Celiac Artery Dissection: A Rare Cause of Epigastric Pain

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Introduction

Isolated spontaneous celiac artery dissection is an uncommon diagnosis and is rarely considered in patients presenting with acute epigastric pain. To our knowledge, there is only one case of spontaneous celiac artery dissection associated with heavy weight lifting in an otherwise healthy individual previously reported in literature.[1,2]

Spontaneous arterial dissection is five times more common in men than in women and the average patient age is approximately 55 years.[3] Other associations previously reported are hypertension, arteriosclerosis, degeneration of arterial wall, trauma, pregnancy and arteriopathy.[2,4-7] The typical symptom of dissection is acute abdominal pain. Complications of the condition include aneurysm formation, rupture, abdominal organ ischemia or infarction, especially in the liver or spleen, and pancreatitis with elevated lipase levels.[8, 9] We report a case of celiac artery dissection presumably associated with heavy weight lifting in a construction worker.

Case Report

This case of celiac artery dissection occurred in a 44-year-old male who was a construction laborer. A week prior to presentation, he started lifting heavy weights as per his work requirement. He presented with sudden onset, sharp, epigastric pain of three-days duration. He denied any history of abdominal trauma. The pain radiated to his right upper quadrant and back. Pain was initially postprandial, however, later became constant.

The patient's past medical history was significant for smoking. He did not have any history of hypertension, diabetes, or dyslipidemia. Complete physical examination, including vital signs, were normal except for the presence of epigastric tenderness. Results of all laboratory tests, including complete blood count, basic metabolic panel, liver enzymes, lipase and lactic acid levels, were within normal range.

A sagittal contrast enhanced computed tomography (CT) scan of the abdomen showed vague eccentric filling defect in the celiac trunk with possible thrombus formation (Figure 1). A sagittal contrast enhanced CT angiogram showed a filling defect in the inferior portion of the celiac axis, worrisome for thrombosis with a dissection flap (Figure 2). The dissection flap was limited to celiac artery only. Hepatic, splenic and gastric arteries were clearly patent.

A vascular surgery consultation recommended a conservative approach with close observation. As the initial CT abdomen showed possible thrombus formation, a hypercoagulation and vasculitis work up was obtained to search for the underlying cause. All labs, including antithrombin III, protein C and S levels, Factor V Leiden, Dilute Russell Viper Venom test, antiphospholipid antibodies,

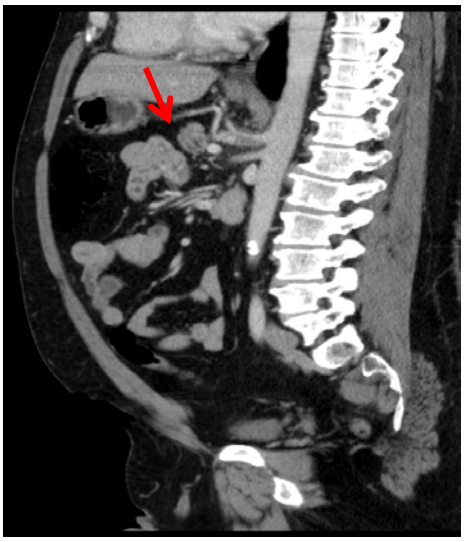

Figure 1. Vague eccentric filling defect in the celiac trunk of the abdomen with possible thrombus (red arrow).

Figure 2. A filling defect in the inferior portion of the celiac axis, worrisome for thrombosis with a dissection flap (red arrow).

prothrombin gene mutation, and beta 2 microglobulin were within normal limits. Flow cytometry ruled out paroxysmal nocturnal hemoglobinuria. Janus kinase 2 mutation, antinuclear antibody, and perinuclear anti-neutrophil cytoplasmic antibodies were negative.

The patient was treated with anticoagulation therapy including heparin infusion followed by Coumadin. He was asymptomatic prior to discharge. Repeat CT angiogram of the abdomen was done at three-month intervals and showed a new finding of pseudo aneurysm formation (Figure 3). After consultation with hematology and vascular surgery, his Coumadin was discontinued and he was started on aspirin. The patient remained asymptomatic at three and six month follow-up visits.

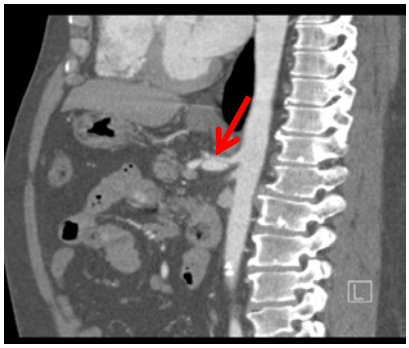

Figure 3. A new finding of pseudo aneurysm formation of the abdomen after three month intervals (red arrow).

Discussion

Cases have been reported documenting an association between arterial dissection and extreme physical exertion including heavy weight lifting, doing pushups, intense swimming, playing tennis, and racquetball.[10,11,12] In most cases, the dissection involved the ascending aorta. Some cases have been reported identifying association of aortic dissection resulting from heavy weight lifting in individuals with underlying vascular pathology such as cystic medial degeneration.[12] However, our patient was a healthy male and had no conventional risk factors for dissection besides smoking. He had never experienced any symptoms prior to this episode which seemed to be associated with his weight lifting over the period of past one week.

The proposed mechanism of dissection with weight lifting is an extreme rise in

blood pressure associated with heavy weight lifting. MacDougall et al.[13] studied arterial blood pressure of healthy males undergoing 90 minutes of heavy exercises. With each weight lift, an extreme rise in systolic and diastolic blood pressure was noticed which rose incrementally with repetitive lifts until the activity ended. One arm curl, for example, resulted in a mean rise among the participants to 225/190mm Hg. A five second Valsalva's maneuver resulted in a mean rise to 190/170 mm Hg in the group. In the first reported case of celiac artery dissection in a 45-year-old male who experienced abdominal pain while bench pressing heavy weights, a CT angiogram showed a dissection of the celiac artery extending into hepatic and splenic arteries.[1]

Conclusion

Although it cannot be stated unequivocally that weight lifting produced celiac artery dissection in our patient, weight lifting clearly leads to a great increase in blood pressure transiently, which places critical hemodynamic stress on the vessel wall. Physicians should be aware of profound cardiovascular effects of weight lifting including dangerous elevation in arterial wall tension and consider arterial dissection in the differential diagnosis of otherwise unexplained epigastric pain in any individual associated with extreme exertion and heavy weight lifting.

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