



Late Complication of Infective Endocarditis: False Aneurism of Ascending Aorta

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ABSTRACT

False aneurysm is one of the life-threatening infective endocarditis (IE) complications. It can occur even long after a well-treated IE.

We report the case a 43-year-old. Treated for a blood culture negative aortic valve endocarditis with 4 weeks antibiotic therapy. One year later, he presented a false aneurysm of the right lateral wall of the aorta responsible of right coronary artery compression. He underwent urgent surgery with a successful removal of the false aneurysm and a Bentall's procedure.

KEYWORDS: Infective Endocarditis, False Aneurysm, Surgery

INTRODUCTION

Infective endocarditis (IE) is a life-threatening condition with potentially fatal consequences, including the spread of infection to valve structures and surrounding tissues, as well as the formation of valve or peri-valve abscesses, valve aneurysms or fistulas. These complications can occur even after an optimal treatment of the infection. A routinely clinical surveillance is necessary to detect and treat any of these complications to improve the patient prognosis. We report the case of a patient who presented an aortic IE treated by antibiotic and complicated distantly by a false right coronary sinus aneurysm with successful surgical treatment.

CASE REPORT

We report the case of a 43-year-old patient with a history of rheumatic fever. He presented a fever with a heart murmur in the physical examination. Blood cultures were negatives and echocardiography had founded a bicuspid aortic valve with a mild aortic stenosis without regurgitation with 4mm vegetation in the right cuspid. The diagnosis of negative blood culture infective endocarditis was retained. The patient was treated by an empiric antibiotic therapy. The outcome was favorable after four weeks of antibiotic therapy, at the control echocardiography the vegetation was disappeared. The patient was lost of follow up after discharge from hospital.

One year later, he consulted for dyspnea without fever. On physical examination the blood pressure was

130/78 mmHg, the heart rate 71bpm. Cardiac auscultation found a 4/6 meso-systolic murmur was in the aortic focus. The rest of the clinical examination was unremarkable, with no signs of left heart failure, no febrile syndrome, and no cutaneous or mucosal signs.

The electrocardiogram (ECG) showed regular sinus rhythm, heart axis in place and systolic left ventricular hypertrophy. The chest x-ray was normal.

Transthoracic and transesophageal echocardiography revealed a bicuspid aortic valve, highly calcified, with moderate aortic valve stenosis (with a mean gradient at 37mmHg, valve area at 1.3cm² and Vmax 3.93m/s) associated to an important aortic insufficiency. The ascending aorta was dilated to 50mm. Furthermore, the right and left ventricles were not dilated with good systolic function.

The thoracic CT angiography confirmed the presence of a false aneurysm in the right lateral wall of the aorta, with a wide neck (26mm), responsible for compression of the right coronary artery (Figure 1).

The patient was admitted to the operating room under cover of parenteral antibiotics (amoxicillin: 12g/day and gentamycin: 240mg/day). The median sternotomy revealed a pericardium adherent to the heart, with the presence of a rounded and pulsatile mass at the level of the ascending aorta-right atrium junction (Figure 2). Giving the risk of rupture of the pseudoaneurysm, aortic and superior

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vena cava cannulation was performed before opening the pericardium. (Figure 2)

After installation of the cardiopulmonary bypass, the pericardium is carefully opened. This reveals the false aneurysm between the aorta and the right atrium measuring 3.5cm in diameter, which pushes back the right coronary artery (Figure 2).

A transverse aortotomy revealed a significant loss of substance from the aortic wall supplying the pseudoaneurysm, with presence of pus. The aortic valve was calcified, with partial destruction of the aortic ring (Figure 3). A Bentall's intervention was performed with a composite valved-conduit constructed by an SJM No 21 mechanical prosthesis and a No 26 Dacron tube.

Postoperatively, the patient was put on parenteral antibiotic therapy. He left the hospital a month later. The bacteriological study of the blood cultures and intraoperative samples was sterile.

At echocardiographic check-up, the aortic prosthesis was in good working order, non-stenosing and non-leaking. The control thoracic CT angiography was satisfactory with good opacification of the thoracic aorta in all its segments without extravasation of contrast product.

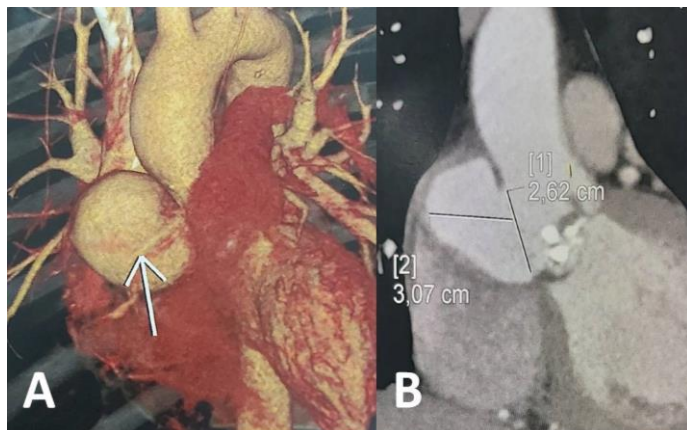


Figure 1: Angio CT scan with 3D reconstruction shown the false aneurysm with right coronary artery compression (White arrow)

