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Case Report

Superior Mesenteric Artery Syndrome: A Rare Cause of Duodenal Obstruction

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Abstract

Superior mesenteric artery syndrome or Wilkie's syndrome is a rare cause of obstruction of the 3rd duodenal portion at the level of the aortomesenteric vascular clamp, often secondary to the disappearance of perivascular adipose tissue following rapid weight loss. Clinical symptoms are dominated by postprandial vomiting and recurrent epigastralgia, but the diagnosis is only confirmed by angioscan, which shows an aorto-mesenteric distance less than 10 mm and an aorto-mesenteric angle less than 22°. Treatment is initially medical, involving correction of malnutrition, and surgery is an alternative if this fails. We report here a rare case of a 52-year-old woman with duodenal obstruction secondary to superior mesenteric artery syndrome, treated by medical therapy.

Keywords: *Superior Mesenteric Artery Syndrome; Wilkie Syndrome; Duodenal Occlusion; Distance Aorto-Mesenteric; Angle Aorto-Mesenteric*

Introduction

Superior mesenteric artery syndrome or Wilkie's syndrome is a rare cause for extrinsic and intermittent obstruction of the 3rd portion of the duodenum by a vascular pincer formed by the superior mesenteric artery anteriorly and the aorta posteriorly [1]. Treatment is initially medical, but if this fails, surgery is required [1]. We report here a rare case of a 52-year-old woman with duodenal obstruction secondary to Superior mesenteric artery syndrome treated by medical therapy.

Case Report

A 52-year-old woman with no previous medical history presented to emergency with chronic vomiting. The history of her disease dates back to 8 months ago, marked by intermittent epigastric pain associated with postprandial vomiting, evolving in a context of weight loss (15 kg) and apyrexia. Clinical examination revealed an apyretic woman (T° = 37°C), with blood pressure of 90/40 mmHg, a body weight of 43 kg, a BMI of 13 kg/m^2, dehydrated skin folds, and a distended abdomen with epigastric tenderness. Biological tests revealed microcytic hypochromic anaemia. Abdominal ultrasound performed was negative.

Gastrointestinal fibroscopy showed superficial ulcerations of the oesogastric mucosa with a distended first portion of the duodenum and bilious reflux into the stomach. An abdominal angioscan revealed a decrease in the distance between the aorta and the superior mesenteric artery measured at 4 mm (Figure 1), and in the aorto-mesenteric angle measured at 13° (Figure 2), with gastric and duodenal distension

(Figure 3), confirming the diagnosis of superior mesenteric artery syndrome. Medical treatment was initiated with the insertion of a naso-gastric tube, enteral and parenteral fluid and electrolyte supplementation, left lateral decubitus and procubitus positioning, and evolution was marked by a clear clinical improvement after 3 weeks of treatment.

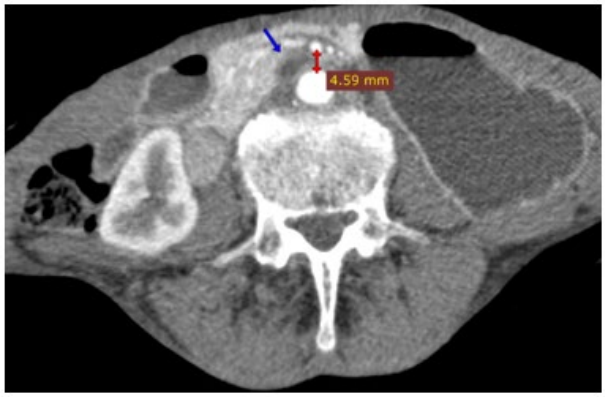

Figure 1: *Axial scan section shows a compression of the third duodenal portion (blue arrow) at the aortomesenteric clamp with an aortomesenteric distance (4.5 mm) less than 8 mm.*

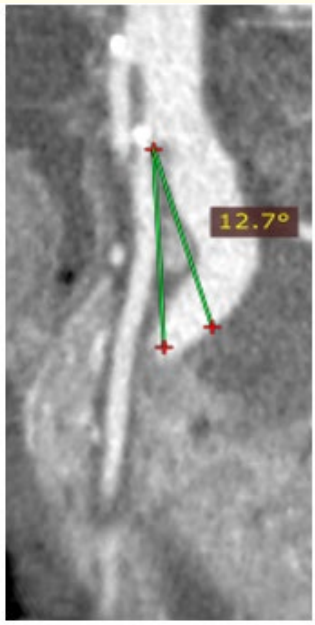

Figure 2: *Sagittal scan section shows an aorto-mesenteric angle (12.7°) less than 22°.*

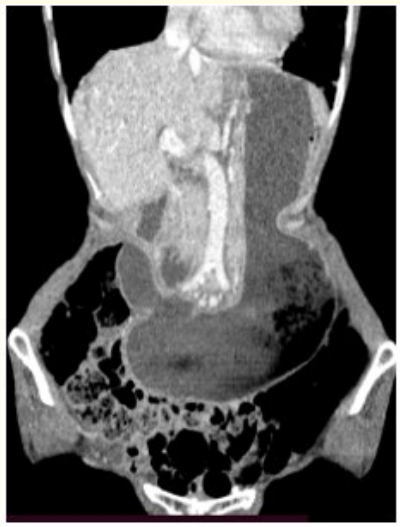

Figure 3: *Coronal scan section shows a gastric and duodenal distension upstream of an aortomesenteric clamp.*

Discussion

Superior mesenteric artery syndrome was first described by Rokitansky in 1861 [2], and Wilkie later published one of the largest series of 75 cases in 1927. Since then, the syndrome has carried his name [1]. Superior mesenteric artery syndrome is a rare cause of duodenal obstruction, caused by extrinsic compression of the third portion of the duodenum by the superior mesenteric artery or one of its branches against the aorto-rachidian plane. The incidence of this disease varies from 0.013% to 0.3% of the barium series of the upper gastrointestinal tract. It preferably affects younger female patients, with no racial or ethnic predisposition [3,4].

