

Spontaneous dissection of celiac trunk with concurrent splenic artery dissection

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Isolated spontaneous dissection of the celiac trunk is rarely diagnosed in acute abdominal pain. We present two cases of celiac trunk and splenic artery dissection with splenic infarction. Patients were successfully managed and stabilized by medical treatment. Isolated celiac trunk dissection can be fatal, therefore providers should be careful not to overlook this entity.

Keywords Dissection; Celiac artery; Splenic artery; Splenic infarction; Emergency medicine

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Case Report



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Capsule Summary

What is already known

Spontaneous dissection of the celiac trunk in concurrence with splenic artery dissection is an rare entity.

What is new in the current study

We believe that our two similar case reports might help determine the appropriate approach and management for this disease in the emergency department.

INTRODUCTION

Spontaneous dissection of the celiac artery with concurrent dissection of the splenic artery without abdominal aortic dissection is very rare.¹ Spontaneous visceral artery dissection was first reported in 1947, which occurs most frequently in the superior mesenteric artery and rarely in the celiac trunk.¹ In the past, celiac artery dissection could only be confirmed by autopsy. However, advances in diagnostic tools such as contrast-enhanced computed tomography (CT), CT angiography, magnetic resonance angiography, and Doppler ultrasonography have improved the rate of diagnosis. Disease management includes medical and surgical treatment and endovascular intervention.

We report two similar cases of isolated spontaneous splenic artery dissection in patients presenting to the emergency department (ED) and review the etiology, epidemiology, diagnosis, and treatment of this entity.

CASE REPORT

Case 1

A 36-year-old healthy man with an unremarkable medical history

was referred from a local hospital for an abdominopelvic CT finding that was compatible with splenic infarction due to splenic artery dissection.

The patient complained of abdominal pain in the left upper quadrant and the epigastric region as well as back pain. Upon physical examination, he had mild tenderness to palpation in the upper left quadrant and the epigastric region without abdominal guarding. Vital signs were stable, with a blood pressure of 130/80 mmHg, heart rate of 80 beats/min, and body temperature of 36.8°C. His visceral arteries were evaluated in detail by mesenteric CT angiography, which showed dissections in the celiac trunk, common hepatic artery, and splenic artery with mural thrombi, and partial infarction of the spleen (Fig. 1). The patient was treated with intravenous heparin and meperidine to control pain. Abdominal pain subsided after three days. A follow-up CT angiogram performed three days after admission showed no changes in the celiac trunk, common hepatic artery, splenic artery dissection, or partial infarction in the spleen. After 10 days in the hospital, the patient was discharged with aspirin, with a follow-up after 12 days.

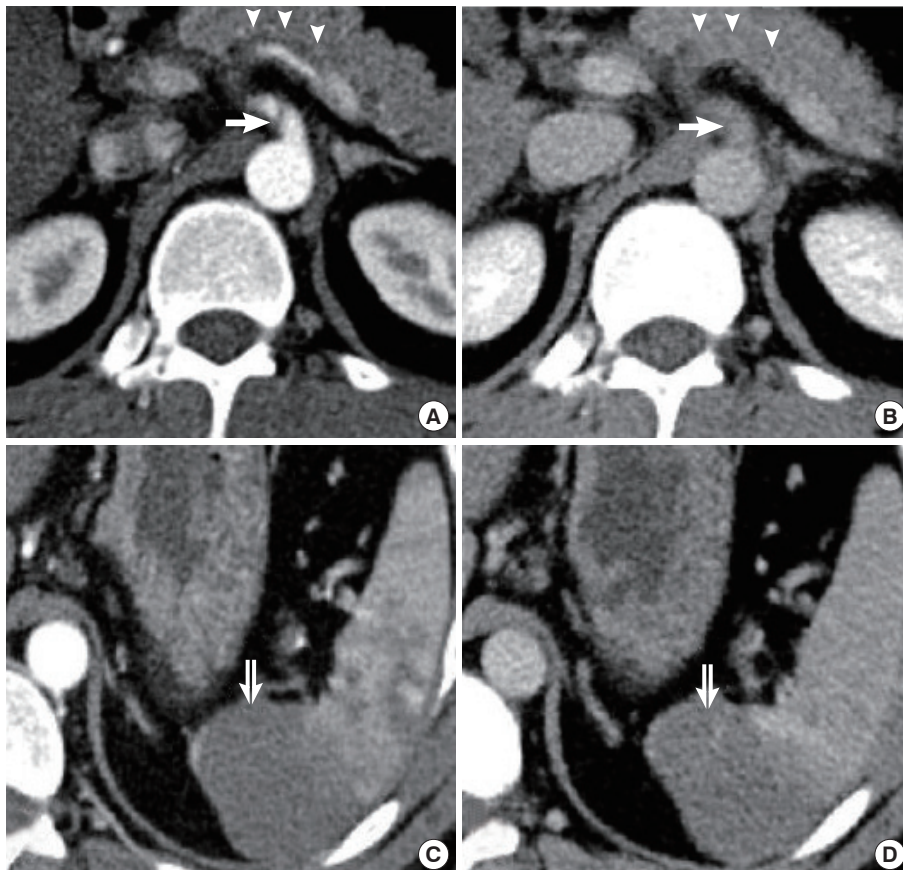


Fig. 1. (A) Computed tomography angiography scan shows celiac trunk dissection (arrow) and splenic artery dissection with mural thrombi (multiple arrowheads) in the arterial phase. (B) A portal venous phase image was obtained at the same level. (C) Computed tomography angiography image in the arterial phase demonstrates partial splenic infarction (double arrow). (D) Axial image at the same level was obtained in the portal phase.



