

Superior mesenteric artery compression syndrome - case report

PAULO ROCHA FRANÇA NETO¹, RODRIGO DE ALMEIDA PAIVA², ANTÔNIO LACERDA FILHO³,
FÁBIO LOPES DE QUEIROZ¹, TEON NORONHA²

¹Master in Medical Sciences, Universidade Federal de Minas Gerais (UFMG); Member of the Coloproctologic Clinic, Hospital Felício Rocho – Belo Horizonte (MG), Brazil. ²Member of the Coloproctologic Clinic, Hospital Felício Rocho – Belo Horizonte (MG), Brazil. ³Doctor in Medical Sciences, UFMG; Member of the Coloproctologic Clinic, Hospital Felício Rocho – Belo Horizonte (MG), Brazil.

NETO PRF, PAIVA RDA, FILHO AL, QUEIROZ FLD, NORONHA T. Superior mesenteric artery compression syndrome - case report. *J Coloproctol*, 2011;31(4): 401-404.

ABSTRACT: Superior mesenteric artery syndrome is an entity generally caused by the loss of the intervening mesenteric fat pad, resulting in compression of the third portion of the duodenum by the superior mesenteric artery. This article reports the case of a patient with irremovable metastatic adenocarcinoma in the sigmoid colon, that evolved with intense vomiting. Intestinal transit was carried out, which showed important gastric dilation extended until the third portion of the duodenum, compatible with superior mesenteric artery syndrome. Considering the patient's nutritional condition, the medical team opted for the conservative treatment. Four months after the surgery and conservative measures, the patient did not present vomiting after eating, maintaining previous weight. Superior mesenteric artery syndrome is uncommon and can have unspecific symptoms. Thus, high suspicion is required for the appropriate clinical adjustment. A barium examination is required to make the diagnosis. The treatment can initially require gastric decompression and hydration, besides reversal of weight loss through adequate nutrition. Surgery should be adopted only in case of clinical treatment failure.

Keywords: superior mesenteric artery syndrome; diagnosis; abdominal pain; duodenum, radiography.

INTRODUCTION

The superior mesenteric artery syndrome was described for the first time by Von Rokitsky in 1861¹, and later studied by Wiekie², who detailed most clinical findings in early 20th century. It is a rare entity, caused by compression of the third portion of the duodenum by the superior mesenteric artery, resulting in an obstruction in this segment. This article reports a case of this disease in a patient that presented fast weight loss due to colon neoplasm.

CLINICAL CASE

A 40-year-old female patient, previously healthy, for six months with intestinal constipation and evacuation discomfort. Her weight was 35 kg at the first appointment and she also reported frequent vomiting. In addition, she reported considerable weight loss of 30 kg in 6 months.

Clinical examination

The patient was very thin, without abdominal distention and with palpable mass in the left iliac fossa.

Study carried out at the Clínica de Coloproctologia do Hospital Felício Rocho – Belo Horizonte (MG), Brazil.
Financing source: Coloproctologic Clinic, Hospital Felício Rocho.
Conflict of interest: nothing to declare.

