CASE REPORT

Braz J Cardiovasc Surg 2005; 20(1): 88-90

Acute dysfunction from thrombosis of a mechanical mitral valve prosthesis

Disfunção aguda devido a uma trombose da prótese da válvula mitral mecânica

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RBCCV 44205-736

Abstract

An 64-year-old man received a 31-mm CarboMedics mechanical prosthesis for severe mitral regurgitation. After four days the patient presented fatigue and dyspnoea with rest; transthoracic and transesophageal Doppler echocardiographic study confirmed a failing mobility of prosthetic valve leaflet from thrombosis and an emergency operation was done. The postoperative course was uneventful. This is an unusual case of acute dysfunction from thrombosis of a mechanical mitral valve prosthesis in a patient on oral anticoagulant therapy and calciheparin.

Descriptors: **Thrombosis. Echocardiography. Mitral valve replacement**

Resumo

Um homem de 64 anos recebeu uma prótese mecânica CarboMedics de 31 mm para refluxo mitral grave. Após quatro dias, o paciente apresentou-se com fadiga e dispnéia em repouso. Estudos do Doppler ecocardiografia transtorácica e transesofágica confirmaram uma disfunção na mobilidade do folheto da válvula protética devido à trombose e uma operação de emergência foi feita. O pós-operatório transcorreu sem intercorrências. Este é um caso incomum de disfunção grave devido à trombose de uma prótese mitral mecânica em um paciente tomando anticoagulantes orais e calciparina.

Descritores: **Trombose. Ecocardiografia. Troca da válvula mitral**

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Article received in December, 2004
Article accepted in February, 2005

Braz J Cardiovasc Surg 2005; 20(1): 88-90

INTRODUCTION

Progress in the design and structure of mechanical prostheses over the years has led to a considerable improvement in their hemodynamic features and durability; however acute thrombosis of mechanical prosthetic heart valves is one of the major complications of valve replacement [1]. The risk of thrombosis is dependant on valve design, materials and host-related interface [2]. Thrombosis of a mechanical valve is much higher in patients with large left atria, chronic atrial fibrillation and intra-atrial clots. We report a case of emergency surgical intervention for unusual acute mitral mechanical valve thrombosis.

CASE DESCRIPTION

An 64-year-old man with history of arterial hypertension, chronic atrial fibrillation and with left atrial diameter of 10 cm in the long-axis view, operated on at our institution, received a 31-mm CarboMedics (CarboMedics, Inc, Austin, TX) mechanical prosthesis for severe mitral regurgitation. On postoperative day 1, a Doppler echocardiographic study showed normal prosthetic function and the postoperative course in intensive care unit was uneventful. Anticoagulation was initiated 24 hours after the procedure (calciheparin and warfarin). After four days the patient presented fatigue, dyspnoea with rest, orthopnea and loss of valve clicks was observed; the patient was with an international normalized ratio (INR) of 2,5. Immediately a transthoracic doppler echocardiographic study was performed and the exam revealed signs of mitral prosthetic obstruction (mean mitral gradient, 20 mmHg; pressure half time, 524 msec) and presence of spontaneous contrast in the large left atrium; the presence of a 24-mm-long thrombus localized on the atrial surface of the prosthesis was confirmed by transesophageal echocardiography study. The patient underwent emergency surgery; in brief, median resternotomy was performed and cardiopulmonary bypass was started. Once left atrium was opened, we found a large thrombus that occluded completely one hemidisc of mitral valve prosthesis (Fig.1; Fig.2). The obstructed prosthesis was carefully excised; care was taken during valve excision not to remove any obstructing material from prosthetic surfaces to ensure a complete and reliable pathologic evaluation. Prosthetic replacement was performed by implanting a 31-mm CarboMedics (CarboMedics, Inc, Austin, TX) mechanical prosthesis at the annular level. Then, a left atrial volume reduction was performed using triangular resection of the posterior atrial wall; our operative technique has been previously described [3]. The histologic examination of the obstructing material showed fibrin mass in which erythrocytes, leukocytes, and platelets were enmeshed. The anticoagulation regimen after surgical treatment consisted of calciheparin; acenocoumarol and aspirin were added on postoperative day 1. At the control after 5 days from operation, the transthoracic doppler echocardiographic study showed a left atrial diameter of 7 cm in the long-axis view. The patient made an uneventful recovery and was discharged with an INR of 3.5 and was followed at the anticoagulation clinic.

Fig.1 - Prosthetic valve thrombosis of a 31-mm CarboMedics mechanical prosthesis. Frontal view

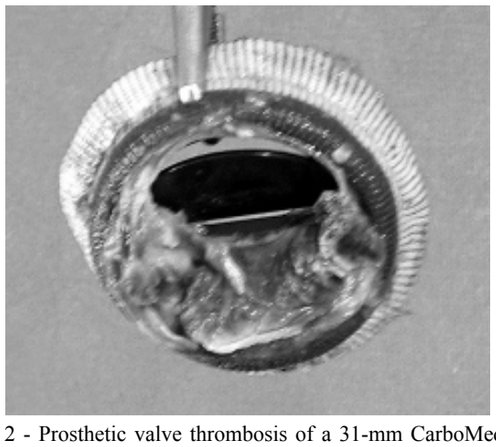

Fig. 2 - Prosthetic valve thrombosis of a 31-mm CarboMedics mechanical prosthesis. Posterior view

COMMENT

Thromboembolism is the most common complication of both biologic and mechanical mitral prostheses but is more frequent in patients with mechanical valves. Chronic atrial fibrillation and local atrial factors, increase the risk of thromboembolism in patients with mitral prostheses [4]. The presence of a giant left atrium increases the thromboembolic risk in spite of anticoagulation therapy. In this case we did not find major deviations from the standard anticoagulant regimen. Suspicion of mechanical valve thrombosis is raised by clinical finding, loss of valve clicks and is confirmed by echocardiography; transesophageal echocardiography is currently recognized as being more accurate to detect eventual paravalvular leakage and even visualization of one or several echos emanating from the atrial surface of the prosthesis corresponding to thrombi. Although thrombolytic therapy can be used in selected circumstances, an immediate operation to replace the valve is usually required; in a series of patients with mechanical cardiac valve thrombosis, ROUDAUT et al. [5] confirmed that the thrombolytic therapy should be reserved for selected patients (those with tricuspid thrombosis, critically ill patients, and patients with contraindications to surgical intervention) and documented recurrency of thrombosis in 24% of cases and a 14.6% incidence of arterial embolism. CARRIER et al. [6] concluded that prosthetic valve thrombolysis did not have a good rate of success in their group of patients as a primary treatment. On the basis of this experiences patients with acute prosthetic valve thrombosis should undergo emergency surgery.

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