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Case Report

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Case Report: Superior Mesenteric Artery Syndrome in a Healthy Adolescent

Alkhatib Amani[2], Hallal Marwa[3], Matar Rami[1], Maitar Michael[1] and Hotayt Bilal[1]*

[1]Department of Gastroenterology, Lebanese university, Beirut, Lebanon

[2]Lebanese University, Faculty of Medical Science, Beirut, Lebanon

[3]Faculty of Medicine, Lebanese American University, Byblos, Lebanon

ABSTRACT

Superior mesenteric artery (SMA) or Wilkie's syndrome is a rare clinical entity of partial or complete duodenal obstruction. The lack of awareness for this phenomenon often results in a delayed diagnosis, yet it can predispose to potentially life-threatening complications. Our case of young female presented for recurrent vomiting and weight loss, the CT scan showed narrow aortomesenteric angle resulting in external compression of the duodenum, other workup including laboratory test and endoscopy were negative. SMA syndrome should be always in the differential diagnosis of unexplained vomiting and weight loss, mainly in the young age group.

***Corresponding author**

Hotayt Bilal, Gastroenterology and Hepatology, Gastroenterology Department, Lebanese university, Beirut, Lebanon.

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Introduction

The compression of the anterior duodenal wall by the superior mesenteric artery as a cause of duodenal obstruction was first described by Von Rokitansky in 1861 [1]. It is characterised by extrinsic compression of the third portion duodenum between the abdominal aorta and the SMA at its origin (Figure 1) [2]. It has been described in the literature by a variety of other names, including Cast syndrome, Wilkie syndrome, arteriomesenteric duodenal obstruction, and chronic duodenal ileus [3]. In general population, the incidence of SMA syndrome ranges between 0.013% and 0.78% [4]. The consequences of the erect posture of humans is that the superior mesenteric artery leaves the aorta at an acute angle, which ranges from 38° to 65° [5]. The main anatomic feature of SMA syndrome is a narrowing of the aorta-SMA angle to less than 25°, and as a result, the aortomesenteric distance decreases to less than 10 mm, from normally 10 to 28 mm [5].

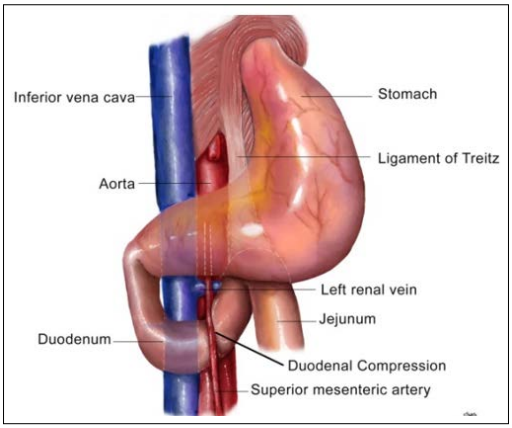

Figure 1: Extrinsic Compression of the Third Part of the Duodenum by the Superior Mesenteric Artery (SMA)

Case Report

A 14 year-old patient presented in our Department for recurrent vomiting mainly postprandial, weight loss more than 10kg within 4 months and mild abdominal discomfort. Patient has negative surgical history, no medical history only she mentioned stress during the last few months. Upon presentation patient looks cachectic, mild epigatsric tenderness on physical exam, no other findings. Laboratory results done including (CBCD, LFTs, TSH, VitD, VIT B12, BILIRUBINE, Lipase) without any significant abnormalities, Ultrasound abdo-pelvis was normal. Upper EGD was done showed mildly distended stomach with mild gastritis, biopsies results of the stomach and duodenum were negatives. CT scan abdopelvis showed that the stomach and the proximal duodenum are moderately distended upper (not over distended) with gastric stasis. The auto mesenteric angle is of 10 degrees and the distance between the aorta (red arrow) and superior mesenteric artery (orange arrow) is of only 4 mm at the level of the duodenum and of 3 mm below the duodenum (Figure 2). Thus, based on the history, the unintentional weight loss due to the stress may have induced the compression of the third part of the duodenum. In this case, the clinical and the imaging findings of the patient concluded the diagnosis of SMA syndrome.

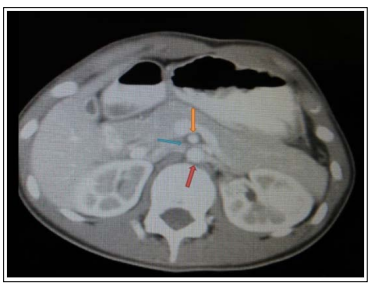

Figure 2: Red Arrow: Aortic Artery; Orange Arrow: SMA; BLUE Arrow: D3

Discussion

SMA syndrome might be a diagnostic challenge and must be always included in the differential diagnosis of upper gastrointestinal obstruction. The diagnosis of SMAS is based mostly on clinical symptoms and radiologic evidence of obstruction. Congenital and anatomical factors predisposing for the syndrome are well-recognised in the literature [6]. This includes high insertion of the duodenum, low SMA origin, and short ligament of Treitz. Congenital compression has also been described due to Ladd bands in the context of midgut malrotation. This may be exacerbated by acquired factors, including rapid weight loss resulting in the loss of retroperitoneal fat, prolonged bed rest, retroperitoneal tumours, and abdominal trauma. Treatment consists initially conservative measures. Medical management may be successful in patients with a short history, moderate symptoms and incomplete duodenal obstruction. A high calorie diet which leads to gain of weight might alleviate or even remove the symptoms. Total parenteric nutrition has also been used but eventually 50-70% of all cases will relapse and may necessitate surgical treatment. The aim of conservative approach with jejunal or parenteral nutrition is the restoration of the aortomesenteric adipose tissue that in the normal individual displaces the SMA anteriorly away from the aorta so avoiding duodenal compression. The surgical management consisted of three procedures, namely, Strong's procedure, duodenojejunostomy, or a gastrojejunostomy [7].

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