» **Case Report** «

Isolated Spontaneous Dissection of the Celiac Artery: Report of Two Cases

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Isolated spontaneous dissection of the celiac artery (DCA) is extremely rare and its therapeutic strategy is still not established. We report two cases of DCA, in which 58-year-old and 43-year-old male patients with right hypogastralgia and back pain, respectively, were diagnosed by enhanced computed tomography and treated conservatively with antihypertensive agents. They were doing well under circumspect medical management without recurrence of symptoms or progression of dissection after 3.5 years and 3 months, respectively, after detection of DCA. Conservative treatment with blood pressure control and careful surveillance is considered to be applicable in most cases of DCA.

Keywords: celiac artery, dissection, conservative therapy

Introduction

Isolated spontaneous dissection of the splanchnic arteries is rare. Among these disorders, dissection of the celiac artery (DCA) is especially rare. Obon-Dent¹⁾ reported that only 33 reported cases of DCA were yielded by a Medline database search in 2012. The patients were treated by surgery, endovascular intervention and medical management in these reports, but the therapeutic strategy is still unclear and controversial.

We report two cases of DCA, in which the patients were treated conservatively and observed carefully.

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Case Report

Case 1

A 58-year-old male smoker underwent enhanced computed tomography (CT) because of mild right hypogastralgia of 10-day duration and elevation of carcinoembryonic antigen (8.9 ng/mL) and carbohydrate antigen 19-9 (124 U/mL). He had had no episode of severe back or abdominal pain. Enhanced CT revealed solitary dissection of the celiac trunk, in which the common hepatic artery arose from the true lumen whereas the splenic artery arose from the false lumen (Fig. 1). He was admitted for further investigation. On admission, blood pressure was 134/72 mmHg and he had mild tenderness in the epigastrium and right hypogastrium, which gradually resolved over several days. Laboratory data showed slight elevation of white blood cell count (10100/ μ L) and hemoglobin (16.8 g/dL), but C-reactive protein (CRP) was normal. Esophagogastroduodenoscopy and total colonoscopy showed no pathological change except atrophic gastritis. He was orally administered a β -blocker to decrease blood pressure mildly, but no antiplatelet or anticoagulant drugs, and was discharged nine days after admission.

Fig. 1 Enhanced computed tomographic coronal sections from ventral (left) to dorsal (right) demonstrate dissection of the celiac artery (white arrow), the common hepatic artery (white arrowhead) arising from true lumen, and the splenic artery (black arrowhead) arising from false lumen in Case 1.

Fig. 2 Enhanced computed tomographic (CT) cross section 5 months after detection and three-dimensional CT two and a half years after detection show no progression of dissection and patent true and false lumens in Case 1.

He was followed-up with enhanced CT at 1, 3, 5 and 30 months after the first examination, but no remarkable change was found at any time and both lumens remained patent (**Fig. 2**). He was well under treatment with an angiotensin receptor blocker and cholesterol transport inhibitor for hypertension and dyslipidemia 3.5 years after detection of the dissection.

Case 2

A 43-year-old male non-smoker with a history of hypertension presented to our hospital with severe back pain. He suddenly developed severe back pain and vomited 4 days earlier, and a physician prescribed an analgesic under the diagnosis of acute enteritis.

Because his back pain did not resolve, he attended a general hospital, and was transferred by ambulance to the emergency unit of our hospital. Enhanced CT showed a nonenhanced region circumferentially surrounding the celiac artery. CRP and fibrinogen were elevated to 7.0 mg/dL and 642 mg/dL, respectively, but blood cell counts, D-dimer and fibrin/fibrinogen degradation products were within normal limits. He was hospitalized with a diagnosis of DCA, and received antihypertensive and analgesic treatment with intravenous injection of nicardipine hydrochloride and pentazocine. Systolic blood pressure was controlled at 100 to 120 mmHg according to treatment for the acute phase of aortic dissection. He did not receive antiplatelet or anticoagulant therapy. His

Fig. 3 Enhanced computed tomographic images 6 days after onset in Case 2. Cross section (left) reveals thrombosed false lumen as nonenhanced area surrounding the celiac trunk (white arrow), and sagittal section (right) demonstrates ulcer-like projections of enhanced region into nonenhanced area (black arrows).

pain increased in the supine position and decreased in the right lateral position on admission, and gradually disappeared over a couple of days. Follow-up CT was performed 2, 7 and 13 days after the first examination. The nonenhanced region was estimated to be a thrombosed pseudolumen, and showed a decrease in diameter in follow-up CT scans. A sagittal section demonstrated projections of the enhanced region into the nonenhanced area, which were thought to be ulcer-like projections (Fig. 3). CRP decreased to 1.0 mg/dL over 9 days, and the patient was discharged 15 days after admission.

The patient was doing well under circumspect medical management, and enhanced CT demonstrated no progression of the dissection 3 months after onset.

