**Superior mesenteric artery syndrome leading to acute gastric dilatation in a woman with bulimia**

在一位患有貪食症婦女由腸系膜上動脈綜合徵引致的急性胃擴張

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Superior mesenteric artery (SMA) syndrome is a rare clinical disease defined as compression of the third part of the duodenum between the aorta and the SMA. Severe complications of SMA syndrome include acute gastric dilatation which is uncommon but potentially fatal and requires immediate intervention. This report describes a 29-year-old woman with SMA syndrome complicated by acute gastric dilatation. It was diagnosed by computerized tomography. The patient had a history of treatment of bulimia nervosa but defaulted 3 months ago. She presented with severe abdominal distension and extreme abdominal pain due to massive gastric dilatation after an eating binge. Gastric decompression was successful with a modified gastric lavage tube with additional large holes at the tip. (Hong Kong J Emerg Med. 2011;18:107-111)

腸系膜上動脈綜合徵是一個罕有的臨床疾病，它是由于腸系膜上動脈和主動脈之間的第三段十二指腸受壓所致。嚴重的腸系膜上動脈綜合徵的併發症包括急性胃擴張，它雖然不常見但會有致命危機，所以需要立即處理。這是一個描述二十九歲的婦女患有腸系膜上動脈綜合徵及併發急性胃擴張的個案。它是由電腦掃描診斷的。病人有一個接受神經性貪食症治療的病史，但她已有三個月沒有覆診。她表現為嚴重的胃腸和腹膜痛，這是由於暴飲暴食後造成嚴重的胃擴張所致。用管端附有加大孔的改良洗胃管才能成功完成胃減壓術。

**Keywords:** Binge-eating disorder, bulimia nervosa, gastric lavage

關鍵詞：暴食型飲食疾患、神經性貪食症、洗胃

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**Introduction**

Superior mesenteric artery (SMA) syndrome is a rare clinical condition defined as entrapment and obstruction of the third portion of the duodenum between the aorta and the SMA. This is thought to occur due to loss of the cushion of fat that normally surrounds the neurovascular pedicle. Hence, patients who are predisposed to the condition are those who are thin, such as adolescents undergoing growth spurt and those with acute weight loss like burn victims or
post operative patients or patients with anorexia nervosa. Although severe complications of SMA syndrome are uncommon, they can be potentially fatal and require immediate intervention. Herein, we present a case of SMA syndrome with acute huge gastric dilatation where conservative management was successful.

Case

A 29-year-old woman presented to the emergency room with severe abdominal distension and extreme abdominal pain by ambulance. She was single and had a slim build. For her past medical history, she was diagnosed to have bulimia nervosa at another hospital several months ago and had received counselling 3 times. However, she dropped out 3 months ago. She did not have any previous surgical, drug or contributory family history. She had menstrual irregularity during the recent 3-4 months. On Thanksgiving Day, she started to eat at 6:00 p.m. and continued until midnight. She went on a binge of food including chicken, pizza, bread, soda drink, and other Korean foods. She planned to vomit later, but found herself unable to do so and her symptoms developed.

In the next morning she presented to the emergency room. Her vital signs were as follows: blood pressure 100/60 mmHg, pulse rate 90 beats per minute, respiratory rate 22 breaths per minute, and body temperature 36.6°C. Her abdomen was diffusely and severely distended with tenderness. Bowel sounds could not be checked as patient was irritable due to severe abdominal pain. Abdominal X-ray performed at the emergency room showed marked gastric distension with no free air beneath the diaphragm. Abdominal CT revealed marked gastric and duodenal distension with food material and the duodenal lumen was narrowed between the abdominal aorta and mesenteric vessels. The angle between the SMA and abdominal aorta was less than 7 degrees (Figure 1).

An 18 French nasogastric tube was inserted for gastric decompression. Unfortunately, drainage was unsuccessful. We changes to a 28 French gastric lavage tube but decompression failed again. Finally we made additional large holes on the tip of gastric lavage tube and decompression was successful with aspiration of 4 kg of gastric contents over 2 hours. Her symptom was slightly improved and she was admitted for observation. She was 169 cm in height, 50.4 kg in body weight and her body mass index was 17.65 kg/m² on admission. On the next day she had decreased abdominal distension and an esophagogastrroduodenoscopy showed reflux esophagitis with small amount of undigested food material. No obstructive lesion was found. She was able to tolerate soft diet and was discharged to home with follow up after one week. She remained well during follow up at 1 week, but did not visit the outpatient department anymore.

