From the Midwestern Vascular Surgical Society

Isolated celiac artery dissection

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Objective: **Spontaneous celiac artery dissection is rare, and its natural history is not well studied. The objective of this study was to review our experience with the evaluation and management of this condition.**
Methods: **During the last 8 years, 19 patients (14 men, five women) presented with the diagnosis of spontaneous celiac artery dissection. Each patient's clinical course was retrospectively reviewed, and patients were contacted for assessment of current symptoms.**
Results: **All patients had computed tomography scans documenting a celiac artery dissection without concomitant aortic dissection. Ages ranged from 39 to 76 years. Seven patients presented with abdominal pain, and 12 were diagnosed incidentally. All patients were initially treated with observation because none had threatened end organs. Patients presenting with aspirin or clopidogrel therapy were continued on these medications, but no patients were prescribed any medications due to their dissection. Three patients continued to have abdominal pain and eventually underwent celiac artery stenting. Pain improved after the intervention in all three. One patient with aneurysmal degeneration of the celiac artery underwent surgical repair. No other patients required intervention. Eighteen patients had follow-up within a year of data collection in the clinic or over the phone. The average time from the initial diagnosis to follow-up for the entire cohort was 46 months. None had abdominal or back pain related to the celiac dissection, had lost weight, or had to change their eating habits.**
Conclusions: **Celiac artery dissection can be safely managed initially with observation. If abdominal pain is persistent, endovascular stenting may stabilize or improve the pain, and surgical reconstruction can be done for aneurysmal degeneration or occlusion, both unusual events. Long-term anticoagulation does not appear necessary in these patients. (J Vasc Surg 2015;61:972-6.)**

Spontaneous isolated celiac artery dissection without associated aortic dissection is a rare clinical condition. Fewer than 100 cases have been reported in the literature in the last 12 years, most as isolated case reports.[1] The long-term course of celiac dissections is uncertain, and there is no consensus on the optimal strategy of management for this rare problem. Some authors recommend operative or endovascular intervention, whereas others recommend oral anticoagulation. However, whether there is significant benefit from any of these strategies is unclear.

We have used a strategy of initial conservative management for patients presenting with spontaneous celiac artery dissection without end-organ malperfusion. Patients were observed clinically, and none were immediately prescribed anticoagulation or taken for operative intervention. We report the results of our experience with 19 patients treated with this approach.

METHODS

Patients with celiac artery dissection presenting to the senior author (E.C.) through inpatient consultation or outpatient referral during the last eight years were prospectively entered into a database that was retrospectively reviewed. Data on patients presenting with threatened end organs needing emergency intervention are not available. Demographic information, presenting complaint, comorbidities, and initial management strategy for each patient were gathered. The clinical course of each patient was also reviewed, and any interventions, including medication changes, endovascular interventions, or open surgical repair, were documented.

Patients were enrolled in annual surveillance with celiac duplex ultrasound imaging; however, those who had not been seen in the clinic within the last year were contacted by phone to obtain long-term follow-up. They were asked about any symptoms of abdominal or back pain at rest, pain after eating, weight loss, or change in eating habits since the diagnosis of the celiac artery dissection, any current anticoagulant use, and treatment that may have been received at another institution. Similar data points were abstracted from the medical record of patients who had been seen in the clinic within the last year. The data were organized into a database using Excel software (Microsoft Corp, Redmond, Wash). Given the relatively small number of patients, no statistical analysis was conducted. This study was given exempt status by the University of Michigan Medical Institutional Review Board, including a waiver of informed consent.

RESULTS

Isolated spontaneous celiac artery dissection was diagnosed in 19 patients, 14 men (75%) and five women, between July 2008 and August 2014. The average age at

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the time of diagnosis was 54 ± 10.4 years (range, 39-76 years). In all patients a computed tomography angiogram (CTA) confirmed the diagnosis of isolated celiac artery dissection (Fig). None of the patients had evidence of median arcuate ligament compression of the celiac artery on CTA. Seven patients (37%) presented with abdominal pain that led to the diagnosis, whereas the celiac dissection in 12 (63%) was discovered incidentally on imaging studies done for other reasons. No patients presented with signs or symptoms of visceral ischemia. Patient characteristics, including smoking status, hypertension, and antiplatelet therapy, without intervention are summarized in Table I. No patients were specifically initiated on antiplatelet therapy solely for treatment of their dissection. Any antiplatelet drugs that the patient was previously taking were continued.

