THE SUPERIOR MESENTERIC ARTERY SYNDROME WITH CHRONIC DIARRHOEA AS PRESENTATION

Ezamin A.R., Norafida B., Hasyma A. H., Suppiah S., Suraini M.S.*

Imaging Department, Faculty Medical and Health Sciences, Universiti Putra Malaysia, Serdang, 43400 Selangor, Malaysia

*Corresponding author: Dr Suraini binti Mohamad Saini, email: surainims@upm.edu.my

SUMMARY

Superior mesenteric artery (SMA) syndrome is rare and potentially life-threatening gastrointestinal disorder which also known as Wilkie’s syndrome, cast syndrome, mesenteric root syndrome, chronic duodenal ileus and intermittent arterio-mesenteric occlusion. Signs and symptoms include nausea, vomiting, postprandial abdominal pain, diarrhoea, reflux and heartburn. We report such a case of SMA syndrome which presented as chronic diarrhoea as symptom which lead to malabsorption and loss of retroperitoneal fat and causing the SMA syndrome.

Key words: Superior mesenteric artery syndrome, chronic diarrhoea

1.0 Introduction

Superior mesenteric artery (SMA) syndrome is recognized clinical syndrome characterized by compression of the third part of duodenum against the abdominal aorta by the superior mesenteric artery [1]. Patients present with signs and symptoms such as early satiety, nausea, vomiting, epigastric pain, postprandial discomfort and severe malnutrition accompanying spontaneous wasting may occur [1]. However in this case, our patient presented with chronic diarrhoea and poor oral intake as a result of tropical sprue and major depression. This led to malabsorption and loss of retroperitoneal fat causing the SMA syndrome. To our knowledge, this association has not been reported previously.

2.0 Case Report

A 69-year-old lady was seen by several Gastroenterologists for non-specific abdominal pain since two years ago. Her symptoms had been gradually worsening for the recent past three months associated with postprandial abdominal pain, chronic diarrhoea, loss of appetite and significant weight loss (from 62 to 46 kg). She was then referred to Medical Centre and was admitted. While in the ward, she also had symptoms of somatisation depression and anxiety. She was then referred to psychiatry for assessment and was diagnosed to have depression and anxiety disorder.
Physical examination revealed an elderly with thin body build. Systemic examinations and blood investigations were normal except for folic acid deficiency anaemia with low calcium.

Oesophageal gastroduodenoscopy showed mild oesophagitis and gastritis. The duodenal biopsy showed partial atrophy. Colonoscopy revealed no evidence of malignancy.

Small bowel enema showed dilatation of the 2nd part of duodenum and stomach and persistent vertical cut-off in the third part of the duodenum (Figure 1). Provisional diagnosis of SMA syndrome was made based on these findings.

CT mesenteric angiography (CTA) shows a broad base of superior mesenteric artery but no stenotic segment was noted. There was a reduction of the aorto-mesenteric angle and distance on reformatted sagittal plane (Figure 2).

She was discharged with the diagnosis of major depression with tropical sprue. She was treated conservatively with antibiotic and on follow-up in gastroenterology clinic.

**Figure 1.** Small bowel enema with tube displaced in the 2nd part of duodenum because of vigorous “to and fro” peristalsis. An abrupt vertical cut off (black arrow) is noted where the superior mesenteric artery crosses the duodenum.
Figure 2: Computed tomogram mesenteric angiogram (CTA) reconstructed in the sagittal plane shows reduction of the aorto-mesenteric angle and distance (black arrow).

3.0 Discussion

Superior mesenteric artery (SMA) syndrome is a pathology caused compression of the third part of the duodenum against the abdominal aorta and the overlying superior mesenteric artery resulting in complete or partial duodenal obstruction [1]. Etiological factors included structural and/or acquired factors such as incomplete rotation of the duodenum, abnormality of the ligament of Treitz, fast weight loss, malabsorption, and use of body cast, traumatic aneurysm of the SMA and Familial SMA syndrome [3]. Like in our case, the SMA syndrome was secondary to weight lost, as a complication of the malabsorption from tropical sprue and poor oral intake.

