

Letter to the Editor

Recurrent obstructive mechanical valve thrombosis in mitral position

Nilgün Bozbuğa*, Hasan B. Erdoğan, Cüneyt Keleş, Cevat Yakut

Department of Cardiovascular Surgery, Kosuyolu Heart and Research Hospital, Istanbul, Turkey

Received 6 November 2000; accepted 6 December 2000

Abstract

We report a case of 37-year-old woman with recurrent prosthetic valve thrombosis (PVT). The patient was evaluated for hypercoagulable state and treated with streptokinase, tissue plasminogen activator and rereplacement of a bioprosthesis. © 2001 Published by Elsevier Science Ireland Ltd.

Keywords: Prosthetic valve thrombosis; Recurrent thrombosis

1. Introduction

Valve obstruction is a life threatening complication of mechanical prosthesis. This case is of particular interest for the recurrent episodes prosthetic valve thrombosis (PVT) during 22 months.

1.1. Case report

A 37-year-old woman had rheumatic mitral stenosis, underwent closed mitral commissurotomy 9 years before, with left atrial enlargement (50 mm) and pulmonary hypertension (60 mm Hg). She underwent mitral valve replacement (MVR) with a #29 St. Jude Medical prosthesis. Postoperative course was uneventful.

The first episode PVT occurred 6 months after MVR. Transesophageal echocardiography (TEE) confirmed an immobile leaflet of the prosthetic valve

(PV) with 36 mm Hg transvalvular gradient due to an obstructive thrombosis. A course of streptokinase was given as IV infusion over 30 min at a dose of 1.500.000 IU and continued 24 h 100.000 IU/h followed by heparinization. After thrombolytic therapy, normal PV function was restored.

Four months later, second episode of PVT was observed and TEE revealed a huge obstructive thrombus that was adherent to the annulus of the PV and obstructed the orifice with 39 mm Hg transvalvular gradient. The thrombolytic therapy protocol consisted of recombinant tissue-type plasminogen activator (rt-PA) (100 mg in 90 min) followed by heparinization. Two weeks later, a nonobstructive thrombus was detected and another course of thrombolytic therapy was given using rt-PA. Fourth episode of rethrombosis occurred in 5 weeks later. She was immediately treated with intravenous rt-PA followed by heparinization.

Nine months later, the patient had another PVT with sudden pulmonary edema and heart failure. At operation a huge thrombus arising from the entire bileaflet mitral prosthesis on atrial surface was seen to occlude the orifice completely. Thrombectomy was

*Corresponding author. Ankara Caddesi No: 50/1, Cağaloğlu 34410, Istanbul, Turkey. Tel.: +90-216-326-3579; fax: +90-212-513-7491.
E-mail address: kosuyolu@superonline.com (N. Bozbuğa).

performed and mechanical valve was replaced with a #27 Hancock bioprosthesis.

Follow-up echocardiography no longer showed significant thrombosis either at the mitral bioprosthesis or at the left atrium after rereplacement. The patient, with aspirin therapy 300 mg/day, has been well at follow-up two years after discharge.

2. Discussion

The incidence of mitral PVT is low, ranging from 0.1 to 5.7% per patient-years; however the recurrence rate of mitral PVT is considerably as high as 15–30% [1,2]. The risk of PVT is mainly dependent on the type of either bioprosthesis or mechanical prosthesis. The risk is also varies with the valve design and the material.

Subtherapeutic anticoagulation was the key factor for thrombotic complications. INR values of the patient during thrombotic attack were 1.38, 1.20, 2.41 (nonobstructive PVT), 2.25, 2.04 respectively. The socioeconomic status of the patient caused ineffective anticoagulation regimen.

Patient-related coagulability may significantly influence postoperative thromboembolic complications and the risk of PVT [3]. Our patient was evaluated for the hypercoagulable state; titers of anticardiolipin antibodies (ACLA; both IgG and IgM types), antiphosphatidylserine antibody (APSA) were found in high levels. Lupus antibody (LA) antigens were strongly positive. But lipoprotein (a) (Lp (a)) and fibrinogen levels were found within normal limits (Table 1)

Artificial heart valves contribute to the generation of systemic hypercoagulable state [4]. Genbay et al. published a study about which frequency of abnormal

Table 1

The factors associated with hypercoagulable states in the patient^a

ACLA–IgG	30	(<15 GPLU/ml)
ACLA–IgM	13	(<12.5 MPLU/ml)
APSA–IgG	24	(<12 RLU/ml)
LA	strongly positive	
Lp (a)	24	(<30 ml/dl)
Fibrinogen	3.1	(2–4 gr/l)

^a ACLA: anticardiolipin antibody, APSA: antiphosphatidylserine antibody, LA: lupus antibody, Lp (a): lipoprotein (a).

levels of ACLA–JgG, ACLA–JgM, APSA, LA, (Lp (a)) and the prevalence of hypercoagulable states in 15 patients with recurrent thrombotic valve obstruction [5]. They found that at least one of the factors was abnormal in 93% patients and the difference of hypercoagulable state factors between in PVT group and in control group was statistically significant.

We conclude that the patients with recurrent PVT should be evaluated for a hypercoagulable state. In case of recurrence of thrombosis, rereplacement with a biological substitute should be considered.

References

- [1] Renzulli A, Vitale N, Caruso A et al. Thrombolysis for prosthetic valve thrombosis: indications and results. *J Heart Valve Dis* 1997;6:212–8.
- [2] Cannegieter SC, Rosendaal FR, Briet F. Thromboembolic and bleeding complications in patients with mechanical heart valve prostheses. *Circulation* 1994;89:635–41.
- [3] Horstkotte D, Riess H. Thromboembolic complications following heart valve replacement: The role of patient-related coagulability. *J Heart Valve Dis* 1998;7:598–600.
- [4] Horstkotte D, Riess H. Prosthetic valve thrombosis. *J Heart Valve Dis* 1995;4:141–53.
- [5] Gençbay M, Turan F, Değertekin M, Ekşi N, Mutlu B, Ünalp A. High prevalence of hypercoagulable states in patients with recurrent thrombosis of mechanical heart valves. *J Heart Valve Dis* 1998;7:601–9.