Fig. 2. (A) Contrast-enhanced computed tomography (CT) image obtained in the arterial phase shows celiac trunk dissection (arrow). (B) CT scan in the same phase demonstrates splenic artery dissection with mural thrombi (multiple arrowheads). (C) Contrast CT axial section of the spleen in the arterial phase shows a wedge-shaped defect (double arrow), suggesting splenic infarction.

Case II

A 42-year-old male patient presented to the ED with a complaint of abdominal pain persisting for one hour on January 21, 2015. He had undergone a small bowel resection and open reduction internal fixation with a screw in the right femur due to a traffic accident in 2004. Since then, he had been taking acetaminophen and tramadol to relieve lower back pain, with no other medications taken regularly. He had sharp pain in the left upper quadrant and the epigastric region. A physical examination revealed tenderness in the same area without signs of peritoneal irritation. His blood pressure was 130/80 mmHg, with a heart rate of 68 beats per minute and a body temperature of 36.8°C. A contrast-enhanced CT scan of the abdomen and pelvis revealed celiac artery dissection with an intimal flap and dissection of the splenic artery with mural thrombus, accompanied by splenic infarction (Fig. 2). He was hospitalized in the vascular surgery department for conservative treatment with intravenous heparin for anticoagulation. The next day, his blood pressure increased to 170/110 mmHg and he received intravenous and oral calcium channel blockers to lower his blood pressure. Afterwards, his antihypertensive drug regimen was changed to an oral angiotensin II receptor blocker based on consultation by a cardiologist. Intravenous meperidine and oral acetaminophen were used to control pain. The patient was discharged 2 days after admission without any complications.

DISCUSSION

Isolated celiac artery dissection is rare but can be fatal.² Naganuma et al.² found 72 case reports of isolated celiac artery dissection from 1964 to 2011. The most important etiology is athero-

sclerosis. Other known risk factors are trauma, pregnancy, cystic medial degeneration (Marfan syndrome), connective tissue disease, periarterial inflammation, fibromuscular dysplasia, congenital disorders of the vascular wall (such as Ehlers-Danlos syndrome), syphilis, polyarteritis nodosa, and fungal infections.³⁻⁵ Naganuma et al.² suggested that hypertension and smoking may also be associated with isolated dissection of abdominal aortic branches. However, in more than half of all cases, none of the risk factors mentioned above were found, similar to the cases presented here.³ Spontaneous dissection of visceral arteries occurs predominantly in males. About 83% to 88% of cases occur in men, with most cases occurring between 45 to 87 years (average age, 55 years).^{4,6,7} About half of splanchnic artery dissections present asymptotically because there is little involvement of the small intestine.^{4,5,8} The most common symptom of celiac trunk dissection is abdominal pain. Other symptoms associated with celiac trunk dissection are obstructive jaundice and postprandial abdominal pain. These symptoms are often related to the dissected lesions. For example, malabsorption is caused by dissection in the superior mesenteric artery, jaundice in the hepatic artery, and pancreatitis in pancreatic arterial arcades.^{7,8} Chronic dissection may present as intestinal angina, including postprandial abdominal pain and weight loss.^{4,5,9}

In previous studies, diagnosis of isolated celiac artery dissection was possible only through autopsy.^{7,9} Recently, more advanced diagnostic techniques have been developed, such as contrast-enhanced CT, CT angiography, magnetic resonance angiography, Doppler ultrasonography, and conventional angiography.^{3,4,9} Among these techniques, enhanced CT and CT angiography are considered to be the diagnostic imaging modalities of choice due to their convenience and reliability. Doppler ultrasonography is also wide-

ly used because it is the least invasive without exposure to radiation.^{3,7} The key to diagnosis of visceral artery dissection is to find an intimal flap.¹⁰ However, this intimal flap is not always easily found, and a mural thrombus may be the only indicator of splanchnic artery dissection.^{4,11,12} The acute inflammatory process causes a high attenuation of fat around the dissection in symptomatic patients, though high attenuation is thought to be a nonspecific sign.¹³

Celiac trunk dissection can be managed by medical treatment, surgery, or endovascular intervention. Conservative management includes anticoagulation and antihypertensive drug regimens to prevent thrombotic complications such as visceral infarction and ischemia, and prevent progression of artery dissection.^{4,11} Surgical or endovascular treatment is indicated for complications such as arterial rupture and liver or bowel ischemia, and when artery dissection progresses despite medical treatment.^{1,3,4} Surgical treatments include small bowel resection, thrombectomy, resection of the dissected artery with anastomosis, and artery bypass grafting. Endovascular interventions consist of insertion of a bare stent or stent graft, fenestration, and transcatheter embolization.^{4,10,13,14} Splenic infarction is uncommon and incidence of splenic infarction due to celiac artery dissection is even rarer.¹⁵ As in our cases, medical treatment is indicated for cases of splenic infarction with concurrent celiac trunk dissection without any complications. However, if there are complications, such as abscesses or rupture, the patient should undergo surgical treatment.¹⁵

Isolated celiac artery dissection is uncommon, and can be misdiagnosed initially in the ED. If a patient persistently suffers from unexplained acute abdominal pain, care providers should consider performing contrast-enhanced CT, CT angiography, or Doppler ultrasound to exclude vascular events. Once a diagnosis has been made, ED providers should consult a vascular surgery specialist to tailor the treatment modality to the patient. If the patient is hemodynamically stable without complications, conservative management is recommended as first-line treatment. However, if the patient becomes hemodynamically unstable, complications arise, or medical treatment fails, caregivers should consider surgical or endovascular treatment.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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