

Periprothetic Circulating Pseudoaneurysm of the Aortic Root: A Complication of Infective Endocarditis

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Abstract

Case Report

Infective endocarditis is an infection with potentially deadly consequences, perivalvular pseudoaneurysm remain a very rare complication associated with high mortality. Thoracic CT angiography, in addition to echocardiography, serves as a powerful tool in the exploration and characterization of this vascular complication, guiding further management.

Keywords: Infective endocarditis, echocardiography, valvular aneurysms.

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INTRODUCTION

Infective endocarditis is an infection with potentially deadly consequences, including the spread of infection to valvular structures and adjacent tissues, as well as the formation of valvular or peri-valvular abscesses, valvular aneurysms, or fistulas. These complications are even rarer when they prove fatal. We report the rare case of a child who presented with infective endocarditis on a mechanical aortic valve complicated by a pseudoaneurysm of the aortic ring resulting to a fatal outcome.

CASE REPORT

We present a case study of a 12-year-old male child with a history of aortic valve replacement due to severe bicuspid aortic valve associated with Marfan syndrome. The child presented to the emergency department with high fever and hemoptysis.

On clinical examination, the blood pressure was 110/56, the heart rate was 110 bpm, and the body temperature was measured at 39.5 degrees Celsius. Furthermore, the rest of the clinical examination was

unremarkable. The chest X-ray revealed a cardiomegaly associated to a right paracardiac alveolar opacity.

The transthoracic echocardiogram revealed a remodeled mechanical aortic valve with a large, mobile vegetation, and there was suspicion of peri-prosthetic leakage.

To further investigate the patient's condition, a thoracic and abdominal angio CT scan was performed. The results revealed the presence of a circulating pseudoaneurysm attached to the right lateral wall of the aortic ring, with a wide neck (20mm). It was opacified by the contrast agent, enclosing a large hypodense vegetation, and extending upward into the anterior mediastinal fat, which was densified. It reached to the right, in close proximity to the middle lobe of the right lung, and anteriorly, in contact with the anterior thoracic wall. There were also areas of ground-glass opacities on medial segment of the middle lobe, indicating alveolar hemorrhage. The patient was initially placed on parenteral antibiotic therapy, but unfortunately, the outcome was fatal, with the patient succumbing on the operating table.

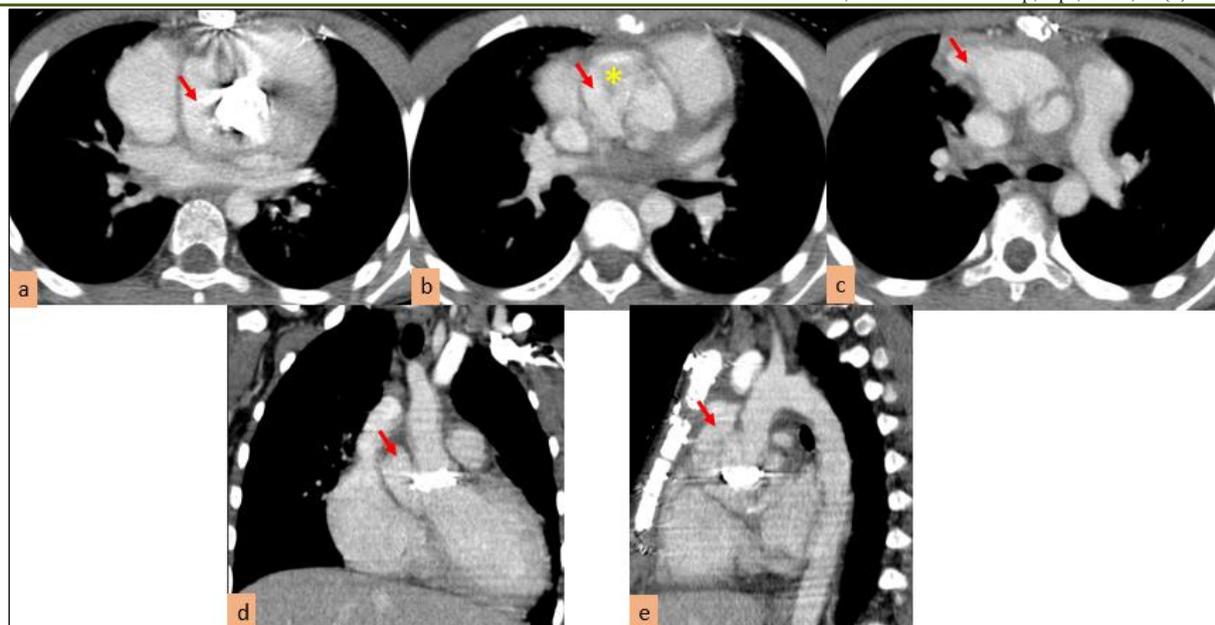


Figure 1: Thoracic CT angiogram with contrast agent injection in axial slices (a, b, c), coronal reconstruction (d), and oblique sagittal reconstruction (e): showing the presence of a circulating pseudoaneurysm attached to the right lateral wall of the aortic ring (arrow), with a wide neck. It is opacified by the contrast agent, enclosing a large hypodense vegetation (asterisk), and extending upward into the anterior mediastinal fat, which was densified. It reached to the right, in close proximity to the middle lobe of the right lung, and anteriorly, in contact with the anterior thoracic wall



Figure 2: Thoracic CT scan with a parenchymal window showing areas of ground-glass opacities on medial segment of the middle lobe, indicating alveolar hemorrhage

DISCUSSION

Infective endocarditis is a serious condition associated with a high morbidity and mortality rate. In the aortic position, extension into neighboring tissues occurs in 20 to 37% of cases [1], and it represents a dreaded complication of aortic infective endocarditis. This local extension often manifests as a peri-annular abscess, which can progress to fistulization or, more rarely, the development of pseudoaneurysms [2]. It is frequently observed in staphylococcal infective endocarditis and infective endocarditis on prosthetic valves. Our case report describes the rare occurrence of

a child who, following infective endocarditis, presented with a periprosthetic circulating pseudoaneurysm, likely ruptured into the right lung with a fatal outcome during surgical treatment. In the absence of treatment, the pseudoaneurysm can be fatal when it complicates into rupture. Rupture can occur into the pericardium in 1.6% of cases and lead to the patient's death. It can also occur within a cardiac chamber or in an extracardiac location. Transthoracic and transesophageal echocardiography have a diagnostic accuracy of 75% and 90%, respectively. They allow for the assessment of the size, origin, and location of the pseudoaneurysm [3].

Cross-sectional imaging, especially cardiac-gated angio CT scan, also provides valuable information for confirming the diagnosis, studying anatomical relationships (especially with the coronary arteries), assessing potential complications, and thereby guiding the surgical procedure [4].

The treatment of pseudoaneurysms is surgical; however, the timing of surgery is still a subject of debate. Some authors recommend optimizing the patient's initial condition with a longer preoperative antibiotic therapy and adequate control of any potential heart failure. On the other hand, others advocate for performing the surgical procedure urgently to prevent the progression of the infection, which could complicate the surgical intervention [5]. In our case, since the pseudoaneurysm was diagnosed during the acute episode of infective endocarditis, with an unfavorable general condition, we initially opted for medical treatment with subsequent urgent surgery, considering the likely intrapulmonary rupture.

CONCLUSION

Our case illustrates one of the rare complications of infective endocarditis, which can manifest in a subacute manner and is associated with high mortality. Thoracic CT angiography, in addition to echocardiography, serves as a powerful tool in the

exploration and characterization of this vascular complication, guiding further management.

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