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THE COMPARISON OF CHANGE OF RIGHT VENTRICULAR FUNCTION AFTER MITRAL VALVE REPLACEMENT BETWEEN PATIENTS WITH MITRAL STENOSIS AND MITRAL REGURGITATION

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Background: Mitral stenosis (MS) and mitral regurgitation (MR) have a different pathophysiology, though they have undergone the same operation. The change of left ventricular function after mitral valve replacement (MVR) in both diseases has been well known. However, there have been few reports comparing both diseases after MVR in terms of right ventricular (RV) function, especially at immediate postoperative period. We evaluated the change of RV function following MVR in MS and MR using Right-Heart Ejection Fraction (RVEF) Thermodilution pulmonary artery catheter.

Methods: With IRB approval, 27 patients with MS and 22 patients with MR undergoing MVR were included. Patients with tricuspid regurgitation were excluded. RVEF catheter was inserted before the induction of anesthesia. Hemodynamic parameters were measured after anesthesia (control, T1), immediately after the termination of cardiopulmonary bypass (T2) and after sternum was closed (T3). Comparisons between data were made using Student's t-test or repeated measures of analysis of variance, as appropriate. A P value less than 0.05 was considered as statistically significant.

Results: Pulmonary capillary wedge pressure (PCWP) and RV end systolic and diastolic volume (RVESV and RVEDV) were higher in MS than MR at T1 and there was no difference in RVEF. Heart rate increased and mean pulmonary artery pressure (mPAP), PCWP, and pulmonary vascular resistance significantly decreased at T2 and T3 in both groups. RVEF increased and RVESV and RVEDV decreased significantly only in MS at T2 compared with the values at T1. There was no significant difference in hemodynamic parameters between both groups at T2, T3.

Conclusions: There was no significant hemodynamic difference between MS and MR after MVR, though they are known to have a different preoperative pathophysiology and postoperative left ventricular function. However, RV function was significantly improved only in MS but not in MR immediately after MVR. The improvement of RV function in MS seemed to be associated with the decrease in RV afterload after MVR and no significant improvement of RV function in MR seemed to be due to relatively low preoperative PAP.

References

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