



Short communication

Triple leaflet perforation due to endocarditis in aortic valve complicated by pneumonia and exacerbation of chronic obstructive pulmonary disease

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ABSTRACT

Valve perforation complicating infective endocarditis has been for decades a bad sign leading to severe valve destruction, intractable heart failure and even death if surgical therapy is not administered in time. Here we present a 57 years old male patient inadvertently diagnosed with pneumonia and chronic obstructive pulmonary disease exacerbation in another hospital. After 20 days of broad spectrum antibiotics and bronchodilator therapy no improvement was achieved. During examination a severe aortic regurgitation was recognized. Immediately after, patient was transferred to our hospital for aortic valve surgery evaluation. Transthoracic echocardiography (TTE) showed a severe aortic regurgitation and vegetation like echogenicity over the noncoronary leaflet. An aortic valve replacement surgical therapy was decided. During the aortic valve excision underneath the vegetations, multiple small perforations in all the three leaflets were noticed. The destructed valve was excised and a mechanical aortic prosthesis (St Jude No: 23, MN, USA) was successfully replaced. After 14 days of treatment patient was healthily discharged.

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Introduction

Valve perforation complicating infective endocarditis has been for decades a bad sign leading to severe valve destruction, intractable heart failure and even death if surgical therapy is not administered in time. Here we present a 57 years old male patient inadvertently diagnosed with pneumonia and chronic obstructive pulmonary disease exacerbation in another hospital. After 20 days of broad spectrum antibiotics and bronchodilator therapy no improvement was achieved. During examination a severe aortic regurgitation was recognized. Immediately after, patient was transferred to our hospital for aortic valve surgery evaluation. Transthoracic echocardiography (TTE) showed a severe aortic regurgitation and vegetation like echogenicity over the noncoronary leaflet. An aortic valve replacement surgical therapy was decided. During the aortic valve excision underneath the vegetations, multiple small perforations in all the three leaflets were noticed. The destructed valve was excised and a mechanical aortic prosthesis (St Jude No: 23, MN, USA) was successfully replaced. After 14 days of treatment patient was healthily discharged.

Case report

A 57 year old male patient presented at our hospital with palourness and shortness of breath. He was referred from another center where he had been treated for about 20 days. He had had a sudden fever (38,5 °C) and shortness of breath on admission. He was diagnosed with exacerbation of chronic obstructive pulmonary disease (COPD) and pneumonia. Although an empirical broad spectrum of antibiotics (Ampicillin/Sulbactam 4 gr/day IV + Klarithromycin 500 mg/day IV) and bronchodilator treatment was administered he had not seen any relief of symptoms. On admission he looked pale, dyspneic and not willing to lie supine. He had no medical history except for a long intense smoking habit. His temperature was 37,5 °C. His electrocardiography showed a sinus tachycardia with a heart rate of 110/min. His blood pressure was measured as 110/50 mm Hg. On lung auscultation broad fine rales and rhonchus were noticed. His heart auscultation showed a 3/6 diastolic murmur on the right side of the sternum at the 2-nd intercostal space. TTE showed a severe aortic regurgitation and vegetation like echogenicity over the noncoronary leaflet. A mild tricuspid regurgitation and a systolic pulmonary artery pressure of 60 mm Hg were found. The ejection fraction was estimated as 50%. An unrecognized infective endocarditis (IE) was found to be the cause of decompensated heart failure. Loop diuretic and bronchodilator regimen with proper oxygen supply were immediately administered. No growth from

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blood and urine cultures were found as a long-term antibiotic treatment was previously applied. According to the 2009 European Society of Cardiology Infective Endocarditis Guideline we had a class 1 B indication for urgent surgery of severe aortic regurgitation with pulmonary hypertension and persisting heart failure. As the patient stabilized a preoperative coronary angiography was performed. Noncritical coronary lesions were found. Thereafter an open heart surgery treatment for aortic valve endocarditis was decided. During native aortic valve excision multiple small vegetations were cleaned off (Fig. 1). Underneath them multiple perforations involving all of the three leaflets of the aortic valve were noticed (Fig. 2). The destructed valve was excised and a mechanical aortic prosthesis (St Jude No: 23, MN, USA) was successfully replaced. After 14 days of treatment with bronchodilator and broad spectrum antibiotics (Ampicillin/Sulbactam 12 gr/day IV + Gentamycin 240 mg/day IV) patient was discharged in a healthy condition.