This syndrome most frequently results from disappearance of perivascular adipose tissue in the aorto-mesenteric space secondary to rapid weight loss, but also to correction of scoliosis, spinal hyperlordosis, cerebral motor infirmity or anatomical anomalies such as a short Treitz ligament or an abnormally high and fixed position, or an unusually low origin of the superior mesenteric artery favouring compression of the digestive segment by the superior mesenteric artery [5,6]. However, 40.4% of cases can occur without any obvious triggering factor [3]. Our case was explained by the onset of rapid weight loss.

Clinical symptoms are highly variable, and may be acute or chronic, depending on the aetiology and the degree of duodenal obstruction. Generally, there is abdominal pain, nausea and early post-prandial vomiting, usually associated with epigastric distension. Symptoms are aggravated by eating and dorsal decubitus, and relieved by ventral decubitus, left lateral decubitus and sitting. It may be confused with pancreatitis, gastric ulcer and eating disorders [4].

The diagnosis of superior mesenteric artery syndrome is suggested clinically but confirmed on imaging. Abdominal angioscanner showed gastroduodenal distension down to the third portion of the duodenum as a result of extrinsic compression by the aortomesenteric vascular clamp. The aorto-mesenteric distance is less than 8 mm for a normal between 10 and 28 mm and the aorto-mesenteric angle is less than 22° for a normal between 25° and 60° [7].

Treatment is initially medical, involving insertion of a nasogastric tube for gastroduodenal decompression, introduction of hygienic and dietary measures such as meal fragmentation, left lateral decubitus or post prandial procubitus [8] and correction of electrolyte disorders.

Nutritional supplementation should be high in calories and be given both enteral and parenterally [1,9], in order to gain weight and restore adipose tissue, thus increasing the aortomesenteric distance and avoiding duodenal compression. The patient should be carefully supervised, and oral nutrition can be gradually introduced once symptoms begin to subside. Medical treatment is successful in 72% of cases, but recurrences are frequent (around 30%) [10]. Our patient benefited from a gastroduodenal tube with introduction of dietary hygiene measures. Progress was marked by weight gain and improvement in symptoms within 3 weeks.

Surgery is indicated if medical treatment fails or if the disease recurs. It consists either of a digestive bypass via a gastrojejunal or duodeno-jejunal anastomosis [1,9], or the modification of anatomical conditions by mobilising and decreasing the duodeno-jejunal angle by positioning the jejunum to the right of the superior mesenteric artery after sectioning Treitz's muscle using Strong's method. Better results have been described with duodeno-jejuno-anastomosis [1,9]. All these operative methods can be performed laparoscopically, which reduces the length of hospital stay and the risk of occlusion on flange, with an excellent aesthetic result and faster restoration of peristalsis [11,12].

Conclusion

Superior mesenteric artery syndrome is a rare cause of duodenal obstruction that remains poorly known. Diagnosis is made by clinical and imaging findings.

Treatment is initially conservative to relieve malnutrition, and surgery is indicated if this fails.

Conflicts of Interest

The authors have no conflicts of interest.

Authors' Contributions

All the authors contributed to the development and implementation of this work. All authors have read and approved the final version of the manuscript.

Bibliography

1. Welsch T., *et al*. "Recalling superior mesenteric artery syndrome". *Digestive Surgery* 24.3 (2007): 149-156.
2. CV Rokitanski. "Braumuller et Siedel: Lehrbuch der Pathologische Anatomie Vienne". 3rd edition. Volume 3 (1861): 187.
3. Mathenge N., *et al*. "Superior mesenteric artery syndrome and its associated gastrointestinal implications". *Clinical Anatomy (New York, NY)* 27.8 (2014): 1244-1252.
4. Zaraket V and Deeb L. "Wilkie´s syndrome or superior mesenteric artery syndrome: fact or fantasy". *Case Reports in Gastroenterology* 9.2 (2015): 194-199.
5. Kalouche I., *et al*. "The superior mesenteric artery syndrome: apropos of a case and review of the literature". *Annales de Chirurgie* 45.7 (1991): 609-612.
6. Bonnet J., *et al*. "La pince aortomésentérique supérieure primitive". *Archives de Pédiatrie* 2.4 (1995): 3333-3338.
7. Unal B., *et al*. "Superior mesenteric artery syndrome: CT and ultrasonography findings". *Diagnostic And Interventional Radiology* 11.2 (2005): 90-95.

8. Chrysikos D., *et al*. "Superior mesenteric artery syndrome: a rare case of upper gastrointestinal obstruction". *Journal of Surgical Case Reports* 3 (2019): rjz054.

9. Karren Frederick Merrill. "Superior mesenteric artery syndrome treatment and management" (2012).

10. Shin MS and Kim JY. "Optimal duration of medical treatment in superior mesenteric artery syndrome in children". *Journal of Korean Medical Science* 28.8 (2013): 1220-1225.

11. Mandarry MT., *et al*. "A comprehensive review of superior mesenteric artery syndrome". *European Surgery* 42.5 (2010): 229-236.

12. Ganss A., *et al*. "Superior mesenteric artery syndrome: a prospective study in a single institution". *Journal of Gastrointestinal Surgery* 23.5 (2019): 997-1005.

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