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Hypertensive emergency presenting with an isolated celiac artery dissection: A rare case study

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ABSTRACT

INTRODUCTION: To our knowledge the most recent article on celiac dissection was published in 2015 and reported 24 known cases of spontaneous isolated celiac trunk dissection [2]. While some of those cases reported hypertension as a risk factor, no other case presents as hypertensive emergency with an isolated celiac artery dissection.
PRESENTATION OF CASE: A 43 year-old man with a past medical history of uncontrolled hypertension, for which he had reportedly been non-compliant with follow-up, presented with complaints of severe, sudden-onset epigastric pain which was non-radiating and constant for 1 hour prior to arrival. On CT an intimal flap was noted within the celiac trunk, starting at the origin and extending into the left gastric, splenic, and the common hepatic arteries.
DISCUSSION: The most common symptom in patients with celiac artery dissection is acute or chronic epigastric or abdominal pain [2,4,9,11]. The crux of the diagnosis of this condition relies on contrast enhanced CT. The superiority of the CT scan is because of the contrast tracking capability [11]. The two most common risk factors for celiac artery dissection are hypertension followed by vasculitis. Patients can be managed nonoperatively or with one of a few operative procedures. Conservative treatment consists of anticoagulants, antihypertensives, and antiplatelet therapy [2].
CONCLUSION: To the best of our knowledge, we present the 25th case of isolated celiac artery dissection. This is the first case of hypertensive emergency induced spontaneous isolated celiac trunk dissection in literature. Our patient was managed primarily with a labetalol drip.

1. Introduction

1.1. Rationale

To our knowledge the most recent article on celiac dissection was published in 2015 and reported 24 known cases of spontaneous isolated celiac trunk dissection [2]. In our literature review we did not identify a single case of isolated celiac artery dissection that presented during a hypertensive emergency. We present a case of hypertensive emergency induced spontaneous isolated celiac trunk dissection, which was managed nonoperatively with a labetalol drip.

1.2. Background

The definition of an arterial dissection is the cleavage of the arterial wall by an intramural hematoma located between two elastic layers [2,4]. As we are reporting the 25th known case of celiac artery dissection, it remains a rare entity. Many of the other reported cases involve other arteries such as the common hepatic, splenic, superior mesenteric, and gastroduodenal [1,2,4,9–12]. Additionally, while some of those cases reported hypertension as a risk factor, no other case presents as hypertensive emergency with an isolated celiac artery dissection. The first case of visceral artery dissection involved the superior mesenteric artery (SMA) and was reported in 1947, while the first celiac artery dissection was not reported until 1959 [2]. More commonly, arterial dissections occur in the carotid and renal arteries [4]. When they occur in the visceral arteries, the most common location is within the SMA [1,4]. Celiac artery dissection

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has been described in blunt abdominal trauma, but it only accounts for 1–2 percent of all visceral vascular lesions [10].

2. Case study

A 43 year-old man with a past medical history of uncontrolled hypertension, for which he had reportedly been non-compliant with follow-up, presented with complaints of severe, sudden-onset epigastric pain which was non-radiating and constant for 1 h prior to arrival. The patient denied associated nausea, vomiting, fevers, or chills. He denied chest pain, shortness of breath, lightheadedness, and dizziness. He reported moving his bowels prior to the onset of symptoms, and noted passing flatus after the onset of symptoms. He denied issues with urination. The patient denied a history of recent abdominal trauma. On initial examination his vital signs consisted of a temperature of 98.1° Fahrenheit, heart rate of 78, respiratory rate of 16, blood pressure of 234/144, and 99% oxygen saturation on room air. His hypertensive emergency in the setting of severe abdominal pain necessitated an emergent vascular surgery consultation. The patient was alert and oriented, and in distress. His lungs were clear to auscultation bilaterally and his respirations were non-labored. His heart rate and rhythm were regular. Examination of the abdomen revealed a soft, non-distended, and obese abdomen. The patient was diffusely tender to palpation, with maximum tenderness overlying the epigastric region. There was no evidence of voluntary guarding or rebound, and he did not display peritoneal symptoms. Pulse examination was positive for 2+ radial, femoral, dorsalis pedis, and posterior tibial pulses bilaterally. There was a well-healed, vertical, surgical scar in the left groin from an unspecified procedure secondary to a remote history of traumatic stab wound. Laboratory analyses (complete blood count, coagulation parameters, comprehensive metabolic panel, lactic acid, and troponin I) were all within normal limits.