Submitted on: 07/22/2009

Approved on: 09/01/2009

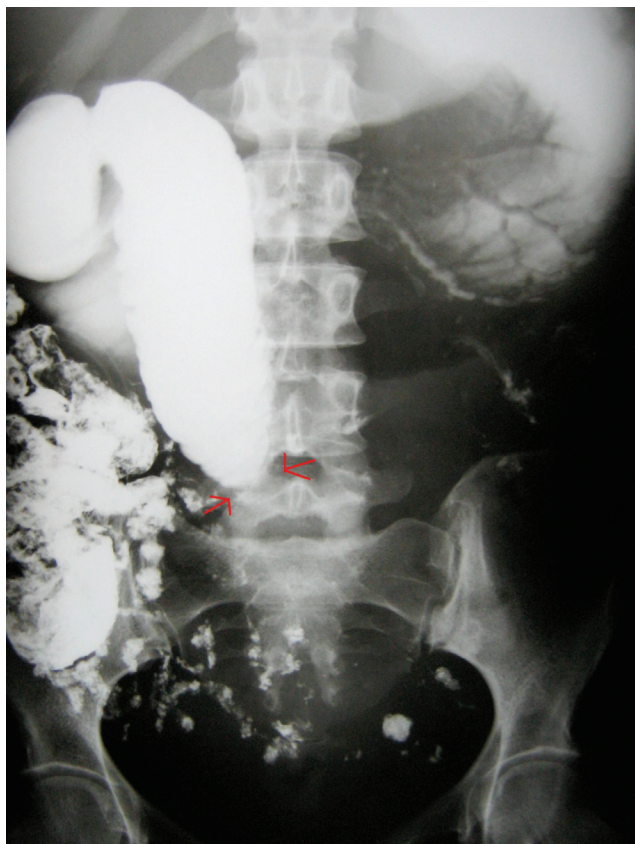


Figure 1. Intestinal transit showing important gastric dilation. The arrows show the contrast progression interruption point.

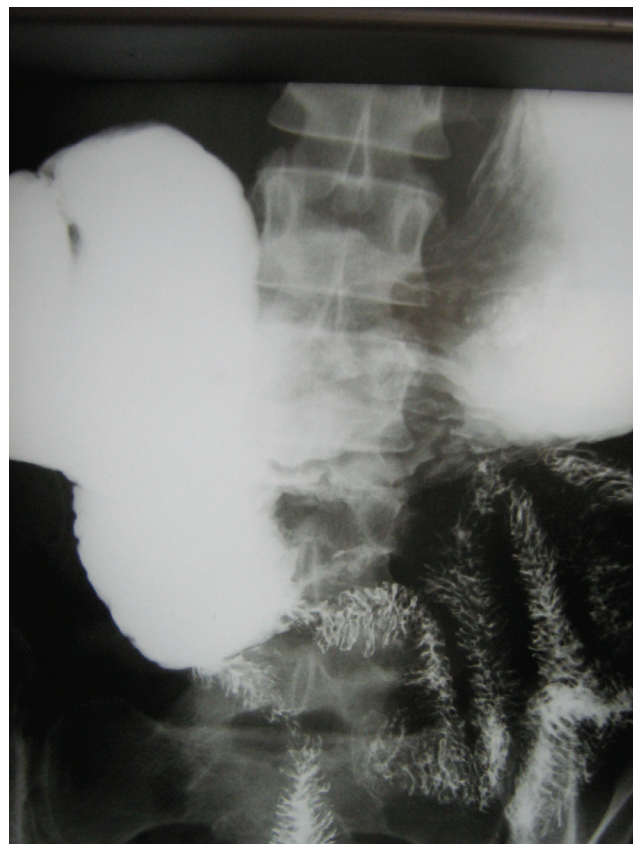


Figure 2. Gastric dilation extended to the third portion of the duodenum.

Colonoscopy

Colonoscopy was performed reaching the sigmoid, where the equipment light was narrowed, blocking the equipment progression. Biopsies of the region showed normal colonic mucosa.

Abdomen and pelvis tomography

Tomography was suggestive of hepatic metastasis, pyelocalyceal dilation and suspicion of iliac vessel invasion.

Thorax tomography

This tomography was suggestive of bilateral pulmonary metastases.

Treatment performed

Exploratory laparotomy was performed, which showed ascites, irremovable hepatic metastases, peritoneal implants and voluminous tumoral lesion in the

sigmoid, with invasion of ureter and iliac vessels in their left portion. Biopsy of implants and loop colostomy in transverse colon were performed.

Two days after the surgery and with restart of oral food intake, the patient started to present frequent vomiting, but reporting significant improvement in general. Her abdomen remained flat, raising the suspicion of proximal obstruction or gastroparesis. Intestinal transit was carried out (Figures 1, 2 and 3), which showed important gastric dilation until the third portion of the duodenum, compatible with superior mesenteric artery syndrome. Considering the patient's nutritional condition, the medical team opted for conservative measures (small food portions in more frequent intakes and left lateral decubitus position after meals).

