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A Case Report on Superior Mesenteric Artery Syndrome

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Case Report

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ABSTRACT

Context: Superior mesenteric artery (SMA) syndrome first described by Rokitansky is a diagnostic dilemma for practicing clinicians. Due to commonality of symptoms often misdiagnosed. Barium follow through and Computed Tomography (CT) shows dilatation of second part of duodenum and compressed third part of duodenum between SMA and Aorta.
Case Report: 15-year-old female presented with epigastric pain with vomiting, rapid weight loss and epigastric fullness on examination. CT revealed compressed third part of duodenum and dilated second part. Mobilization of duodenum with retrocolic side to side duodenojejunostomy was done.
Conclusion: Superior mesenteric artery syndrome is difficult to diagnose. It is a life-threatening condition. Multidisciplinary approach is required to manage the case. Conservative treatment can be tried however surgery is treatment of choice.

Keywords: Superior mesenteric artery (SMA); Computed Tomography (CT); Duodenojejunostomy.

1. INTRODUCTION

The superior mesenteric artery syndrome (SMAS) first described by Von Rokitansky in 1861 [1] is a rare medical condition where third part of duodenum is compressed by superior mesenteric artery(SMA) due to narrow acute angle between SMA and Aorta resulting in

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various clinical symptoms [2]. The symptoms are characterized by post prandial nausea and vomiting, epigastric pain, early satiety with associated rapid weight loss [3,4]. SMA syndrome present with acute illness. Diagnosis is problematic hence it is imperative to convincingly exclude other causes of duodenal obstruction. Surgery for superior mesenteric artery syndrome was first proposed by Bloodgood as duodenojejunostomy [1].

2. CASE REPORT

A 15-year-old female presented with occasional dull aching pain over epigastrium since the last 18 months, non-radiating with occasional associated vomiting which relieved pain. Vomiting was aggravated by meal so was the pain. There was concomitant weight loss of 24 kg over past 18 months with current BMI to be 12.57kg/m^2. Patient guardians visited our hospital with concern for cancer. Abdominal examination revealed epigastric fullness however rest of the examination were normal. Biomedical parameters were normal. Abdominal ultrasound was normal.

On admission, a nasogastric tube was inserted and parenteral crystalloid was injected to correct fluid and electrolyte balance. Computed tomography (CT) scan of abdomen excluded malignant pathology and possibility of annular pancreas that would have resulted in duodenal obstruction. Subsequent Abdominal CT Angiogram revealed decreased aortomesentric angle to be 12^0 (Figs. 1 and 2) with reduced aortomesentric distance to be 4mm.

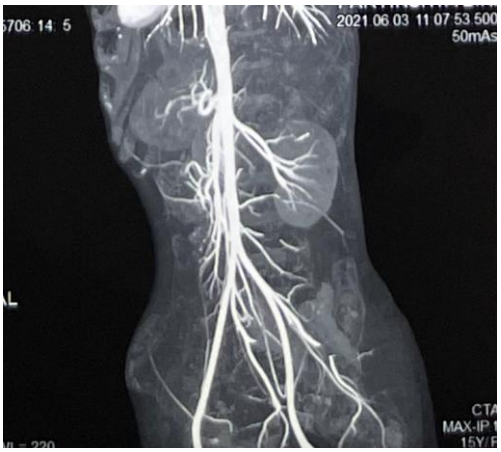

Fig. 1.

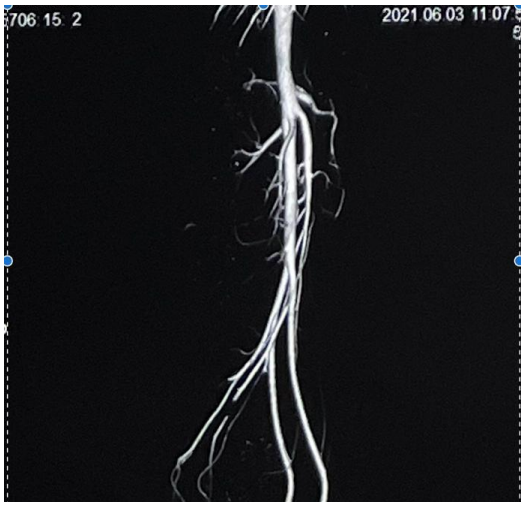

Fig. 2.

Figs. 1, 2. Subsequent abdominal CT angiogram

Thus based on history, the unintentional weight loss, examination and the imaging finding concluded the diagnosis of the SMA syndrome.

