CASE REPORT

SUPERIOR MESENTERIC ARTERY SYNDROME:
—REPORT OF FOUR CASES—

Yung-Huei WANG, M.D.* and Tadahiro TAKADA, M.D.**
*Department of Surgery, Mackay Memorial Hospital, Taipei, Taiwan, Republic of China
**First Department of Surgery, Teikyo University School of Medicine, Itabashi-ku, Tokyo, Japan

Summary

Four patients of SMA syndrome presented in the past 3 years. One case was treated surgically and three others were treated conservatively. Although it is rare, strong suspicion is advocated in evaluating patients with long-standing vague abdominal complaints. Diagnosis is made by upper gastrointestinal barium study and SMA angiogram. However, mild distention of the duodenum may be overlooked in barium meal G.I. series. The air inflation test has been of value in recognizing this syndrome. It has been recognized that there are acute and chronic forms. Peptic ulcer is often associated with SMA syndrome, especially in the chronic form. Conservative treatment must be stressed and performed initially. Surgical intervention is indicated if medical treatment fails. Division of the ligament of Treitz to free the bound position of the duodenum and make the duodenojejunal flexure downward is advocated first during surgery. If the result is not satisfactory the duodenojejunalostomy is necessary.

Key Words: Superior mesenteric artery syndrome, Wilkie's syndrome, Duodenal obstruction.

Introduction

In 1842 Rokitansky described a syndrome characterized by emesis of copious, intermittent and bile-stained material in asthmatic persons which resulted from compression of the duodenum between the aorta and superior mesenteric vessels. This entity has been designated as the superior mesenteric artery syndrome (SMA syndrome). It has many synonyms, such as arteriomesenteric duodenal compression, intermittent arteriomesenteric occlusion of the duodenum, duodenal stasis, arteriomesocolic duodenal compression, chronic duodenal ileus, duodenal regurgitation, acute gastroduodenal obstruction, cast syndrome, etc. However, the most commonly used terms in the literature are Wilkie's syndrome, vascular compression of the duodenum and superior mesenteric artery syndrome.

The third portion of the duodenum crosses the spine and is fixed posteriorly by the spine and aorta, and anteriorly by the root of the superior mesenteric vessels. In 1965, Derrick and Fadhli in a study of the surgical anatomy of the superior mesenteric artery based on the dissection of the 64 cases reported that the average angle of the superior mesenteric artery
from the aorta was 41.65°, and the average distance from this angle to the midpoint of the duodenum at the vertebral aortic fissure was 10 cm \(^2\) (Fig. 1). Therefore the acuteness of the angle and the shortness of the distance were two important factors in the occurrence of obstruction \(^3\).

The symptoms of obstruction are as follows: postprandial epigastric distress, postprandial vomiting, fear of eating and weight loss. The characteristic radiologic finding is a dilated duodenum. Reverse peristalsis has been said to be indicative of duodenal obstruction. During fluoroscopy temporary relief of the obstruction can be occasionally demonstrated by placing the subject in a prone, knee-chest, or left lateral positions \(^4\). Four cases of SMA syndrome were reported from May 1976 to April 1979 at Mackay Memorial Hospital.

**Case Report**

Case 1. An 18 year-old male was admitted to the emergency service with a chief complaint of flame burn extending 40% over the face and extremities. The patient was treated with systemic antibiotics, sulfamylon for local use and debridement of the wound. Two weeks after admission, acute abdominal pain, epigastric fullness and vomiting of a bile-stained substance developed. He denied having the same gastrointestinal complaints in the past. The patient was poorly nourished with a body weight of 47 kg and a height of 165 cm. On admission the chest and abdomen were essentially normal until the above episode, when moderate tenderness and rebound pain were noted in the upper abdomen and the epigastrium was slightly distended.

Laboratory examination results, including hemoglobin, blood cell counts, urinalysis and liver function test, were all within normal limits except for sodium, what was a little low on admission. An upper G.I. series showed dilatation of the stomach and proximal duodenum with abrupt obstruction in the third portion of the duodenum, delayed passage of barium across the midline, to-and-fro activity of barium and reverse peristalsis were seen on fluoroscopy (Fig. 2).

Conservative treatment was commenced with nasogastric suction, fluid and electrolyte balance, putting the patient in a prone or knee-chest position and elevation of the head to 40 degree. After ten days of treatment, the symptoms of abdominal pain and vomiting subsided and a bland diet was commenced. The patient has been doing well without gastrointestinal symptoms for 3 years since discharge.

Case 2. A 36 year-old male was referred by a general practitioner due to complaints of postprandial epigastric fullness for 2–3 years. During this period symptoms of nausea and abdominal fullness were gradually aggravated, and occasionally mild abdominal distress with acid regurgitation were also noted, but there were no vomiting. The symptoms were relieved by lying in prone or knee-chest position. The physical examination showed a slight degree of malnutrition and poor development with a body weight of 49 kg and a height of 162 cm.