Four months after the surgery and conservative measures, the patient did not present vomiting anymore, with considerable weight gain of 8 kg.



Figure 3. Intestinal transit compatible with superior mesenteric artery syndrome.

DISCUSSION

Retroperitoneal fat tends to keep the mesenteric root and the superior mesenteric artery far from the aorta. The angle between the two arteries varies from 25 to 60° in normal individuals and the radiographic distance between them ranges from 10 to 28 mm³⁻⁵. The reduction in angle to 6–16° and in the aortomesenteric distance to 2–8 mm causes duodenal obstruction. Around two thirds of patients with this syndrome are female, 75% between 10 and 39 years of age. In general population, the estimated prevalence ranges from 0.013 to 0.3%⁶⁻⁸.

The main causes of this syndrome are severe cranioencephalic trauma, long period in dorsal decubitus position on bed, immobilization in hyperextension device, considerable weight loss accentuated by consumptive disease, eating disorders, among others. The main symptoms are: intermittent post-prandial epigastric ab-

dominal pain (59 to 81% of the cases), which is relieved when changing the position, as well as vomiting, nausea and anorexia^{6,9}. This condition makes food intake impossible, leading to worsened clinical conditions.

The post-operative confirmation diagnosis is difficult; but, once the suspicion exists, a contrast study of the duodenum can provide a number of signs compatible with superior mesenteric artery syndrome, including: dilation of the first and second portions of the duodenum; compression of duodenal arc, with difficult or interrupted transit of contrast medium; stasis of the contrast medium at the gastrointestinal level for more than four hours; obstruction disappears when changing to left lateral decubitus or ventral position¹⁰⁻¹². In some patients, computed tomography of abdomen is required, which can show the duodenal obstruction and its relation with aorta and superior mesenteric artery. More invasive exams, such as arteriography and angioresonance, are not indicated when contrast radiography does not suggest the diagnosis¹³⁻¹⁵. The differential diagnosis of superior mesenteric artery syndrome includes other causes of small bowel obstruction, as well as diseases associated with duodenal dysmotility (megaduodenum), including diabetes, collagen diseases, scleroderma and chronic idiopathic intestinal pseudo-obstruction¹⁶.

The clinical treatment is initially indicated, which consists in the introduction of a nasogastric probe for stomach decompression, correction of hydroelectrolytic disorders and acid-base balance. If possible, small amounts of food and in short intervals should be adopted, as well as change to left lateral decubitus position. In more severe cases, total parenteral nutrition may be necessary. When these measures are successful, the need for a surgical treatment may be reduced from 70 to 14%¹⁷.

The surgical treatment is recommended in case of clinical treatment failure, in symptomatic patients. It consists in duodenojejunostomy in most cases, with 80% success rate^{18,19}. Lee et al.²⁰ concluded that duodenojejunostomy presented better results in severe cases, when compared to gastrojejunostomy and Strong's operation (division of the ligament of Treitz).

CONCLUSION

The superior mesenteric artery syndrome is a rare entity that does not enable proper food intake.

The post-operative confirmation diagnosis is difficult; but, once the suspicion exists, a contrast study of the duodenum can provide a number of signs compatible with superior mesenteric artery syndrome. In some patients, computed tomography of abdomen is

required to confirm the diagnosis. The clinical treatment is initially indicated, as it was successfully performed in the studied patient. The surgical treatment is recommended in case of clinical treatment failure, in symptomatic patients.

