Prosthetic Mitral Valve Thrombosis Treated With Two Consecutive Courses of Fibrinolysis

To the Editor:

We present the case of a 57-year-old woman who 14 months earlier underwent a double aortic and mitral valve replacement with a bileaflet mechanical prosthesis. Discharged after a slow postoperative, she had remained asymptomatic for more than 1 year until recently beginning with dyspnoea and progressive systemic congestion. She did not exhibit fever or infectious symptoms. The thoracic radiography showed a bilateral alveolar interstitial oedema pattern, and the analysis and haemostasis were normal, with INR =0.99. Interestingly, anticoagulant treatment had been discontinued 4 months earlier due to an episode of mild haemoptysis.

The patient was admitted to the coronary unit, and conventional treatment for heart failure began paired with intravenous heparin sodium. The urgent echocardiography study (Figure) absolute lack of opening of one of the mitral prosthesis' leaflets and a reduced opening of the other one, which resulted in a total effective area of 0.8 cm^2 and an mean gradient of 24 mm Hg. There was thrombotic occupancy on the left appendix and spontaneous echo contrast on the left atrium, although thrombotic material was not observed in the mitral prosthesis. The aortic mechanical prosthesis functioned adequately, and left ventricular systolic function was normal.

Still without locating thrombus in the mitral prosthesis, antecedents of interrupted anticoagulation, the thrombus in the left appendix, and the echo contrast established thrombosis of the prosthesis as the most probable diagnosis. Considering the previously complicated postoperative, initiation of fibrinolytic treatment with rt-PA (10 mg of intravenous bolus followed by another 90 mg in continuous perfusion for 90 min) was chosen. This obtained favourable but insufficient results, with improved opening of the partially immobilized leaflet and persistence of the other leaflet being closed and fixed (effective area, 1.36 cm^2; mean gradient, 8.5 mm Hg) (Figure). The patient also improved symptomatically.

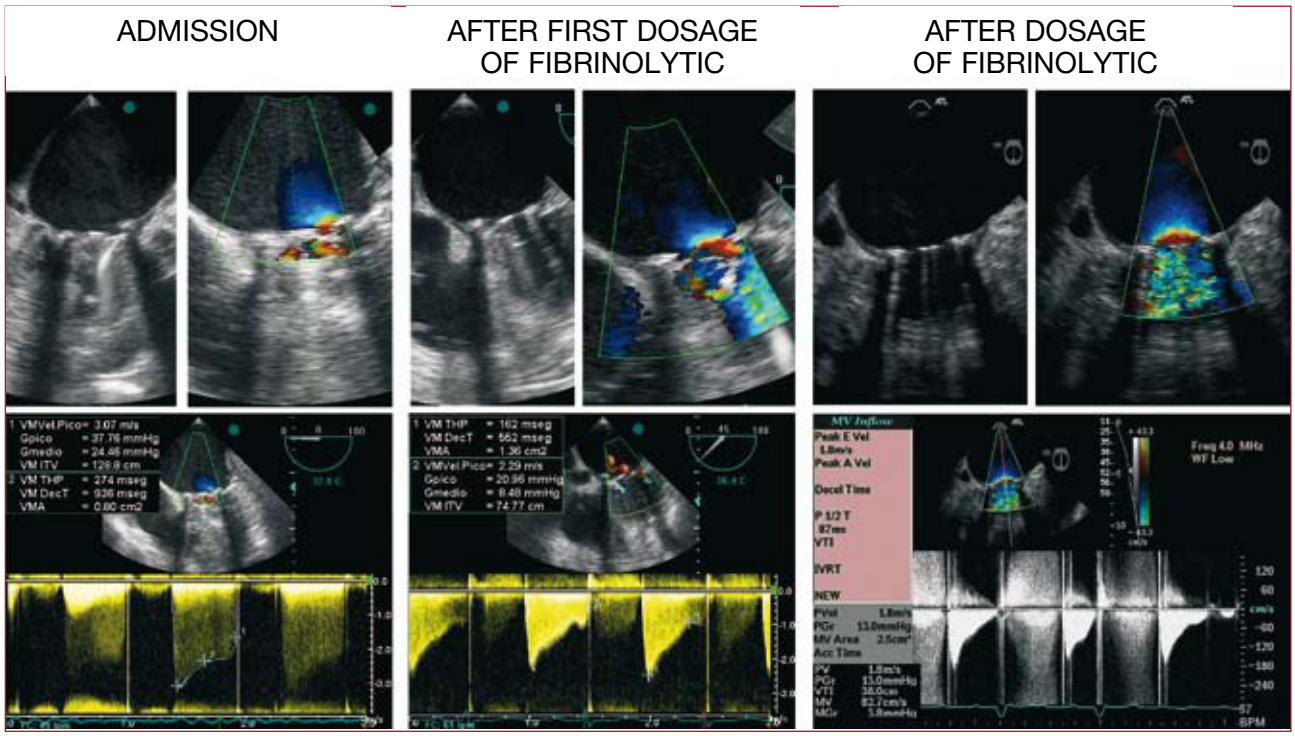

Figure 1. Transoesophageal echocardiographic studies carried out at the time of admission (A) and after the first (B) and second (C) dosage of fibrinolytic. At each of these times, a bidimensional image was taken during diastole of the mitral valve area occupied by the prosthesis, another image similar to the previous one but in colour Doppler mode, and an image in pulsed Doppler mode of the flow entering into the left ventricle, as the estimate calculations taken of the effective valve area.

At 48 h, encouraged by the good initial response, a new dosage of rt-PA was administered following the same criteria. Hours later in the transoesophageal echocardiogram, she already showed normal mobility of both leaflets (effective area, 2.5 cm^2; mean gradient, 3.8 mm Hg) (Figure).

There were no subsequent complications. At 4 days, she was discharged after reaching adequate oral anticoagulation and having no signs of heart failure.

Prosthetic valve thrombosis continues to be a serious complication in patients with mechanical prosthesis, with an incidence of 0.2%-6% a year in aortic and mitral positions and up to 20% in the tricuspid, and it is generally related to insufficient anticoagulation.[1]

The classical surgical treatment by thrombectomy or new valve replacement presents increased perioperative lethality up to 69%.[1]

Due to this, therapeutic alternatives have emerged. Among these, intravenous administration of fibrinolytics such as streptokinase, urokinase, or rt-PA are emphasized, with encouraging results until now: effectiveness close to 85% and a relatively low incidence of complications. These complications are mainly peripheral embolisms (constituting between 5%-12%) or cerebral embolisms (5%-10%), major haemorrhages (5%), and recurrence (11%). Risk of death is estimated at 6%.[2,3] The factors associated with a higher risk of complications are the administration of fibrinolytic in fast sequence, previous presence of embolisms, and size of the thrombus (>0.8-1 cm^2), which is also associated with a higher risk of therapeutic failure, and according to some authors, could even be considered as contraindication.[4]

In our case, various questions arose. The first was if it really corresponded to a prosthetic thrombosis or not. In respect to this, it is fitting to point out that not seeing thrombus in the prosthesis in the transoesophageal echocardiogram does not rule out a diagnosis, and that the interrupted anticoagulation antecedent has to be considered per sea transcendental diagnostic criterion.

The decision to use fibrinolytic treatment was highly influenced by the previous postoperative complication. The second administration of fibrinolytic was based on a favourable response to the first dosage and the already abundant studies which show a benefit in repeating dosage with an incomplete initial response. Although, one of the studies indicates that a complete lack of response to a first administration is also related to a high probability of failure in subsequent administrations.[5]

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