Pulmonary valve replacement for pulmonary thrombus formation after previous aortic valve replacement, Guillain-Barré syndrome and enterococcal sepsis

Peter Eigel*, Axel Lars Larsen, Gerrit van Ingen
Passau General Hospital, Klinikum Passau, Innstr. 76, 94032 Passau, Germany

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Abstract

Acquired disease of the pulmonary valve requiring surgery is rare. We report the case of a 70-year-old male presenting with pulmonary valve insufficiency and pulmonary emboli originating from a thrombus formation adhering to the pulmonary valve occurring despite dicoumarol anticoagulation for previous aortic valve surgery. Two years ago he experienced Guillain-Barré syndrome and one year ago enterococcal sepsis which were treated medically. Apart from a previous prolonged ICU stay no predisposing factors for right sided endocarditis could be found. The pulmonary lesion was surgically corrected with removal of the thrombus and excision of the pulmonary valve. Reconstruction of the valve and pulmonary artery was performed with a semistentless xenograft valved conduit.

Keywords: Pulmonary valve; Endocarditis; Pulmonary emboli

1. Introduction

Replacement of the pulmonary valve with homografts and various xenografts has been described for acquired pulmonary valve disease [1–3]. It is an uncommon operation mostly performed in patients with corrected congenital lesions and residual pulmonary regurgitation [4], or in patients with IV drug abuse. However, patients with no other known cardiac pathology have been reported [5].

2. Case report

A 70-year-old intelligent and alert man presented with pulmonary regurgitation and pulmonary emboli in the right lower lobe. Six years ago he had aortic valve replacement with a bileaflet valve for aortic regurgitation. Since that time he was on oral anticoagulation with Dicoumarol (INR 2.5–3.0). Two years ago a prolonged ICU stay (27 days) with respirator therapy was necessary for Guillain-Barré Syndrome. One year later he presented with general illness, fatigue and fever. Blood cultures revealed an enterococcal sepsis possibly due to a cholecystolithiasis for which a cholecystectomy was carried out. Transesophageal echo showed a normal functioning aortic valve prosthesis but also slightly thickened pulmonary valve cusps with a small vegetation (1.5 cm) on the anterior cusp. A pulmonary valve regurgitation grade II was observed. Treatment with IV antibiotics resulted in complete recovery with no further signs of infection. Routine echo control 7 months later showed a large thrombus formation originating from the anterior cusp of the pulmonary valve (Fig. 1). Radionuclide scan showed evidence of pulmonary emboli in the right lower lobe. Right- and left-sided cardiac catheterization was performed, and confirmed moderate pulmonary insufficiency.

At operation, access was performed via median sternotomy. Cardiopulmonary bypass was initiated and the heart

*Corresponding author. Tel.: +49-851-53002897; fax: +49-851-53002908.
E-mail address: eigel@fmi.uni-passau.de (P. Eigel).
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Fig. 1. Transesophageal echo in the long axis view showing pulmonary valve thrombus formation (below).
was arrested using antegrade cold blood cardioplegia. The pulmonary artery was transected above the sinuses to visualize the valve leaflets and the infundibulum. A thrombus formation 6 cm in length (Fig. 2) adhered firmly to the protruding anterior cusp of the pulmonary valve and could not be removed without resecting it. The remainder of the valve was excised and a 29-mm Shelhigh™ (Shelhigh, Inc. Union, NJ) semistentless pulmonary xenograft valved conduit was implanted for reconstruction with continuous 4-0 Prolene® (Ethicon, 22851 Norderstedt, Germany) sutures. The patient’s recovery was uneventful. A transthoracic echocardiogram demonstrated normal functioning pulmonary and aortic valve prostheses. The patient was discharged home on the 10th postoperative day. The microscopic slide of the thrombus and the valve revealed normal thrombus tissue with calcium deposits, the valve tissue was slightly thickened without any sign of inflammation.

3. Discussion

Pulmonary valve insufficiency due to endocarditis is a rare entity in patients without predisposing factors [5]. With our patient who had aortic valve surgery, which is not a risk factor for pulmonary valve endocarditis, on the other hand a prolonged stay in an intensive care unit for Guillain-Barré syndrome with respirator therapy and hemodynamic monitoring with a Swan-Ganz catheter could have damaged the endocardial surface of the pulmonary valve thus leading to predisposition for endocarditis and valve insufficiency [6]. Prolonged therapy with high doses of IV bactericidal antibiotics eliminated the acute infection and obviously the observed vegetation at the pulmonary valve became aseptic. However, despite anticoagulation, it had the potential to grow to its length of 6 cm leading to pulmonary emboli. Initially it was not clear, whether the thrombus was septic or aseptic, so radical debridement with valve excision was performed. The semistentless Shelhigh™ valved conduit proved to be a suitable conduit to reconstruct both the pulmonary valve and artery.

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References