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Intramural Aortic Abscess Mimicking Chronic Aortic Dissection

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ABSTRACT

A 77-year-old patient was referred for progressive fatigue and dyspnea on exertion. Preoperative imaging evaluations including transthoracic echocardiography and computed tomography were suggestive of a chronic ascending aortic dissection with an intramural hematoma. Intraoperatively, the intramural structure was identified as an abscess cavity.

INTRODUCTION

Infected aortic aneurysms are found in approximately 1% of all aortic aneurysms [Oderich 2001; Schneider 2004]. Here we present a rare case of a 77-year-old patient with an intramural aortic abscess.

CASE REPORT

A 77-year-old female patient underwent a clinical workup for a history of progressive fatigue and dyspnea on exertion. The patient had been symptomatic for >1 year and presented with a history of weight loss, anemia, and laboratory signs of an ongoing infection (high C-reactive protein and leukocyte values). A preoperative imaging analysis including transthoracic echocardiography revealed severe aortic valve insufficiency, in addition to an aneurysm of the ascending aorta with a thickened wall. A computed tomography (CT) angiography evaluation showed an intramural hematoma of the ascending aorta that was highly suggestive of a chronic type A dissection (Figure 1A). The patient was referred for replacement of the aortic root and the ascending aorta.

Intraoperatively, the heart and great vessels demonstrated severe adhesions suggesting an extensive inflammatory process. The ascending aorta completely adhered to the pulmonary artery and the right atrium. The patient was put on cardiopulmonary bypass via cannulation of the right axillary artery and the right atrium. Moderate hypothermia was induced, and

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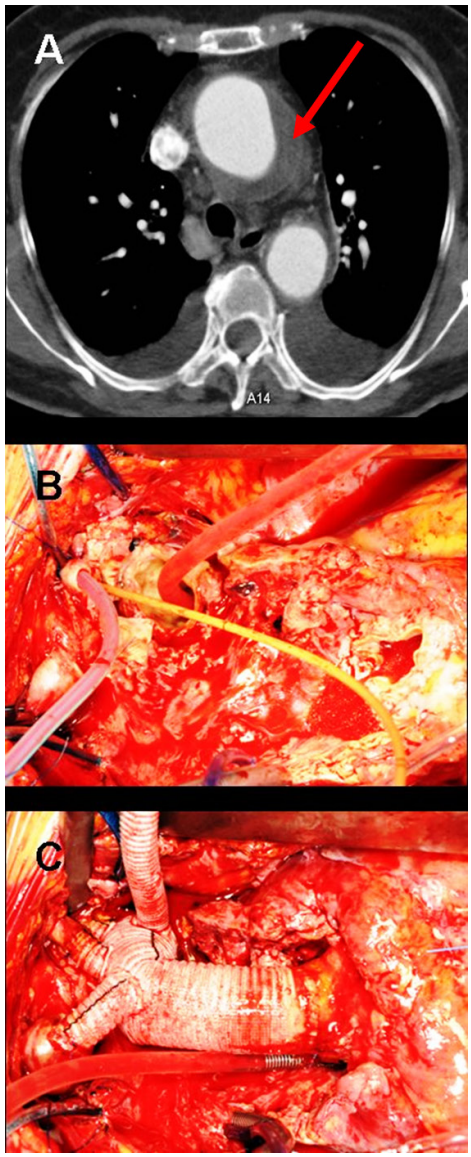

Figure 1. A, Intramural abscess of the ascending aorta (arrow). B, Intramural abscess drained into the operative field. C, Intraoperative view after replacement of the aorta ascendens with rebranching of the supra-aortic vessels.

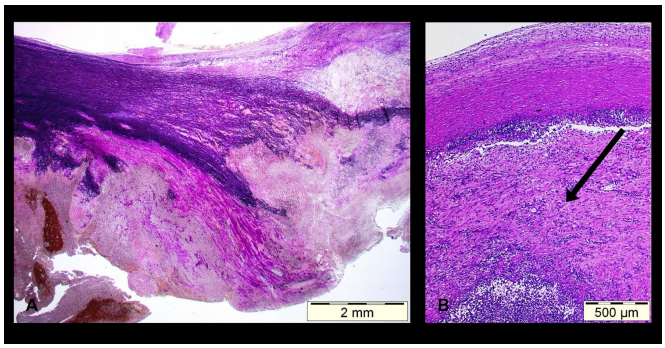

Figure 2. A, Elastin–van Gieson staining showing a severe inflammatory infiltration involving the adventitia and the periaortic connective tissue. B, hematoxylin-eosin staining showing a chronic granulating and purulent abscessing aortitis and periaortitis (black arrow).