Discussion

DCA was first reported by Watson²⁾ in 1956, while spontaneous dissection of the superior mesenteric artery (SMA) was reported by Bauersfeld³⁾ in 1947. In both cases, the diagnosis was made by postmortem examination. The reason why DCA was recognized nearly a decade later than was dissection of the SMA appears to be its relative infrequency and non-fatal nature. Obon-Dent speculated that the recent increase in reports of DCA was attributable to the introduction of multislice CT angiography for the diagnosis of abdominal pain.¹⁾ He reviewed only 33 cases of isolated DCA, including 10 cases

from Japan, in the literature yielded by a Medline database search in 2012, whereas Suzuki found 18 cases in the Japanese literature in the same year.⁴⁾ The reason why many DCA cases were reported from Japan may be the high adoption rate of CT scanners in Japan, where the number of CT scanners per population is almost seven times the average in OECD countries.⁵⁾

Possible serious sequelae of visceral artery dissection are rupture and organ ischemia. DCA can cause infarction in the spleen when it reaches the splenic artery. However, DCA is less frequently associated with fatal organ ischemia than is SMA dissection because of the abundant blood supply from the SMA even with occlusion of the celiac trunk,⁶⁾ and most ruptures of DCA arise in peripheral branches of the celiac artery.^{2,7)} Therefore, DCA would hardly cause any fatal sequela when the dissection is limited to the celiac trunk in the acute or early phase. However, celiac arterial stenosis or occlusion can bring on true pancreaticoduodenal aneurysms,⁷⁾ rupture of which is associated with mortality upwards of 50%.

Because DCA is extremely rare, optimal management has not yet been established. DCA was sometimes treated by surgery⁸⁾ or endovascular intervention⁹⁾ because of uncontrolled severe pain, intraabdominal hemorrhage, organ ischemia or large aneurysm formation, whereas many cases of DCA were able to be treated conservatively under close medical surveillance and became asymptomatic after the acute phase.¹⁰⁾

Although anticoagulation and/or antiplatelet drug therapy is often used in visceral artery dissection for prevention of arterial occlusion, it is speculated to be unnecessary in most DCA cases, because acute occlusion of the celiac trunk is well tolerated owing to the rich blood supply from the SMA. Strict control of blood pressure and careful surveillance are necessary both in the acute and chronic periods to prevent progression of dissection and various complications.

Conclusion

We describe two cases of isolated spontaneous dissection of the celiac artery (DCA) where the patients were successfully managed by conservative therapy with antihypertensive agents, and neither sequela nor progression of dissection was observed both in the acute and follow-up period. DCA is extremely rare, but recently the number of reports of DCA has risen due to increasing opportunities for CT angiography for the diagnosis of abdominal pain. Although optimal management for DCA has not yet been established, conservative treatment with strict control of blood pressure and careful surveillance is considered to be applicable in most cases of DCA.

Disclosure Statement

All authors declare no conflict of interest.

References

- 1) Obon-Dent M, Shabaneh B, Dougherty KG, et al. Spontaneous celiac artery dissection case report and literature review. *Tex Heart Inst J* 2012; **39**: 703-6.
- 2) Watoson AJ. Dissecting aneurysm of arteries other than the aorta. *J Pathol Bacteriol* 1956; **72**: 439-49.
- 3) Bauersfeld SR. Dissecting aneurysm of the aorta; a presentation of 15 cases and a review of the recent literature. *Ann Intern Med* 1947; **26**: 873-89.
- 4) Suzuki T, Makuuchi H, Kobayashi T, et al. Consideration and analysis of spontaneous isolated dissection of the splanchnic arteries: 7 case reports and review of 165 in the Japanese papers. *Jpn J Vasc Surg* 2012; **21**: 773-80. (in Japanese)
- 5) Anderson GF, Hussey PS, Frogner BK, et al. Health spending in the United States and the rest of the industrialized world. *Health Aff (Millwood)* 2005; **24**: 903-14.
- 6) Takayama T, Miyata T, Shirakawa M, et al. Isolated spontaneous dissection of the splanchnic arteries. *J Vasc Surg* 2008; **48**: 329-33.
- 7) Watanabe A, Kohtake H, Furui S, et al. Celiac artery dissection seen with ruptured pancreaticoduodenal arcade aneurysms in two cases of celiac artery stenosis from compression by median arcuate ligament. *J Vasc Surg* 2012; **56**: 1114-8.
- 8) Glehen O, Feugier P, Aleksic Y, et al. Spontaneous dissection of the celiac artery. *Ann Vasc Surg* 2001; **15**: 687-92.
- 9) Zhang T, Zhang X, Zhang X, et al. Endovascular treatment of isolated spontaneous celiac artery dissection. *Vascular* 2012; **20**: 118-20.
- 10) Amabile P, Ouaiissi M, Cohen S, et al. Conservative treatment of spontaneous and isolated dissection of mesenteric arteries. *Ann Vasc Surg* 2009; **23**: 738-44.