RESUMO: A síndrome da artéria mesentérica superior é uma entidade clínica causada geralmente pela perda do tecido adiposo mesentérico, resultando na compressão da terceira porção do duodeno pela artéria mesentérica superior. Esse artigo relata o caso clínico de uma paciente portadora de adenocarcinoma de cólon sigmoide metastático irressecável, que evoluiu com vômitos incoercíveis. Realizou-se, então, trânsito intestinal que evidenciou dilatação gástrica importante, que se prolongava até a terceira porção duodenal, quadro radiológico compatível com pinçamento da artéria mesentérica superior. Diante da condição nutricional da paciente, foi optado por iniciar medidas conservadoras (porções alimentares pequenas e mais frequentes, além de decúbito lateral esquerdo após as refeições). Quatro meses após a cirurgia e as medidas conservadoras, a paciente não apresentava mais vômitos pós-prandiais, nem emagrecimento. A síndrome da artéria mesentérica inferior é incomum e os sintomas podem ser inespecíficos. Sendo assim, um índice elevado de suspeita é exigido no ajuste clínico apropriado. O diagnóstico é feito, habitualmente, através de exame radiológico contrastado. O tratamento pode, inicialmente, exigir a descompressão gástrica e a reposição volêmica, além da reversão da perda de peso com nutrição adequada. A cirurgia deve ser reservada para os casos de falha do tratamento clínico.

Palavras-chave: síndrome da artéria mesentérica superior; diagnóstico; dor abdominal; duodeno; radiografia.

REFERENCES

1. Von Rokitsansky C. Lehrbuch der pathologischen Anatomie. Vienna: Braumuller & Seidel; 1861.
2. Wilkie DP. Chronic duodenal ileus. Am J Med Sci 1927;173:643-9.
3. Derric JR, Fadhli HA. Surgical anatomy of the superior mesenteric artery. Am Surg 1965;31:545-7.
4. Wayne ER, Burrington JD. Duodenal obstruction by the superior mesenteric artery in children. Surgery 1972;72:762-8.
5. Barnes J, Lee M. Superior mesenteric artery syndrome in an intravenous drug abuser after rapid weight loss. South Med J. 1996;89:331-4.
6. Ylinen P, Kinnunen J, Hockerstedt K. Superiormesenteric artery syndrome. A followup study of 16 operated patients. J Clin Gastroenterol 1989;11:386-91.
7. Goin LS, Wilk SP. Intermittent arteriomesenteric occlusion of the duodenum. Radiology 1956;67:729-37.
8. Nugent FW, Braasch JW, Epstein H. Diagnosis and surgical treatment of arteriomesenteric obstruction of the duodenum. JAMA 1966;196:1091-3.
9. Biank V, Werlin S. Superior mesenteric artery syndrome in children: a 20-year experience. J Pediatr Gastroenterol Nutr 2006;42:522-5.
10. Cohen LB, Field SP, Sachar DB. The superior mesenteric artery syndrome the disease that isn't, or is it? J Clin Gastroenterol 1985;7:113-6.
11. Gustafsson L, Falk A, Lukes PJ, Gamklou R. Diagnosis and treatment of superior mesenteric artery syndrome. Br J Surg 1984;71:499-501.
12. Burgener FA, Korman M. Differential diagnosis in conventional radiology. New York: Thieme, 1985.
13. Ahmed AR, Taylor I. Superior mesenteric artery syndrome. Postgrad Med J 1997;73:776-8.
14. Hunnicutt KL. A 6-year-old child with abdominal pain. Clin Pediatr (Phila) 2001;40:563-4.
15. Burrington JD. Superior mesenteric artery syndrome in children. Am J Dis Child. 1976;130:1367-70.
16. Superior mesenteric artery compression syndrome, 2009 [cited 2009 June 02]. Available from: <http://www.uptodate.com>.
17. Laffer LC. Acute dilatation of the stomach and acute arteriomesenteric ileus. Ann Surg 1908;47:94-7.
18. Barner HB, Sherman CD Jr. Vascular compression of the duodenum. Int Abstr Surg 1963;117:103-18.
19. Lundell L, Thulin A. Wilkie's syndrome – a rarity? Br J Surg 1980;67:604-6.
20. Lee CS, Mangla JC. Superior mesenteric artery compression syndrome. Am J Gastroenterol 1978;70:141-50.

Correspondence to:

Paulo Rocha França Neto
Rua Cônego Rocha Franco 252, Bairro Gutierrez
CEP 30430-000 – Belo Horizonte (MG), Brazil
E-mail: paulinho.med@ig.com.br