Intramural Aortic Abscess Mimicking Chronic Aortic Dissection

Ayhan Sahin,¹ Maximilian Y. Emmert,¹ Hatem Alkadhi,² Stephan Baumüller,² Christian Ruf,³ Peter Vogt,⁴ André Plass,¹ Volkmar Falk¹

Divisions of ¹Cardiovascular Surgery, ²Diagnostic and Interventional Radiology, ³Infectious Diseases and Hospital Epidemiology, and ⁴Pathology, University Hospital Zurich, Zurich, Switzerland

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

Received August 12, 2011; received in revised form October 10, 2011; accepted October 21, 2011.

Correspondence: Ayhan Sahin, Clinic for Cardiovascular Surgery, University Hospital Zurich, Ramistrasse 100, 8091 Zurich, Switzerland; 0041-44-2551111; fax: 0041-44-2551111 (e-mail: ayhan.sahin@gmx.net).

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.
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, C. psittaci, Bartonella quintana, Coxiella burnetii, sylvialis, 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. 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.

**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**