Contrast enhanced (oral and intravenous) computed tomography of the chest and abdomen/pelvis demonstrated normal course and caliber of the great vessels, ascending aorta, descending aorta, and abdominal aorta without aneurysmal dilatation. There was no evidence of displaced intimal calcification, intramural hematoma, or dissection flap to suggest an aortic dissection. An intimal flap was noted within the celiac trunk, starting at the origin and extending into the left gastric, splenic, and the common hepatic arteries. The true and false lumens of the celiac trunk appeared well perfused. From the level of the bifurcation of the celiac trunk, perfusion of the true lumen of the left gastric, splenic, and common hepatic artery was noted. The superior mesenteric artery, bilateral renal arteries, inferior mesenteric artery, common iliac arteries, and internal/external iliac arteries were patent without aneurysmal dilatation. There were no signs of ischemic change of the liver and stomach, and the pancreas was of normal size and contour. The spleen appeared heterogeneous. The patient was treated with 8 mg of morphine with only slight relief from his symptoms. The patient was also treated with 10 mg labetalol IV and his systolic blood pressure improved into the 140s. An additional 6 mg of morphine was administered for persistent abdominal pain and an additional 10 mg labetalol was prescribed.

The patient was admitted to the Cardiac Intensive Care Unit for aggressive blood pressure control and was initiated on a labetalol drip to maintain systolic blood pressure less than 120 mm Hg. With aggressive blood pressure control throughout the evening of hospital day 0 and hospital day 1, the patient's abdominal pain decreased in intensity. He was then started on a regular diet, which he consumed without nausea, vomiting, or exacerbation of his pain. On hospital day 1, the patient was weaned off of the labetalol drip, and his blood pressure medication regimen was transitioned to a by mouth route of hydralazine, labetalol, and amlodipine. He was subsequently downgraded to the General Medical Floor with telemetry monitoring.

3. Discussion

The most common symptom in patients with celiac artery dissection is acute or chronic epigastric or abdominal pain [2,4,9,11]. In many of the case studies the patient presented to the emergency department with sudden onset epigastric pain [2,9,16]. Another cardinal symptom for patients with chronic pain is weight loss [4]. Other manifestations include obstructive jaundice, pancreatitis, intestinal angina, tachycardia, hemorrhage, and hypertension [4,10,13]. Interestingly, patients do not usually present with nausea, vomiting, or peritoneal symptoms [4,11,16]. Another case study had a patient present with hematemesis, melena, and postprandial pain [14]. One of the more unique presentations was in a patient who had a history of long-term energy drink consumption and intense exercise routines [7]. Patients with celiac artery dissection may also have a self-limited course of these aforementioned symptoms [9]. The majority of patients with this pathology are middle aged men [4]. Our patient fits this most commonly noted demographic.

One case series elucidated many of the complications of celiac artery dissection [4]. Extensive of the dissection may occur into adjacent arterial walls, including those of the splenic artery and proximal hepatic arteries. Renal arteries and the splenic artery may also infarct in the first week after celiac dissection. The hepatic artery may develop an aneurysm. Additional case studies report other complications. One case study noted that the dissection extended into the common hepatic artery [9]. Another patient presented with upper gastrointestinal hemorrhage as a complication [14]. There was one patient who experienced a sequential SMA dissection in the subsequent week [8] During his hospital stay our patient did not experience any of these complications..

The crux of the diagnosis of this condition relies on contrast enhanced CT (CT). Other modalities that can be used are CT angiography (CTa), magnetic resonance imaging (MRI), magnetic resonance angiography (MRA), and Doppler ultrasonography (US) [9]. CTa is used for definitive diagnosis as it allows precise determination of collateral circulation [11,13]. US is of some efficacy because one can assess areas of abnormal flow in the proper habitus [11]. One of the key findings on CT is an intimal flap [4,9]. Other cases have found infiltration of the fat surrounding the celiac artery or celiac artery aneurysm [4,9]. The stranding of the adjacent soft tissue is suggestive of focal hemorrhage [10]. Additional CT findings include intramural thrombus formation, splenic infarctions, segmental stenosis [2,9]. Intramural hematoma has been identified on CT and may lead to moderate narrowing of the vessel [11]. Dissection length is variable. One study describes a celiac artery dissection of 14 millimeters [2]. Another reported a length of 8–12 millimeters [13]. In the one patient that presented with upper gastrointestinal hemorrhage CT showed enhancement of perigastric and gastric intramural vascular collaterals due to chronic ischemia secondary to celiac artery dissection [14].

The superiority of the CT scan is because of the contrast tracking capability [11]. Additionally, follow up CT studies can be compared to the original one. Follow up imaging is recommended in the management of patients with celiac dissection. One proposed protocol has follow up imaging performed at 1 week and 2–6 months [4]. Another case study repeated the CT scan as early as 12 h later [11]. Yet another performed it 3 days after admission [13]. Regardless of the timeline chosen, it is imperative to have serial CT scans to monitor for the potential serious complications of celiac artery dissection.