




Superior Mesenteric Artery Syndrome in an 11-Year-Old Boy: A Case Report

Sakar Babu Gharti¹ , Nischal Shrestha¹ ,
Kaushal Samsher Thapa², Rajat Shah³, Priti Khanal¹ ,
Rajnish Kumar Shah¹, Sanjeeb Babu Gharti⁴ and Umesh Tiwari⁵

¹Nobel Medical College Teaching Hospital, Biratnagar, Nepal. ²National Academy of Medical Sciences, Kathmandu, Nepal. ³Birat Medical College Teaching Hospital, Biratnagar, Nepal.

⁴Universal College of Medical Sciences and Teaching Hospital, Bhairahawa, Nepal. ⁵BronxCare Health System, Bronx, NY, USA.

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ABSTRACT: Superior Mesenteric Artery Syndrome (SMAS) is a rare but potentially life-threatening condition caused by the compression of the duodenum by the superior mesenteric artery. We report a case of an 11-year-old male who complaint of abdominal pain and intermittent vomiting for last 3 weeks. Diagnosis of SMAS was made with the help of radiological findings. The patient was managed conservatively with nutritional support, prokinetic agents, and stomach decompression. After 2 weeks of treatment, the patient's symptoms improved, and he was discharged from the hospital.

KEYWORDS: Superior mesenteric artery syndrome, vomiting, weight loss

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CORRESPONDING AUTHOR: Nischal Shrestha, Nobel Medical College Teaching Hospital, Kanchanbari, Biratnagar 56613, Nepal. Email: shresthasnisal@gmail.com

Highlights

- Superior Mesenteric Artery Syndrome (SMAS) is a rare but potentially life-threatening condition which can occur after rapid weight loss, sometimes during growth spurt phase while major cause in children includes congenital diseases.
- SMAS is a challenging diagnosis due to its nonspecific symptoms like abdominal pain, vomiting, dyspepsia, abdominal bloating, and weight loss.
- SMAS is usually managed conservatively, surgery is indicated only in refractory cases.

Introduction

Superior mesenteric artery syndrome (SMAS) is a rare medical condition caused by compression of the third part of the duodenum between the superior mesenteric artery and the abdominal aorta.¹ The reported incidence of SMAS in the literature ranges from 0.1% to 0.3%.^{2,3} One of the major theories suggests that reduction in the retroperitoneal fat pad and connective tissues results in narrowing of aorto-mesenteric angle thereby causing mechanical obstruction in the duodenum. So rapid weight loss can lead to SMAS, which is therefore, uncommon in children.² The clinical features include persistent upper gastrointestinal symptoms, including postprandial epigastric pain, nausea, vomiting, dyspepsia, abdominal bloating, and weight loss due to reduced oral intake.⁴ SMAS is a challenging diagnosis due to its nonspecific clinical presentations.

Case

An 11-year-male was brought by his mother with complaints of abdominal pain with intermittent vomiting which was

non-projectile containing undigested food particles immediately after taking food without blood and bile stains for 3 weeks. Patient also mentions loss of appetite. The patient visited to local pharmacy for abdominal pain and was provided with pain killer. His weight was 35 kg at that time and has lost 4 kg in these 3 weeks. His height was 154 cm and body mass index (BMI) 13.07. Patient had no associated comorbidities. On examination, patient was thin in built but with stable vitals. He didn't have pallor, icterus, or edema. Routine blood investigation was normal except slight rise in serum urea (43 mg/dl) level. Ultrasonography scan of abdomen and pelvis was normal. Contrast enhanced computerized tomography (CT) showed aorto-mesenteric angle of 17° and aorto-mesenteric distance of 7 mm (Figures 1 and 2). The patient was managed conservatively with prokinetics, high calorie, and low volume diet. Symptoms improved over period with naso-jejunal tube. After 2 weeks of treatment, the patient's symptoms improved, and he was discharged from the hospital. The patient was well with no sign of recurrence at third month of follow up.

Discussion

SMAS is uncommon clinical condition predominantly observed in young adult females (median age of 23 years). It is due to narrowing of the aortic-mesenteric angle and a reduced SMA-aorta distance. The normal range for the aortic-mesenteric angle is 38° to 65°, and the normal SMA-aorta distance is 10 to 34 mm.⁵ In our adolescent male patient, there was reduction of aortic mesenteric angle and distance. The angle narrowing is mostly due to rapid weight





Figure 1. Contrast enhanced CT abdomen sagittal image with arrow showing reduced aorto-mesenteric angle (17°) and aorto-mesenteric distance of 7 mm.

loss and loss of fat pad between mesenteric artery and aorta. Rapid weight loss is observed in anorexic women, in malignancy, prolonged stay in the intensive care unit, after bariatric surgery, spinal surgery or severe burn cases.² Though uncommon, rapid weight loss can occur in children as well during growth spurt.^{1,6} Weight loss is not always the cause of SMAS in pediatric population.⁷ Major cause of SMAS in children includes congenitally short or hypertrophic ligament of Treitz.⁵ The weight loss in this case was most probably due to gastroenteritis based on symptoms. Presentation is usually vague with nonspecific symptoms making clinical diagnosis very difficult. Radiological evidence of small bowel obstruction is needed for the diagnosis of SMAS. CT scan is considered the standard diagnostic modality.⁵ First line treatment in case of SMA syndrome is conservative by correcting electrolyte imbalance and building nutritional status of patient to help weight gain. Surgical approach is reserved if conservative management fails.^{8,9}

Conclusion

In conclusion, we report a rare case of SMAS in an 11-year-old boy. Diagnosis of SMAS was made with the help of radiological findings. SMAS usually occurs after rapid weight loss, which can occur in children during growth spurt phase. Therefore, children presenting with nonspecific pain abdomen with vomiting and history of weight loss is there, we should go for radiological imaging keeping SMAS as a differential diagnosis.

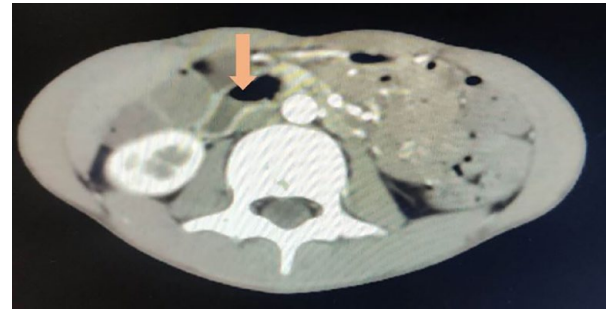


Figure 2. Contrast enhanced CT abdomen axial image with arrow showing compression of third part of duodenum leading to obstruction.

Consent

Written informed consent has been taken from the patient's mother to publish this case. The consent can be available upon Editor in Chief request.

Author Contributions

S.B.G, N.S, and P.K: Conceptualization, Clinical Investigation, Patient Management, Writing – Original Draft, Writing – Review & Editing.

K.S.T, P.K, R.K.S, S.B.G, and U.T: Critical Review of Manuscript, Writing – Review & Editing.

Availability of Data and Materials

The data are available with the correspondence author and can be reached on request.

ORCID iD

Sakar Babu Gharti  <https://orcid.org/0000-0002-7336-4177>

Nischal Shrestha  <https://orcid.org/0000-0002-1118-3039>

Priti Khanal  <https://orcid.org/0009-0005-7440-6710>

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