After a detailed discussion with the patients guardians operative treatment was planned. Exploratory laparotomy through midline incision was done. Intra-operative findings confirmed the extrinsic obstruction of third part of the duodenum (Fig. 3) with dilatation of the stomach was noted proximally. Few peritoneal adhesion along the duodenopyloric region with anterior abdominal wall and few insignificant mesenteric nodes were present. Adhesion was separated. Mesenteric nodal biopsy done. Ligament of treitz was released with mobilization of duodenum was done. A retrocolic duodenojejunostomy (Fig. 4), side to side anastomosis was done. Post operatively follow ups patient was symptoms free and started taking normal diet.

3. DISCUSSION

Diagnosing SMAS has been considered extremely difficult entity since first described by Rokitansky [5] is characterized by mechanical compression of duodenum between the SMA and Aorta caused by loss of fat between mesentery and retroperitoneum or short ligament of Treitz or low origin of SMA [6]. With the incidence of 0.013 to 0.3% patient presents acutely, with chronic insidious symptomatology or with the acute exacerbation of chronic symptomatology [7]. Acute presentation is characterized by duodenal obstruction. Chronic by vague recurrent episodes of abdominal pain with associated post prandial nausea and vomiting [7].

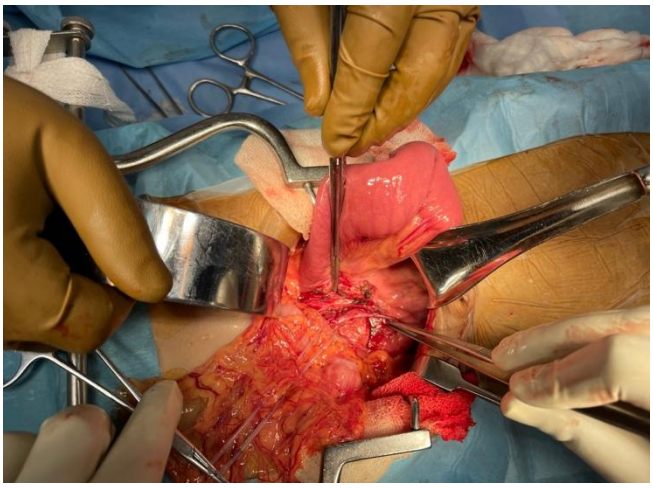

Fig. 3. Intra-operative

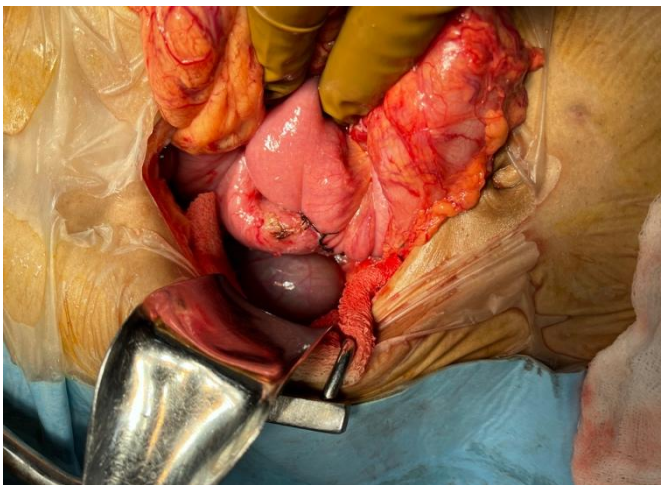

Fig. 4. A Retrocolic duodenoje junostomy

SMAS may be congenital or acquired anatomic abnormality. More commonly associated with debilitating condition causing severe weight loss. Congenital condition is a result of low insertion of SMA or high insertion of ligament of Treitz. Acquired anomalies occur following condition like corrective spinal surgeries for scoliosis which lead to increase in relative length of spine, [8] after abdominal surgery such as total proctocolectomy with ileal J pouch anastomosis on tension and caudal pull of mesentery, [9] catabolic state like burns, [10] wasting condition such as malignancy and malabsorptive states [11] or eating disorder like anorexia nervosa [12] leading to drastic weight loss.

Diagnosis of SMAS is based on both clinical symptomatology and radiological evidence by CT scan and barium for evidence of obstruction. Normal aortomesenteric angle and distance are 25^0-60^0 and 10 to 28 mm respectively in healthy individual where both are reduced in SMAS with values of 6^0 to 15^0 and 2 to 8 mm respectively [1].

Treatment options include medical and surgical option. Medical include fluid and electrolyte balance, enteral feeding targeted for weight gain is an effective option. Surgical option include gastrojejunostomy and Strong's procedure, where ligament of Treitz is divided, duodenum mobilized and duodenojejunostomy done. All these procedures can all be performed laparoscopically and by open techniques [13].

4. CONCLUSION

SMAS is a rare disorder often difficult to diagnose. Should be consider in a young patient with the post-prandial vomiting and rapid weight loss. Surgical treatment is of choice however medical treatment can also be considered.

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

CONSENT

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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