

CASE REPORT

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Rare cause of duodenal obstruction in a young-age female: a case report

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Abstract

Background: Gastrointestinal tract can be compressed by many vascular structures in the abdomen; such compressions may be incidentally found or may result in compression symptoms like abdominal pain and vomiting.

Case presentation: We illustrate an uncommon cause of extrinsic compression of the third part of the duodenum by jejunal branches of the superior mesenteric artery in an 18-year-old female, presented with dull-aching epigastric pain and vomiting. Contrast Enhanced Computerized Tomography (CECT) showed atypical origin of the jejunal branches of superior mesenteric artery with relative space narrowing between it and the aorta, causing significant compression on the third part of the duodenum. Barium follow-through confirmed indentation of the duodenal lumen at the same level of the aberrant vessel. Conservative treatment failed to control her symptoms, and the patient referred to the surgery.

Conclusion: High index of suspicion is required for diagnosis of atypical causes of upper abdominal pain and vomiting. CECT guided by a well-descriptive comment of the treating doctor is very helpful diagnostic tool for detecting such rare condition. Barium studies still have a valuable role for determining the level of obstruction and confirming the diagnosis of such rare cases.

Keywords: Duodenal obstruction, Jejunal branches, Superior mesenteric artery

Background

Superior mesenteric artery (SMA) considers one of the major arteries of the abdomen, it arises from the abdominal aorta about 1 cm below the coeliac trunk at the level of the intervertebral disk just between the first and second lumbar vertebrae. It passes inferiorly and anteriorly, anterior to the uncinate process of the pancreas and the third part of the duodenum and posterior to the splenic vein and body of the pancreas. Then it descends in the root of the mesentery, crosses anterior to the inferior vena cava, right ureter, and right psoas major. While decreasing its caliber as branches are given off to the loops of jejunum and ileum. Finally, it ends in a terminal branch which anastomoses with the ileocolic artery. The

superior mesenteric artery gives the middle colic, right colic, ileocolic, jejuna, and ileal branches (Hollinshead 1961; Steward and Rankin 1933; Mohanty et al. 2013).

Various abnormal anatomical variations in SMA or its branches could exist and compromise the compression symptoms to the surrounding structures especially the duodenum. Sometimes, vascular compression associate with significant morbidity and poor treatment outcome especially if remains untreated and unrecognized (Noorani et al. 2009).

Imaging facilitates the accurate road mapping of the abnormal anatomy and prediction of hemodynamic significance, prior to treatment (Butros et al. 2013).

Case presentation

Female patient, 18-year-old, presented with dull-aching epigastric pain and repeated vomiting of more than 6 months duration. Her past medical and surgical history was unremarkable. The patient received empirical proton

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pump inhibitors and prokinetics with no improvement of her symptoms; therefore, the patient was admitted to the hospital for evaluation of her condition. Abdominal ultrasound and metabolic profile were unremarkable. Contrast Enhanced Computerized Tomography (CECT) was done and revealed normal aortic superior mesenteric artery angle (about 38), the distance at the third part of the duodenum level = 9 mm, such measures are not in favor of superior mesenteric artery syndrome. However, the jejunal branches of SMA are seen abnormally originating from the posterior border of the SMA at the point of the third part of the duodenum with relative space narrowing between it and the aorta (Fig. 1). Oesophago-gastro duodenoscopy (OGD) showed marked narrowing of the lumen of the third part of the duodenum with normal mucosal lining, picture suggestive of external compression. Barium follow-through was then done and confirmed a vertical band of external compression causing a well-noticed indentation at the third part of the duodenum with subsequent proximal gastric and duodenal dilatation (Fig. 2). Conservative management failed to control the patient's symptoms, and the patient referred to surgery. She underwent gastro-jejunostomy and passed smooth postoperative course with complete resolution of her condition 3 months postoperative.

Discussion

Various vascular structures of the abdomen can compress the surroundings that are usually discovered accidentally in asymptomatic patients or may present with nonspecific symptoms.



Fig. 1 CECT shows jejunal branches originating from the posterior border of the superior mesenteric artery at the point of 3rd part duodenal crossing with relative space narrowing between it and the aorta



Fig. 2 Barium follow through shows extrinsic compression of the third part of the duodenum by a vertical band (arrow) with dilated stomach and second part of duodenum

Patients presenting with symptoms of duodenal obstruction like abdominal pain, vomiting, and distension need a high index of suspicion to the possibility of vascular compression especially after exclusion of the common gastrointestinal and metabolic disorders. However; in some patients, compression may be intermittent with some improvement of their symptoms that can lead to a delay in the diagnosis (Srisajjakul et al. 2017).

CECT plays a major role not only in detecting such atypical causes of vascular compression but also to exclude the other differential diagnoses. (Srisajjakul et al. 2017) CECT has many advantages in this entity like; its superior contrast, temporal and spatial resolution, speed, and non-invasiveness compared to other conventional angiography, meanwhile, magnetic resonance imaging (MRI) and angiography may only replace CECT in any patient who has had a previous allergic reaction to iodinated contrast agent and provide additional information that can help in diagnosing of vascular compression (Srisajjakul et al. 2017).

Endoscopy also plays a vital role to rule out intraluminal obstruction caused by tumors, strictures, or ulcer scar (Lamba et al. 2014).

Hereby we report a very uncommon case for a young girl presented with vascular duodenal obstruction by abnormally originating jejunal branches of SMA. The diagnosis was suspected by atypical findings in CECT and then was confirmed by barium follow-through that demonstrated significant compression of the duodenal wall with marked narrowing of its lumen at the same level of the aberrant vessel described in the CECT. To our knowledge, it is the first time in the medical literature to

describe such a very rare and atypical cause of duodenal compression by jejunal branches of the SMA. Unfortunately, with failed conservative treatment; the patient underwent gastrojejunostomy with improvement of her symptoms.

Conclusions

High index of suspicion is required for diagnosis of atypical causes of upper abdominal pain and vomiting. CECT guided by a well-descriptive comment of the treating doctor is very helpful diagnostic tool for detecting such rare condition. Barium studies still have a valuable role for determining the level of obstruction and confirming the diagnosis of such rare cases.

Abbreviations

SMA: Superior mesenteric artery; CECT: Contrast Enhanced Computerized Tomography; OGD: Oesophago-gastro duodenoscopy; MRI: Magnetic resonance imaging.

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Authors' contributions

MT analyzed and interpreted the patient data regarding the symptom and the endoscopic findings. AH analyzed and interpreted the patient data regarding the radiological data. AA participated in writing the manuscript and submission process. MA participated in revising the manuscript and general supervision of the research group. All authors read and approved the final manuscript.

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Availability of data and materials

Not applicable.

Declarations

Ethics approval and consent to participate

The study was approved by local institution ethical committee. The committee's reference number is not available. Oral and written informed consents were obtained from the patient.

Consent for publication

Oral and written informed consents were obtained from the patient.

Competing interests

The authors declare no potential competing interests.

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