One patient had a marfanoid body habitus, but Marfan syndrome was not confirmed. One patient had type IV Ehlers-Danlos syndrome. One patient, who had a concomitant dissection of the superior mesenteric artery (SMA), presented with abdominal pain leading to the diagnosis but did not have any evidence of threatened end organs. His pain improved without intervention.

Three patients were initially seen at other institutions and were prescribed anticoagulation before referral because of their dissection. This was discontinued after our initial evaluation in two patients. One patient had pre-existing atrial fibrillation and remained on anticoagulation with warfarin for that indication.

Three patients (16%) continued to have abdominal pain, presumably related to their dissection, and underwent endovascular stenting of the celiac artery to treat the dissection. These three patients were prescribed antiplatelet therapy with aspirin and clopidogrel after stent placement. The abdominal pain improved after stenting in all three, and at last follow-up, none of these patients reported any abdominal pain. One patient who did not have any comorbidities and had quit smoking 30 years before her diagnosis of celiac artery dissection developed aneurysmal degeneration of the dissected celiac artery measuring 5 cm in diameter and underwent open repair of this aneurysm. This was an incidental finding on a CT scan done for another purpose. However, she presented to our institution with this finding so the timing between the initial dissection and aneurysm development cannot be ascertained. She was prescribed aspirin after her repair.

Twelve patients were seen in clinic ≤1 year of data collection, and an additional six were contacted by telephone. The average time from diagnosis to last follow-up for the entire cohort was 46 ± 35 months (range, 1-104 months). The average time from the initial imaging to last follow-up imaging was 35 ± 30 months for the entire cohort. For those patients contacted by telephone for follow-up, the average time from the last imaging to the telephone call was 28 months.

One patient died of other causes and was found to have a patent celiac artery at the time of autopsy. Of the remaining 18 living patients, none had abdominal or back pain related to their dissection at last contact. None have had to change eating habits or have unintentionally lost weight since being diagnosed with their dissection. One patient who had undergone stent placement for symptomatic dissection had evidence of a nonflow-limiting in-stent stenosis on follow-up imaging. No significant change from the initial imaging to the last follow-up imaging was seen in any of the other patients. The false lumen was stable or smaller in size compared with the initial examination in all patients.

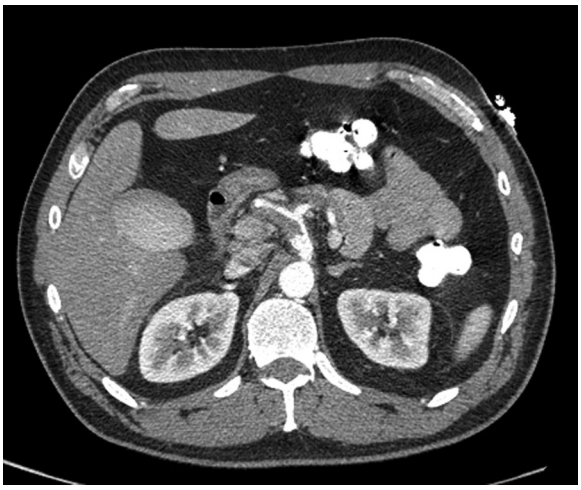

Fig. Computed tomography angiogram (CTA) demonstrates a celiac artery dissection extending into the common hepatic artery. The false lumen is thrombosed.

Table I. Patient characteristics

Characteristic	*No. (%) (N = 19)*
Sex	
Male	14 (74)
Female	5 (26)
Symptomatic	7 (37)
Endovascular stent placement	3 (16)
Asymptomatic	12 (63)
Aspirin (w/o intervention)	5 (26)
Plavix (w/o intervention)[a]	2 (11)
Smoking	
Current smoker	3 (16)
Former smoker	4 (21)
Never smoker	12 (63)
Hypertension	7 (37)

[a]Sanofi-Aventis, Bridgewater, NJ.

DISCUSSION

Isolated celiac artery dissection without concomitant aortic dissection is a rare diagnosis. Initial reports on the topic came from autopsy series, making natural history studies impossible. As CT computed tomography has become more prevalent and resolution has improved, the diagnosis of celiac artery dissection and monitoring patients