Introduction

Celiac artery aneurysms represent a rare form of aneurysmal disease, accounting for 4% of all splanchnic aneurysms. The majority of patients have nonspecific complaints requiring CT scan and angiography to confirm the diagnosis. Repair usually requires aneurysm resection and vascular reconstruction. This rare aneurysm may have an innocuous presentation. Once recognized, it should be repaired. Elective repair results in low morbidity; however, complications of rupture are severe.

Case Report

The patient is a 68-year-old white male. His past medical history is significant for 50 pack-years of smoking, mild COPD, and peptic ulcer with a previous vagotomy and pyloroplasty. He presented with complaints of worsening shortness of breath and chronic fatigue. He had no complaints of abdominal discomfort, nausea, vomiting, change in bowel habits, or weight loss. During his evaluation, he underwent echocardiography, which incidentally found a poorly defined mass in the upper abdomen. CT scan demonstrated a 4.8-cm infrarenal abdominal aortic aneurysm, and a 4x4-cm celiac artery aneurysm. Angiogram was obtained that showed a saccular aneurysm of the celiac artery giving rise to the hepatic and splenic arteries (Fig. 1). The patient’s symptoms were ultimately attributed to a COPD exacerbation and he was treated with bronchodilators and steroids.

The patient subsequently underwent elective repair of the celiac artery aneurysm. The aneurysm measured 4 cm in size, with 1 cm of normal celiac artery proximal to the aneurysm (Fig. 2). Proximal control was obtained with clamps and distal control with balloon catheters. The aneurysm was saccular with an intact posterior wall. An aneurysmorrhaphy was performed with the aneurysmal portion resected and the defect repaired with a PTFE patch angioplasty. The patient did well after the operation and was discharged on the seventh postoperative day. Two-year follow-up with duplex ultrasonography revealed the repair to be intact and the abdominal aortic aneurysm remained less than 5.0 cm.

Review

Celiac artery aneurysms, as defined by their involvement of the celiac artery, may extend to involve the major branches of the celiac artery to varying degrees. They represent a rare form of aneurysmal disease. The exact incidence is difficult to discern; however, two autopsy studies reflect their rarity. In 1901, Schrotter et al. reported 1 aneurysm in 19,300 autopsies over a 10-year period [1], and Laipply in 1943 reported 1 case in 8,070 autopsies performed at Western Reserve University and University Hospitals in Cleveland [5]. Celiac artery aneurysms represent approximately 4% of all visceral artery aneurysms, and are fourth in incidence of visceral aneurysms behind those of splenic, hepatic, and superior mesenteric artery origin. The incidence of associated aneurysms is significant. Approximately 20% of patients will have an associated abdominal aortic aneurysm and 38% will have a second splanchnic artery aneurysm [1].

The average age at presentation is 52.3 years with a male:female ratio of 1:1. These demographics have changed in the last 50 years. Historically the male:female ratio approached 9:1 for celiac artery aneurysms with mean age 39.7 [1]. Historical data reviewed by Graham et al. relate a fundamental difference in the predominating etiologies of celiac artery aneurysms as compared with recent data. Graham et al. suggest a distinction between aneurysms identi-
fied before and after 1950 [1]. This distinction reflects differences in disease etiology plus differences in diagnostic tools and therapeutic techniques. Among the cases reported prior to 1950, syphilis was a significant factor attributed to 31%; less common causes included tuberculosis associated with false aneurysms. Approximately 40% were undetermined. The cases after 1950 have revealed a shift in the previous etiologies. While 40% remain undetermined, syphilis has virtually disappeared. Atherosclerosis has now been associated with at least 30%. It is difficult, however, to tell whether atherosclerosis exists in these patients as a primary cause or a secondary issue. Developmental defects that lead to medial degeneration account for 17%. Less common etiologies are traumatic and mycotic aneurysms.

The majority of patients who proceed to diagnosis are symptomatic. Table 1 represents some of the salient features of presentation and management in recent case reports on celiac artery aneurysms. The most common symptom is abdominal pain, occurring in approximately 61% of patients. The pain often occurs in the epigastrium, and is usually vague, or intermittent. Nausea and vomiting are associated in 20%. Other symptoms described include back pain, flank pain, and anorexia. The physical exam in most instances is nonspecific; however, it may demonstrate a palpable mass in 30% of cases [1].

The majority of diagnoses, however, were made on radiologic evaluation, either for symptoms related to the aneurysm or as an incidental finding for evaluation of an unrelated condition. Abdominal x-rays may demonstrate calcification in the wall of the aneurysm if present, but the majority of patients required ultrasound or CT scan to make the diagnosis. The majority of patients were subsequently evaluated with angiography.

Aneurysm rupture remains the major complication and appears to be in the range of 13%, which compares with the historical rupture rate of 72% [1]. Most often they rupture into the peritoneal cavity, but celiac artery aneurysms rupturing into the G.I. tract have presented with hematemesis and bright red blood per rectum [5]. Carrel describes two unusual cases of aneurysm rupture diagnosed at autopsy. One is of a patient who complained of abdominal pain, anorexia, and hemoptysis. He demonstrated a 1.5-cm saccular aneurysm rupturing into the right pleural space. The other patient with a history of COPD and Staphylococcus aureus sepsis developed hemoptysis when his aneurysm ruptured into the pleural cavity. Both of these patients had