Does Antiphospholipid Antibody Syndrome Affect Bioprosthetic Heart Valve?  
Midterm Echocardiographic Report

Cardiovascular involvements in antiphospholipid antibody syndrome have been recognized as a major complication of this disease. Furthermore, some papers report bioprosthetic heart valve also seems to be affected. A 32-year-old female with aortic regurgitation presented to our hospital. Further examination revealed high titer of anticardiolipin beta 2 glycoprotein 1 antibody, and she was diagnosed as having primary antiphospholipid antibody syndrome since the patient failed to match the criteria of systemic lupus erythematosus. Cardiopulmonary bypass was uneventfully conducted under systemic heparinization of usual dosage. Administration of warfarin sodium was started on the third postoperative day, and international normalized ratio was controlled from 2.0 to 2.5. On echocardiographic examination at 1 month, mean systolic gradient was 17 mmHg. Although transesophageal echocardiography at 2 years after surgery revealed no sign of valvular destruction or sclerosis, transaortic gradient had increased to 26 mmHg. Bioprosthetic stenosis was suspected probably due to pannus formation and the patient may have to undergo another valve replacement in the near future.

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Key words: antiphospholipid antibody syndrome, aortic regurgitation, bioprosthetic heart valve, echocardiography, pressure gradient

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As involvement of heart valves has been increasingly recognized as a major complication of antiphospholipid antibody syndrome (APS), reports on value replacements have been increasing in number.1-3 According to recent papers, APS seems to affect bioprosthetic valves.4,5 A case of APS who underwent aortic valve replacement with a bioprosthesis is presented in this paper.

Case

A 32-year-old female was referred to our hospital for aortic valve replacement. The patient was first diagnosed with hypertension and aortic regurgitation at the age of 19. Thereafter, she experienced two spontaneous abortions of unknown reasons. Physical examination at admission revealed blood pressure of 128/50 mmHg and pulse of 72 beats/min under medication. The hematological and chemical laboratory data of the patient at admission were as follows: white blood cell, 3,200/μl; hemoglobin, 8.3 g/dl; platelet, 123,000/μl; serum urea nitrogen, 40 mg/dl; creatinine, 1.57 mg/dl; C-reactive protein, 0.18; prothrombin time, 12.6 seconds [international normalized ratio (INR) 1.00]; partial prothrombin time, 55.1 seconds (normal range 29–44). Creatinine clearance was 46 ml/min. The coronary angiogram showed meanders with no stenotic or sclerotic lesions. Echocardiogram revealed three aortic cusps with increased echogenicity of their free edges as well as aortic regurgitation of grade 3/4.

Further examinations for the reduced renal function and hematological counts revealed high titer of anticardiolipin beta 2 glycoprotein 1 antibody (60.2 U/ml, normal<3.5). The findings of antinuclear...
antibody (ANA) and anti ss-deoxyribonucleic acid (DNA) antibody were also positive. Those of lupus anticoagulants and antibodies to ds-DNA, ribonucleoprotein (RNP), Sm and SS-A were negative. Magnetic resonance (MR) imaging showed an asymptomatic cerebral infarction in the left caudate. The patient was diagnosed as having primary APS (PAPS) since she failed to meet the criteria of systemic lupus erythematosus (SLE).

The patient underwent aortic valve replacement with a bioprosthetic valve (25 mm Medtronic Mosaic® aortic bioprosthesis) because she sustained the desire to bear a child. Usual dosage of heparin was administered for systemic heparinization. On exposure of the aortic valve, the free edges as well as the midportions of the cusps were thickened and sclerotic although the bases were thin. Soft vegetations were evident mainly on the aortic surface (Fig. 1). Histopathological examination revealed thrombofibrotic vegetations on the cusps, which was considered to be a specific finding of valvular lesions in APS (Fig. 2). Immunohistological staining for immunoglobulin G was negative.

The postoperative course was uneventful and transthoracic echocardiography carried out 1 month after the operation revealed the findings shown in Table I. Although a bioprosthetic valve was implanted, administration of warfarin sodium was continued for prevention of thromboembolic events due to APS. INR was controlled from 2.0 to 2.5.

2 years after the operation, transthoracic as well as transesophageal echocardiography was performed for accurate evaluation of the bioprosthetic heart valve (Table I). While no apparent destruction of the bioprosthesis was found on B-mode, increase in the mean pressure gradient across the valve was evident.