

THE SUPERIOR MESENTERIC ARTERY SYNDROME

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ABSTRACT

Obstruction of the duodenum by entrapment between the aorta and the superior mesenteric artery (SMA) is a controversial entity. Acceptance of this syndrome as a clinical entity has not been universal because of confusion with other causes of upper gastrointestinal obstruction. Two cases which sharply exemplify the clinical and anatomic features of the SMA syndrome are reported. Symptoms mimic pyloric outlet obstruction but gastroscopy is frequently normal and the diagnosis is made on barium studies. The anatomic features of this entity are a narrow angle between the aorta and the SMA, together with high fixation of the duodenum by the ligament of Treitz. The SMA syndrome may be acute or chronic and responds well to duodeno-jejunostomy.

Keywords: Duodenum, Obstruction, Gastrointestinal.

INTRODUCTION

The superior mesenteric artery (SMA) syndrome (Wilkie's syndrome ¹) was first described by Von Rokitansky in 1861 ² and over 400 cases have been reported since. However, many have failed to fulfil the characteristic diagnostic criteria and the condition is still to some extent controversial. Two cases of this syndrome are presented, in which there were typical clinical and radiological features with excellent results from duodeno-jejunostomy.

CASE REPORTS

Case 1

P.J., a 27 year old man was admitted electively to a medical ward for investigation of an eight month history of vomiting undigested food, anorexia, lethargy and weight loss. There was no past history of note. On examination, the only abnormal finding was a succussion splash and pyloric outlet obstruction was diagnosed. Investigations, which included full blood count, fasting glucose, liver and thyroid function tests, plain chest and abdominal x-rays, were normal. At endoscopy he was found to have a dilated stomach with a large amount of residue. However, the pylorus and proximal duodenum were normal with no obvious outlet obstruction. Barium meal examination showed an obstruction in the third part of the duodenum with dilatation proximal to this. (Fig. I) On turning the patient onto his left side, contrast flowed freely into the

rest of the duodenum and jejunum. (Fig. II) After a period of parenteral nutrition he proceeded to laparotomy and at operation the x-ray findings were confirmed, the level of obstruction corresponding to the point of intersection of the SMA over the third part of the duodenum. There was no organic pathology. A duodeno-jejunostomy was fashioned and he made an uneventful recovery. He remains well 9 years post-operatively.



Figure I - Barium meal examination with the patient supine. There is obstruction to the flow of contrast in the third part of the duodenum.

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Figure II - the same patient in the left lateral position. Contrast now flows freely into the jejunum.

Case 2

A.S., a 57 year old female was admitted to a surgical ward as an emergency with a 24 hour history of vomiting, central colicky abdominal pain, distension and absolute constipation. Past history of note was poliomyelitis when 6 years old which resulted in a kyphoscoliosis that had increased over the 2 years prior to admission. She was clinically dehydrated, her abdomen was distended and she had a succussion splash. Severe kyphoscoliosis of the thoracolumbar spine was confirmed. Plain abdominal x-ray showed a large gastric air bubble and pyloric outlet obstruction was diagnosed. However, the findings on endoscopy and barium meal examination were similar to the previous case. In this instance the obstruction was not relieved by changing the position of the patient. The operative findings were identical to the first case described above and a duodeno-jejunostomy was fashioned. Post-operative recovery was uneventful. She remains well 7 years after her operation.

DISCUSSION

The superior mesenteric artery syndrome is a rare condition. An incidence of 0.1 - 0.3% of patients presenting with upper gastrointestinal symptoms has been reported.³ However, in a retrospective study of 44 patients diagnosed as having this syndrome, Hines et al found that only 14.6% fulfilled strict clinical and radiological criteria suggesting overdiagnosis of the disorder.⁴ The pathogenesis is believed to be compression of the third part of the duodenum by the SMA

secondary to a narrow aortomesenteric angle and high attachment of the ligament of Treitz. Simultaneous mesenteric angiography and barium studies have confirmed that the site of duodenal compression corresponds to the position of the SMA.⁵

The history may be acute but is often chronic as illustrated by the two cases presented. Symptoms include post-prandial epigastric pain, bilious vomiting, weight loss, early satiety and flatulence. Symptoms may be relieved by adopting the left lateral or prone positions but this feature was absent in both patients. The condition has been associated with wasting diseases, severe trauma, deformity of the spine (as in the second case), dietary disorders and the post-operative state.⁴ 25% of cases are associated with peptic ulcer disease but the mechanism is unknown.

In both patients presented barium meal examinations were abnormal, showing a dilated duodenum with a straight line cut off to the flow of contrast in the third part. In the first patient contrast flowed beyond the site of obstruction when the position of the patient was altered, a characteristic and significant finding when present. Gustaffson et al reported that in their series, only 1 patient out of 11 had an abnormal barium meal examination. They found hypotonic duodenography to be more useful in establishing the diagnosis.⁶

The treatment of this condition should be conservative to start with and consists of nasogastric suction, parenteral alimentation and correction of fluid and electrolyte disorders. However, 75% of patients will require surgery because of failed medical treatment or to establish a diagnosis.⁷ The recommended surgical treatment for this condition is duodeno-jejunostomy.⁶ In children, mobilization of the duodenum and division of the ligament of Treitz is sufficient.⁸

In conclusion, the SMAS is a condition which is readily amenable to surgical treatment and therefore, despite its rarity, should be considered as a differential diagnosis in all patients with unexplained upper abdominal symptoms. If this syndrome is suspected, barium studies are indicated in order to confirm a pre-operative diagnosis.

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