selective antegrade cerebral perfusion was performed. After dissection of the aortic wall, an intramural abscess drained into the operative field (Figure 1B). The abscess was found to be circumferential, affecting the whole circumference of the ascending aorta, involving the aortic root, and extending into the aortic arch—necessitating complete arch replacement. Replacement of the aorta ascendens and the aortic arch was performed via implantation of a 24-mm Gelweave prosthesis (Vascutek, Inchinnan, Scotland, UK) with rebranching of the supra-aortic vessels (Figure 1C). The prosthesis was clamped, and rewarming was begun. Next, the aortic root was replaced by implanting a 21-mm FreeStyle prosthesis (Medtronic, Minneapolis, MN, USA) with reimplantation of the coronary arteries.

Microbiological analysis (intraoperative scrapes, uric acid culture, sputum), polymerase chain reaction analysis (*Mycobacterium tuberculosis*, *Mycobacterium bovis*, and atypical mycobacteria), and other immunologic analyses (serologic analysis of *Brucella* species, *Bartonella henselae*, *Chlamydophilia pneumoniae*, *C psittaci*, *Bartonella quintana*, *Coxiella burnetii*, syphilis, antinuclear antibodies, antineutrophilic cytoplasmic antibodies) revealed no cause of infection, whereas the histologic analysis showed a severe inflammatory infiltration involving the adventitia and the periaortic connective tissue, which indicated a chronic aortitis and periaortitis (Figure 2). The operation was carried out without any complications, and the patient made an uneventful recovery.

DISCUSSION

This rare case is of a patient with an intramural aortic abscess. Infected aortic aneurysms are found in 0.7% to approximately 1.3% of all aortic aneurysms [Oderich 2001; Schneider 2004]. The infected aortic segments are usually heavily atherosclerotic. *Staphylococcus aureus* and *Streptococcus* species are the most common organisms responsible, followed by *Salmonella* [Oderich 2001]. Oderich et al reported that extensive periaortic infection, female sex, S aureus infection, aneurysm rupture, and a suprarenal aneurysm location were the primary determinants of aneurysm-related death [Oderich 2001]. Most patients with infected aortic aneurysms present with at least 1 chronic comorbidity condition, such as diabetes, renal failure, or steroid use. Infected aortic aneurysm is one of an insidious febrile illness that can lead to early rupture and death without prompt surgical intervention [Chan 1989; Moneta 1998; Muller 2001].

Although we have provided clinical aspects of an infection, the origin of the abscess in our case remained unclear. Because the CT results were suggestive for an intramural hematoma, a chronic type A dissection was initially suspected. In this type of situation, timely surgical intervention is indicated, and broad antibiotic empiric therapy should be started preoperatively whenever there are positive laboratory signs of an infection and particularly if the use of prosthetic material is intended [Muller 2001; Hsu 2004, 2007]. Preoperative magnetic resonance tomography could distinguish between abscess and hematoma; however, CT angiography is still the gold standard for detecting pathologies of the aorta, especially if aortic dissection is suspected. A preoperative magnetic resonance tomography evaluation could have been valuable in this case. This case highlights that an abscess represents an important differential diagnosis, particularly if there are positive signs of inflammation, such as a positive C-reactive protein and leukocytosis.

REFERENCES

Chan FY, Crawford ES, Coselli JS, Safi HJ, Williams TW Jr. 1989. In situ prosthetic graft replacement for mycotic aneurysm of the aorta. Ann Thorac Surg 47:193-203.

Hsu RB, Chen RJ, Wang SS, Chu SH. 2004. Infected aortic aneurysms: clinical outcome and risk factor analysis. J Vasc Surg 40:30-5.

Hsu RB, Lin FY. 2007. Surgery for infected aneurysm of the aortic arch. J Thorac Cardiovasc Surg 134:1157-62.

Moneta GL, Taylor LM Jr, Yeager RA, et al. 1998. Surgical treatment of infected aortic aneurysm. Am J Surg 175:396-9.

Muller BT, Wegener OR, Grabitz K, et al. 2001. Mycotic aneurysms of the thoracic and abdominal aorta and iliac arteries: experience with anatomic and extra-anatomic repair in 33 cases. J Vasc Surg 33:106-13.

Oderich GS, Panneton JM, Bower TC, et al. 2001. Infected aortic aneurysms: aggressive presentation, complicated early outcome, but durable results. J Vasc Surg 34:900-8.

Schneider S, Krulls-Munch J, Knorig J. 2004. A mycotic aneurysm of the ascending aorta and aortic arch induced by *Salmonella enteritidis*. Z Kardiol 93:964-7.