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Bioprosthetic Mitral Valve Thrombosis: Transesophageal Echocardiographic Features and Treatment

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Introduction: Mitral bioprosthetic valve thrombosis is occasionally found on pathologic examination, but preoperative diagnosis is rarely suspected.
Methods and results: Between 2001-2008, 103 pts underwent mitral valve (MV) replacement with a bioprosthesis. All had post-operative trans-thoracic echocardiograms (TTE). Transesophageal echocardiography (TEE) was performed in 28 (27%) of them, with clinical or echocardiographic criteria of prosthetic valve malfunction at 11±3 months post surgery. In 6 we detected homogenous and echodense masses, attached to the ventricular surface of the mitral bioprosthetic cusps, compatible with valve degeneration or pannus formation. 4 of the 6 pts underwent repeat surgery to replace their valve. In only 1 of these pts a pannus was found while in 3, pathological examination revealed that the artificial valve was covered with a thrombotic layer. In the other 2 pts with similar TEE findings, a trial of intravenous heparin followed by oral warfarin was initiated. On repeat TTE following 1 week of heparin treatment, the gradient across the MV diminished significantly and the clinical condition improved. Repeat TEE performed 78±16 days after warfarin treatment demonstrated complete disappearance of the echogenic masses and normal leaflet mobility. MV prosthetic mean gradient decreased from 21±4mmHg to 6.1±2.1mmHg, TI gradient decreased from 62.5mmHg to 41.5mmHg and MV area increased from 1.13±0.3 to 1.72±0.6cm. Clinical follow-up at 22±5 months showed symptomatic improvement.
Conclusions: MV bioprosthetic thrombosis is an underdiagnosed entity. In our study it occurred in 18% of cases with suspected valve malfunction. Echocardiography cannot always differentiate between the various causes of valve malfunction. Anticoagulation is effective in resolving bioprostheses thrombosis, and should be the first line of treatment before considering surgery.