ELSEVIER

Giant Pararenal Abdominal Aortic Aneurysm

Charles A. West Jr, [1] *Imtiaz R. Khan,*[1] *Linda Doucet,*[1] *Matthew B. Boudreaux,*[1] *and Lester W. Johnson,*[2] *Shreveport, Louisiana; Monroe, Louisiana*

Inflammatory aortic aneurysms are unusual vascular lesions and most commonly involve the infrarenal segment of the abdominal aorta. These complex aneurysms represent a challenge to the vascular surgeon and become even more difficult as the extent of the aneurysm and size of the inflammatory mass increase. Although well described, few cases of giant inflammatory aneurysms are reported. In this case, we review the clinical presentation and surgical management of a patient with a giant pararenal abdominal aortic aneurysm and highlight an uncommon morphologic pattern of aortic disease and provide a review of relevant literature.

Inflammatory aortic aneurysms are uncommon vascular lesions first described by Walker et al. in 1972.[1] The frequency of inflammatory abdominal aortic aneurysms (IAAAs) ranges 3-10% of surgically repaired abdominal aortic aneurysms (AAAs).[2-6] Inflammatory aortic aneurysms are usually isolated and most commonly involve the infrarenal segment of the abdominal aorta.[2-6] These complex aneurysms represent a challenge to the vascular surgeon when performed using traditional methods and become even more difficult as the extent of the aneurysm and size of the inflammatory mass increase. Although inflammatory aneurysms are well described, few cases of giant inflammatory aneurysms are reported. In this case, we present the surgical management of a patient with a giant pararenal AAA and provide a review of the relevant literature.

CASE REPORTS

A 74-year old man presented to our emergency room with severe, persistent low back pain and a large pulsatile abdominal mass on physical examination. The patient had an extensive history of smoking and mild hypertension, with a surgical history of an open hiatal hernia repair. Plain x-ray films revealed an AAA, confirmed by computed tomography (CT) to be a pararenal abdominal aneurysm 12 cm in diameter with inflammatory characteristics (Figs. 1A, B). There was no obvious aortic hematoma or other radiographic features consistent with rupture. The patient underwent urgent open aortic aneurysm repair through a midline incision and subsequent infracolic aortic exposure which revealed a massive aortic aneurysm encroaching to the level of the renal arteries, its surface was pearly-white in color with a glistening appearance associated with dense adhesions of retroperitoneal structures (Fig. 1C). These features being the sine qua non of an inflammatory aortic aneurysm, established the diagnosis.[1]

Left renal vein division was required to facilitate exposure of the juxtarenal aorta. Aneurysm repair ensued with an aorto-bi-iliac bypass using a gel-impregnated (16 × 8 mm) polyester vascular prosthesis (Fig. 1D). The postprocedure convalescence was uneventful. The patient was dismissed after 7 days in the hospital. One month postprocedure, normal activities were resumed and the patient was symptom-free.

DISCUSSION

In 1935, James described the first inflammatory aneurysm followed by DeWeerd in 1955.[2] Successful repair by tube engraftment of an inflammatory aneurysm was performed in 1958 by Garret.[3] In 1972, Walker et al. used the term ''inflammatory aneurysm'' to describe the characteristic pathologic features, formally distinguishing these aneurysms from standard degenerative aneurysms.[1-3]

[1]*Department of Surgery, Division of Vascular and Endovascular Surgery, Louisiana State University Health Science Center, Shreveport, LA.*

[2]*Department of Surgery, Louisiana State University Health Science Center, Monroe, LA.*

Correspondence to: Charles A. West Jr., Division of Vascular Surgery, Henry Ford Hospital, 2799 West Grand Blvd, K-8, Detroit, MI 48202-2689, E-mail: cwest5@hfhfs.org