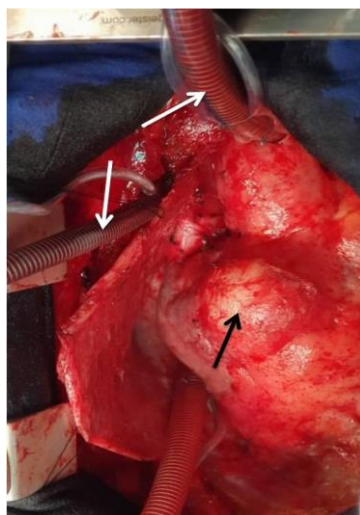


Figure 2: Operative view:

- Black arrow: false aneurysm
- White arrow: extra-pericardial cannulation of aorta and superior vena cava before the opening of the pericardium.



Figure 3: Operative view after opening of the false aneurysm.

DISCUSSION

Infective endocarditis is a life-threatening condition with high morbidity and mortality. In the aortic position, extension to neighboring tissues occurs in 20 to 37% of cases (1). This local extension is often manifested by a peri-annular abscess, which can progress to fistulization or more rarely to the development of false aneurysms (2). Most often, a paravalvular abscess develops first, then communicates between the abscess and the aortic sinus, then dilates and progresses becoming aneurysmal (2). It is often seen in staphylococcal aureus and prosthetic valve endocarditis.

Our observation reports the case of a patient with an aortic IE complicated by a false right coronary sinus aneurysm with successful surgical treatment.

Non-treated, the pseudoaneurysm can be complicated by rupture, which can occur in the pericardium in 1.6% of cases and lead to the death of the patient. It can also occur in a heart chamber causing acute heart failure (3,4). More rarely, the pseudoaneurysm can lead to compression of a coronary artery with a coronary ischemia. We can also have a thrombosis with peripheral embolism (5). IE is known as a cardiac pathology with extracardiac complications (6).

Transthoracic and transesophageal echocardiography have diagnostic accuracy of 75% and 90% respectively. They study the size, origin and location of the pseudoaneurysm. Valsalva sinus pseudoaneurysms most commonly affect the right coronary sinus (80%), followed by the non-coronary sinus (16%) and the left coronary sinus (4%) (7). Magnetic resonance imaging and computed tomography also provide valuable information to confirm the

diagnosis, study the anatomical relationships (especially with the coronary arteries) and therefore guide the surgical procedure.

The treatment of pseudoaneurysms is surgical, however the operative "timing" is still debated. Some authors recommend optimizing the patient's initial condition with longer preoperative antibiotic therapy and sufficient control of possible heart failure. While others recommend that the surgical procedure should be performed urgently to prevent the progression of the infection, which could complicate the surgical procedure (8). According to Malvindi, no impact of the time interval between patient admission and surgery on hospital mortality has been demonstrated (9).

In the case of IE complicated by false aneurysms, the recommendations of the ESC and the AHA / ACC agree on the benefit of early surgery and recommend to operate urgently (10). In our case, the pseudoaneurysm being diagnosed at a distance from the acute episode of the IE, with a favorable general condition, we opted for urgent surgery given the risk of rupture.

The principle of surgical treatment is extensive and radical debridement of infected tissue followed by reconstruction of the aortic root and correction of the valve defect (9). Under these conditions, replacement of the aortic valve and the aortic root are the treatment of choice. If the pseudoaneurysm is small, closing the pseudoaneurysm with a patch associated with replacement of the aortic valve may be sufficient.

Regarding the choice of graft, homografts are the substitute of choice, because it is a viable tissue and more resistant to subsequent reinfection. However, their main limitation is their availability, especially in an emergency context, in addition to the deterioration and calcification expected from a homograft (11). The use of an autograft (Ross intervention) has shown good results, but this technique also poses the problem of reconstruction of the right pathway.

The comparative studies have not shown a significant difference in terms of hospital mortality and reinfection rate between bioprostheses and mechanical prostheses (12). Our patient presented, distant from the infectious episode, with a large false aneurysm, on a pathological aortic valve, so we opted for a replacement of the aortic valve and the aortic root with a mechanical valve tube.

Hospital mortality is around 20%, and medium-term results are favorable with 5-year survival between 50 and 60% (13). For these reasons, the surgical option should always be considered in cases of complicated EI despite the technical difficulties, since it is the adequate solution with medium-term survival and a satisfactory quality of life.

CONCLUSION

Our observation illustrates one of the rare, but potentially fatal complications of infective endocarditis. The false aneurysm of sinus of valsalva can occur sub-acutely, despite

the apparent success of well-conducted antibiotic therapy. When it occurs, surgical treatment improves the prognosis with acceptable hospital mortality.

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