Discussion

This case illustrates what appears to be an important complication of infective endocarditis, namely, perforation or destruction of the aortic valve leaflets. As we look at the literature valve perforation is found to be a common complication of left side native valve infective endocarditis (LNVIE) firstly described in autopsy studies^{1–3}. In a prospective echocardiographic study the frequency of LNVIE valve perforation was found 34%⁵. Several studies report that valve perforation in IE is usually associated with valve destruction, valve regurgitation, progressive heart failure and a high rate in hospital mortality^{3–5}. K. Bachour et al. showed that in LNVIE mitral valve perforation was more common than aortic valve perforation⁶. However, perforation of the aortic leaflets, rather than the mitral cusps was found to correlate to a worse prognosis requiring early surgical treatment⁵. Interestingly we noticed multiple perforations in different sizes involving all of the three leaflets of the aortic valve. Triple aortic valve perforation being a rare finding in infective aortic valve endocarditis, was a remarkable sign of an advanced and intractable infection that already had destructed the aortic valve apparatus leading to severe acute aortic regurgitation and heart failure. As in our patient severe acute aortic regurgitation is seen to be more life threatening than severe acute mitral regurgitation probably as a result of the left ventricle being less compliant than the left atrium and the left ventricle end diastolic pressure being higher in acute aortic regurgitation requiring early surgical treatment^{7,8}. In addition, late diagnoses and empirical ineffective, perhaps insufficient dosages of antibiotics due to pneumonia could have attributed to progression of the aortic valve destruction, thus leading to multiple valve perforations, aortic regurgitation and acute heart failure. This finding underscores the rare course of infection leading to severe aortic regurgitation by multiple perforations in all the three leaflets rather than a perivalvular abscess

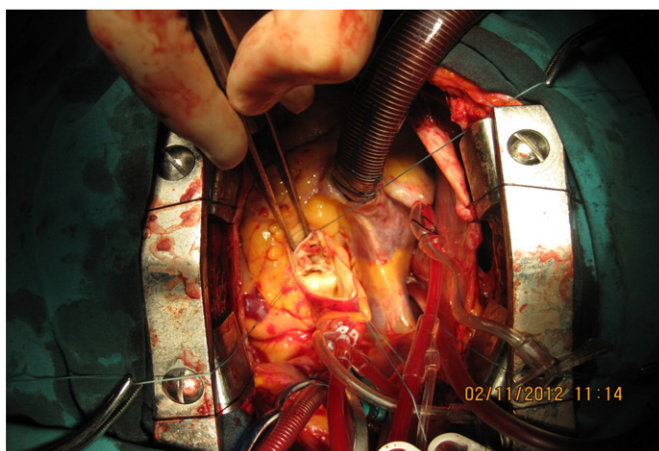


Fig. 1. Aortic valve endocarditis with multiple small vegetations.

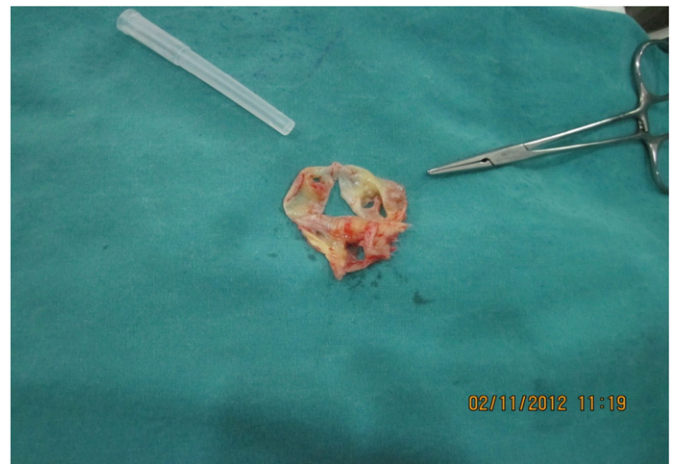


Fig. 2. The excised native aortic valve with multiple perforations in all the three cusps (Surgical clamp indicates the right coronary cusp; plastic clamp indicates the left coronary cusp).

formation, rupture or valve destruction suggesting the need for prompt surgical evaluation before clinical deterioration.

Conclusion

Infective endocarditis is a life threatening disease that can present in different clinical scenarios. Our findings show a rare course of infection over the aortic valve leading to valvular destruction and progressive heart failure and a worse outcome. Aortic valve perforation must be regarded as a bad prognostic sign that emergent surgical therapy be considered as soon as possible before clinical deterioration ensues.

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