Ann Vasc Surg 2010; 24: 950.e3-950.e6
DOI: 10.1016/j.avsg.2010.01.013

Published online: July 5, 2010

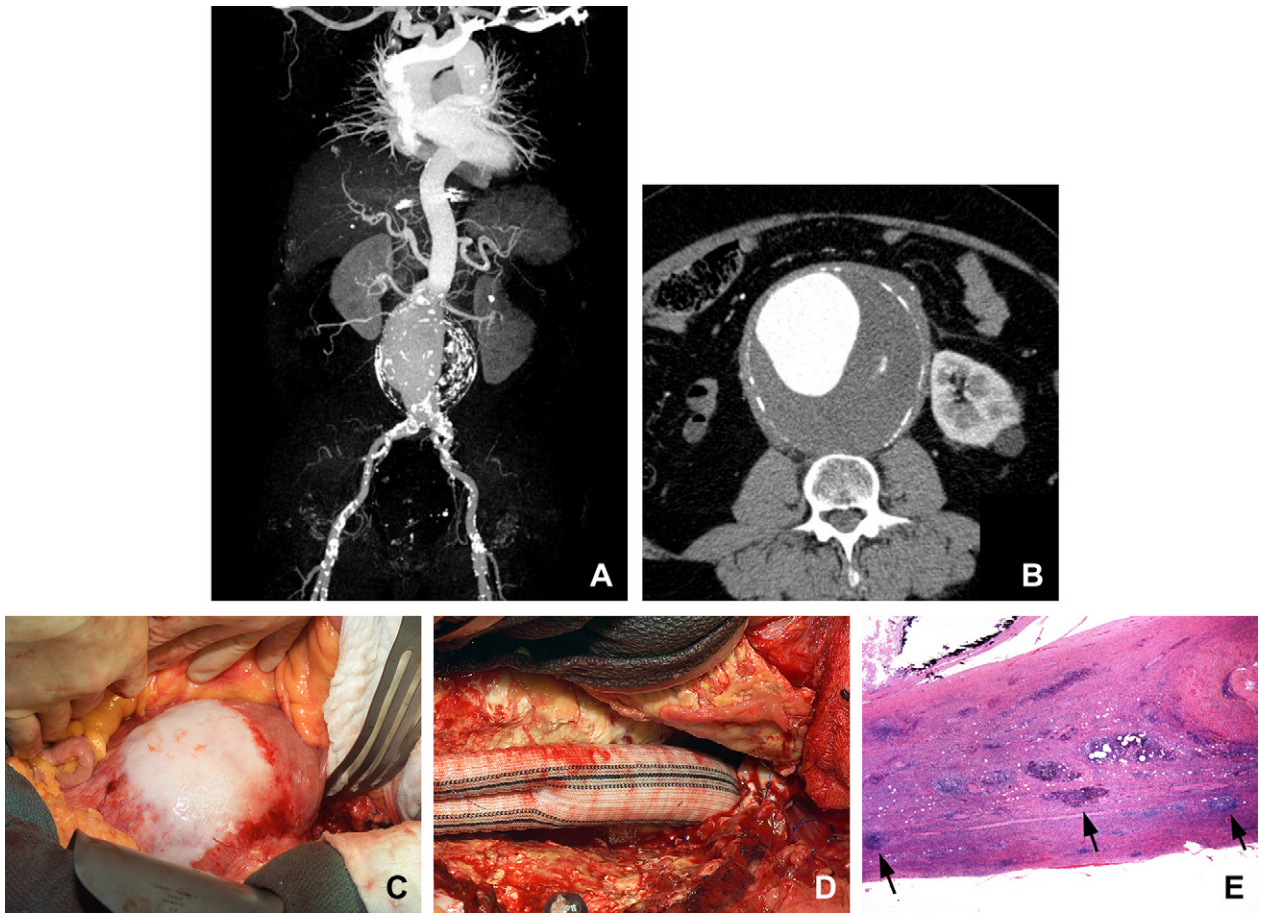

Fig. 1. A A computed tomography angiogram demonstrating a giant pararenal abdominal aortic aneurysm extending to the inferior renal artery margins. **B** An axial computed tomography scan illustrates aortic wall thickening, an inflammatory perianeurysmal fibrosis encasing the abdominal aneurysm. **C** A ''pearly white'' glistening, shiny aneurysm wall Aortic replacement with bifurcated polyester prosthesis surface is illustrated with dense adhesions to the duodenum noted proximally. **D** Aortic replacement with a polyester bifurcated prosthesis. **E** A photomicrograph of inflammatory aneurysm wall histology (hematoxylin-eosin staining), demonstrating multiple mononuclear cell germinal centers or vascular associated lymphoid tissue (*arrows*).

IAAAs typically occur at a younger age, have a stronger familial tendency, and occur more predominantly in men compared with noninflammatory aneurysms. They are seen almost uniformly in smokers.[2,4,5] The vast majority are symptomatic at presentation.

Abdominal or back pain, weight loss, and an elevated erythrocyte sedimentation rate are common clinical findings.[2,4] The diagnosis is made preoperatively with 90% sensitivity using conventional contrast enhancing imaging modalities (computed tomography, (CT) or magnetic resonance angiography, (MRA)).[5] A characteristic inflammatory cuff of periaortitis and perianeurysmal fibrosis encasing the aneurysm wall that enhances with contrast is the classic descriptive radiographic feature.[2,5] At surgical exploration, the presence of a pearly-white, glistening aortic wall with dense adhesions of retroperitoneal structures to its surface is the sine qua non of the inflammatory aortic aneurysm.[2] The aortic wall is 3-4 times thicker and more rigid than atherosclerotic aneurysms, and the inflammatory process is often limited to the anterior and lateral aortic walls of these aneurysms.[2,5]

Histopathologic comparative studies reveal that inflammatory aneurysms have an accentuation of the chronic inflammation and fibrosis observed in atherosclerotic aneurysms.[7] Non-inflammatory aneurysms possess scanty numbers of lymphocytes and plasma cells, and no appreciable fibrosis in their outer vessel layers.[4] In contrast, IAAAs characteristically have an abundance of lymphocytes and plasma cells scattered diffusely in a markedly thickened adventitia layer.[2,5,7,8] The inflammatory cells