The patients can present with acute or chronic upper abdominal symptoms such as postprandial epigastric pain, nausea, repetitive vomiting, abdominal cramping and sometimes subacute small bowel obstruction. However, presentation of the SMA syndrome with chronic diarrhea has never been reported before in English literature like in this case secondary to tropical sprue. The symptoms are relieved when the patient in the lateral decubitus, prone, or knee to chest position and aggravated when the patient in the supine position because of the gravity effect [4] can cause clamping of the duodenum by the two arterial structures.

On physical examination, patient has a thin body build in about 80% of cases. Peptic ulcer disease has been noted in 25-45% of the patients and hyperchlorhydria has been noted in 50% [2]. Oesophageal gastroduodenoscopy of these cases are usually normal or they may reveal mild gastritis and bile reflux. Anderson JR et al [5] reported that the most striking radiological
feature was vigorous to-and-fro peristalsis in the second and third parts of the duodenum, with an abrupt but incomplete hold up of barium in the third part and dilatation proximal to the point of hold up with delay of 4-6 hours in gastroduodenal transit which demonstrated in this study [5].

Measurement of the angle between the SMA and the aorta using conventional CT or MR angiography is another radiological diagnostic method. In our patient, this angle was found to be 7-22 degree (normal values 25 and 60 degree) and distance was found to be 2-8mm (normal 10-28mm) [3, 4]. Konen E et al [6] emphasized the use of CT angiography and three-dimensional (3D) reconstruction in the diagnosis of superior mesenteric artery syndrome. Like in this case, the CT mesentery angiography and reconstructed in sagittal plane provide excellent findings. Nonoperative treatment should be attempted first like in this case [2], except for cases where emergency surgery is necessary upon presentation [1]. The goal of medical treatment for SMA syndrome is resolution of underlying conditions and weight gain [1]. Like in this case, the patient’s condition improved after treatment has been given to her tropical sprue disease and psychiatric illness.

Surgical procedure is indicated when conservative measures are ineffective. Duodenojejunostomy is the most frequently used procedure and it is successful in about 90% of cases. Performed as either an open surgery of laparoscopy, duodenojejunostomy involves the creation of an anastomosis between the duodenum and the jejunum by passing the compression caused by the abdominal aorta and the superior mesenteric artery [1]. The use of laparoscopic surgery that involves lysis of the ligament of Trietz and mobilization of the duodenum has been reported [5].

Delay in the diagnosis of SMA syndrome can result in fatal catabolysis (advanced malnutrition), dehydration, electrolyte abnormalities, hypokalemia, acute gastric rupture or intestinal perforation (from prolonged mesenteric ischemia), gastric distention, spontaneous upper gastrointestinal bleeding, hypovolemic shock, aspiration pneumonia, or sudden cardiovascular collapse. A 1-in-3 mortality rate for Superior Mesenteric Artery syndrome has been reported by a small number of sources [1].

In conclusion, we report an elderly lady who presented with a history of chronic diarrhoea and poor oral intake as a result of tropical sprue and psychiatric illness. This led to malabsorption and loss of retroperitoneal fat that causing the SMA syndrome.

**4.0 Conclusion and recommendation**

In conclusion, diagnosis of SMA syndrome as a distinct clinical entity is difficult and usually one of exclusion. SMA syndrome is thus considered only after patients have undergone an extensive evaluation of their gastrointestinal tract including upper endoscopy, colonoscopy, and evaluation for various malabsorptive, ulcerative and inflammatory intestinal conditions. A more holistic approach is recommended for proper management of this entity to prevent serious complications. The expected outcome for SMA syndrome treatment is generally considered to be excellent.
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Declaration

Author(s) declare that there is no conflict of interest in the preparation of this article and for publication in this journal.

References