Discussion

SMA syndrome is an unusual form of intestinal obstruction that was first described in 1842. It was also known as Wilkie disease, cast syndrome, duodenal ileus, or megaduodenum. The exact incidence of SMA syndrome is unknown due to the difficulty in making the diagnosis. It was estimated to be between 0.013% and 0.78% in the literature. SMA syndrome results from compression of the duodenum between the aorta and vertebral column posteriorly and the superior mesenteric artery anteriorly. Patients with SMA syndrome present acutely or chronically with vomiting, nausea, pain and epigastric distention due to small bowel obstruction. The classic presentation is characterised by chronic and progressive symptoms such as postprandial epigastric fullness, sense of repletion, and vomiting. However, presentations can also be acute with minimal preceding symptoms. Vomiting and gastric dilatation are more commonly seen in the acute cases compared with the chronic and recurrent cases. Females and young adults are more likely to be affected though it can occur at any age. The age and sex predilection may simply reflect the predisposing cause of the condition and in particular eating disorders. Various medical and psychiatric conditions may result in initial rapid weight loss which cause narrowing of the aortomesenteric angle. The pathogenesis involved the loss of fatty tissue in the
Figure 1. A 29-year-old woman presented with severe abdominal distension and extreme abdominal pain. Axial CT (a) and coronal volume rendered image (b) from an IV contrast enhanced 64 slice CT demonstrated massive distension of the stomach (St) and dilatation of duodenum (Du) caused by compression between the superior mesenteric artery (▶) and the aorta (Ao). Sagittal reconstructed image (c) shows relationship of the superior mesenteric artery (▶) to the aorta (Ao) and the aortomesenteric angle (arrow) is less than 7 degrees.
mesentery around the artery, the development of a hyperacute aortomesenteric angle and upward displacement of the duodenum by an abnormally high ligament of Treitz. For our patient, the body mass index (BMI) was 17.65 kg/m² on admission which is substantially below the ideal body weight. Gastric dilatation, delayed gastric emptying, and functional obstruction have been reported in patients with anorexia nervosa or bulimia, and several case reports of functional obstruction in such patients have been published. 

The diagnosis of SMA syndrome is usually based on clinical suspicion and is often delayed. Confirmation of the diagnosis of SMA syndrome requires a radiographic study such as upper gastrointestinal barium study, angiography, or CT scan of the abdomen. Upper gastrointestinal barium study yielded nonspecific radiologic appearances and angiography was invasive. On the other hand, CT is a relatively simple, rapid, and noninvasive technique which facilitates diagnosis and detects potentially fatal complications. It reveals gastrointestinal distension and duodenal relationship to the SMA and the aorta. It also allows evaluation of vascular abnormalities and measures the distance and angle between the SMA and the aorta. The narrowing of the angle and reduction of the distance between the SMA and aorta are the primary diagnostic features of SMA syndrome. For normal individuals, the respective measurements are 25–60° and 10–22 mm. Although diagnostic value of endoscopy for SMA syndrome is limited, it may be useful in ruling out other causes of mechanical obstruction.

Treatment of SMA syndrome is either nonoperative or surgical management. Nonoperative treatment involves reversing or removing the precipitating factor. Interventions like removal of body casts and intermittent ambulation or total parenteral nutrition for weight loss have been advocated. A nasogastric tube should be inserted to decompress the dilated stomach and proximal duodenum in the acutely ill patients. Fluid and electrolyte abnormalities should be monitored and corrected aggressively. Nutritional support is very important. The prone or left lateral decubitus position is useful in symptom relief in the acute state. Surgical options include duodenojejunostomy, gastrojejunostomy, and Strong’s operation, which consists of division of the ligament of Treitz and derotation of the small bowel and right colon. The most frequently used procedure is duodenojejunostomy which is successful in approximately 90% of cases.

In our patient, conservative management was successful. Another interesting point in this case was the use of modified gastric lavage tube with additional large holes. Severe complications of SMA syndrome include acute gastric dilatation, gastric pneumatosis, gastric rupture, and cardiovascular collapse. Our patient presented with massive gastric dilatation which is a life-threatening condition that may be complicated by gastric necrosis, gangrene, perforation, rupture, shock, and death. In this case, aspiration of the gastric contents with either 18 French nasogastric tube or 28 French gastric lavage tube failed. Decompression was achieved after addition of large holes on the tip of gastric lavage tube. A larger tube with bigger holes may be needed for thick gastric contents.

References


