EFFECT OF PROSTHESIS PATIENT MISMATCH IN MITRAL POSITION ON PULMONARY HYPERTENSION

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Introduction: Pulmonary arterial hypertension is a serious complication of mitral valve disease and a major risk factor for poor outcome after mitral valve replacement (MVR). We proposed to determine the effect of valve prosthesis patient mismatch (PPM) on pulmonary arterial (PA) pressure after MVR.

Methods: 500 patients who have undergone MVR were studied retrospectively. Postoperative pulmonary arterial systolic pressure (PASP) measured by doppler echocardiography was compared with preoperative values. PASP ≥ 40 mm Hg was defined as pulmonary arterial hypertension (PAH). Mitral valve effective orifice area (EOA) was determined by the continuity equation and indexed for body surface area. PPM was defined as indexed EOA (iEOA) ≤ 1.2 cm²/m².

Results: The incidence of PPM in the study was 37.2% (186/500). The average post-operative PASP was 30.49 mm Hg in patients without PPM, versus 42.35 mm Hg in patients with PPM. Regression of PAH was seen in 76.26% (196/257) of the patients without PPM, while patients with PPM showed a much lower regression of 20.64% (32/155); (p < 0.001). The iEOA correlated well with postoperative PASP (r = 0.71) and to a lesser extent with peak and mean gradients (r = 0.54; 0.42 respectively).

Conclusions: Persistent PAH is frequent after MVR and strongly associated with the presence of PPM. iEOA was by far the strongest predictor of PAH. The preventive strategy should therefore be focused on the implantation of the prosthesis having the largest EOA for a given size. This observation also underlines the need for the development of better performing mitral prostheses and provides further impetus for repairing rather than replacing the valve whenever possible.