recovery. Recently, other surgical approaches have surfaced that remain to be compared to yield fresher evidence pertaining to their therapeutic outcome.[10]

In conclusion, SMA syndrome is a challenging diagnosis, particularly in children, and must always be included in the list of probable diagnoses causing obstruction of the upper gastrointestinal tract.

PATIENT'S CONSENT:

Informed consent was obtained from the patient for publication of the obtained information as a case report.

COMPETING INTEREST:

The authors declared that there is no competing interest involved in the preparation and publication of this manuscript.

AUTHORS' CONTRIBUTIONS:

AAAA: Conception & design of the work.
KH: Acquisition, analysis, or interpretation of data for the work.
AN: Acquisition, analysis, or interpretation of data for the work.
IK: Drafting the work.
SP: Revising the manuscript critically for important intellectual content.

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