

AORTIC VALVE ENDOCARDITIS: A LATE COMPLICATION OF A BLAST TRAUMA

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Keywords

infective endocarditis, blast trauma, aortic valve replacement, mitral valve repair

Ključne riječi

infektivni endokarditis, eksplozivna ozljeda, zamjena aortne valvule, rekonstrukcija mitralne valvule

Introduction

Despite advances in diagnosis and treatment, infective endocarditis remains a dangerous disease. If not aggressively treated with antibiotics combined or not with surgery, it may lead to severe morbidity as well as mortality [1]. The incidence remains similar due to a progressive change of risk factors. While classic predisposing conditions have not been eradicated, new risk factors include intravenous drug use, sclerotic valve disease in elderly patients, use of prosthetic valves, nosocomial disease, and hemodialysis patients [2].

Case Report

We report a case of a 55-year-old male patient, a war veteran with post-traumatic stress disorder, admitted for a new onset of fever, angina and

dyspnea with no previous cardiac history. The patient's history revealed that two years prior to the current hospital admission he suffered from a blast trauma to the pelvis and the abdomen, causing penetrating injuries and multiple organ damage. This was followed by a series of reconstructive surgical procedures like rectal resection, cystostomy, multiple urethrotomies for urethral strictures, and abdominal drainage complicated with pneumonia and sepsis.

At present admission for the symptoms mentioned earlier, the initial echocardiography did not reveal any significant valvular pathology and hemoculture was negative. Empirical antibiotic therapy was started. Since the patient's clinical state was deteriorating with a progression of dyspnea, angina and fever, another echocardiography was performed. The latter examination revealed severe aortic regurgitation (AR) with a vegetation measuring 2 x 1.5 cm involving the left coronary cusp. In addition to his aortic valve pathology, the patient was found to have functional severe mitral regurgitation (MR). Enterococci were isolated from the blood and intravenous vancomycin and gentamycin were initiated. The progressive renal insufficiency prompted the substitution of the mentioned antibiotics with meropenem and linezolid. Further evaluation using abdominal ultrasound disclosed

an abscess of the spleen verified by a multi-slice computed tomographic (MSCT) imaging. Splenectomy was performed to prevent rupture and prosthetic valve endocarditis. A low platelet count was attributed to a side effect of linezolid observed after the onset of therapy. Neither enzyme-linked immunosorbent assay nor flow cytometry revealed anti-platelet or anti-heparin/platelet factor 4 antibodies. After ruling out coronary artery disease with a MSCT coronary angiography, the patient was referred to surgical management for his cardiac pathology.

The surgery was performed with the aid of cardiopulmonary bypass. The intraoperative findings were consistent with the preoperative ultrasound imaging (Fig. 1). Predominantly the left, as well as the right, coronary cusp was compromised with endocarditic vegetation that partially occluded the opening of the left main coronary artery (Fig. 2). After complete excision of the aortic valve cusps, the mitral valve was inspected. Mitral regurgitation was found to be secondary to P3 tethering. Mitral valve repair using an undersized annuloplasty ring and ultimately aortic valve replacement with a mechanical prosthesis were performed. The patient had an uneventful postoperative recovery.

Discussion

Pressure effect of blast injury damages organs, particularly at air-fluid interfaces, and the wind propels fragments of the device, causing penetrating or blunt injuries [3]. The extent of the damage to the tissue is utterly diverse and complications can vary to such an extent that it would be impossible to numerate.

Infective endocarditis is a disease in which a microorganism colonizes a focus in the heart, producing fever, heart murmur, splenomegaly, possibly embolic manifestations and bacteremia or fungemia. Embolic manifestations can vary from cerebrovascular accidents (CVA) to splenic abscess, as described in the case study. Early diagnosis of this condition is extremely important because it almost invariably leads to devastating complications and death if not treated with antibiotics, with or without surgery. Most study reports indicate that operative mortality is below 10%. This percentage rises in the at-risk population; a history of infective endocarditis, prosthetic valve endocarditis, congenital heart disease, etc. 10-

year survival after surgery for infective endocarditis is about 50 to 60% [4].

Even more important than treatment is the prevention of infective endocarditis. Antibiotic prophylaxis at a time of invasive procedures has been a tenet of cardiac and dental practice for half a century, although the evidence of benefit is limited. The shortage of evidence and changing clinical profile of infective endocarditis has led several health organizations to update their guidelines in recent years [5]. In patients with underlying cardiac conditions associated with the highest risk of adverse outcome from infective endocarditis, prophylaxis for dental procedures may be reasonable, even though its effectiveness is unknown [6]. Additional prophylactic measures for infective endocarditis include education of at-risk patients about the need for meticulous dental and skin hygiene and avoidance of unnecessary invasive procedures. A strict adherence to institutional hygiene is crucial because a third of cases of prosthetic valve or *S. aureus* infective endocarditis are nosocomial in origin and mortality in this setting exceeds 30% [7, 8].

In the setting of such a complex case, with diverse comorbidities, a successful surgical treatment was performed. Nevertheless, the patient was also adequately treated in the early postoperative period at our department. As in all of our patients, a fast track postoperative management protocol was initiated. Once desirable findings were obtained, including echocardiography, the patient was released from our department with an emphasis to continue i.v. antibiotic therapy, according to the recommendations for treating infective endocarditis. Recently, at the early follow-up examination two months after the surgery all findings have suggested that the treatment was successful and that there was no recurrence of the illness.

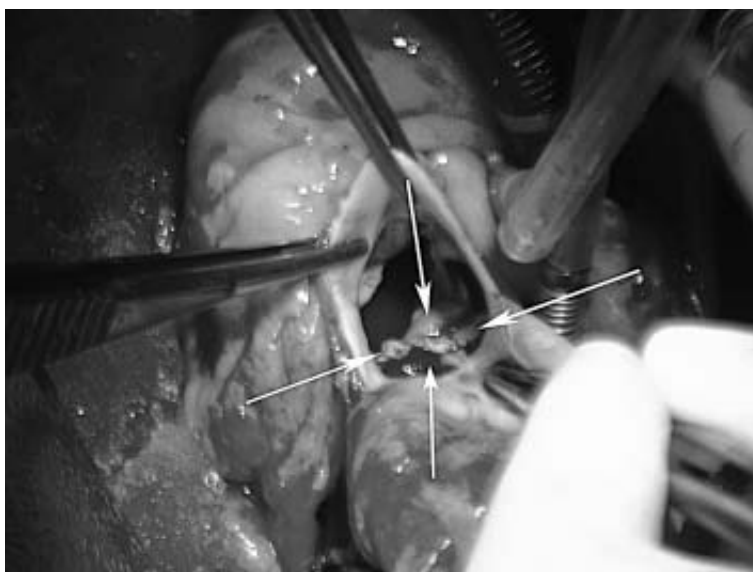
We consider the adequate management protocol should be as described in our case study, i.e. 6 week targeted i.v. antibiotic therapy, surgical intervention, edema control and long term echocardiographic follow-up to identify possible late prosthetic valve endocarditis.

Figure captions

Figure 1. Short axis view of the aortic valve using a transesophageal ultrasound showing an impressive vegetation involving the left coronary cusp of the aortic valve (AV - aortic valve, RV outflow - right ventricular outflow tract, LA - left atrium, RA - right atrium)



Figure 2. Intraoperative photograph of the aortic valve
The arrows point towards the vegetation that extends over the whole left coronary cusp and to some extent the right coronary cusp. It is partially occluding the opening of the left main coronary artery.



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