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**CLINICAL APPLICATION OF MIN-DIAMETER ATRIA STEEL-WIRE IN MODIFIED PERCUTANEOUS BALLOON MITRAL VALVULOPLASTY**

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**Objectives** To evaluate the efficacy, feasibility and safety of the min-diameter half and two convolutions atria steel-wire used in modified percutaneous balloon mitral valvuloplasty (PBMV).

**Methods** Totally 63 patients with moderate and severe mitralis stenosis of rheumatic valvular disease of the heart combined with thrombotic left auricle were enrolled from First Affiliated Hospital, Gannan Medical University between August 2003 and October 2005. After all patients received warfarin tabella for more than 3 months, thrombus disappeared in eight patients, while other 55 patients underwent PBMV with the min-diameter (3 cm) half and two convolutions atria steel-wire and single balloon Inoue technique after low dosage urokinase intravenous drip and low molecular heparin injection for 5 days to observe the changes of the modynamics and mitral valve orifice area after PBMV. After following-up for 6 months, pulmonary arterial pressure, inner diameter of left atrium and complication as systematic thromboembolism were observed.

**Results** A total of 54 patients were involved in the result analysis. During the trial, 8 without thrombus after warfarin anticoagulant therapy and 1 died of traffic accident were out of the result analysis. (1) After PBMV, mean left atrial pressure (LAPm) and mean mitral valve pressure gradient (MVPG) were remarkably lower than those before PBMV [ $10.3 \pm 2.1$ ], ( $28.5 \pm 3.2$ ) mm Hg,  $p < 0.05$ ; ( $3.4 \pm 2.8$ ), ( $16.8 \pm 3.8$ ) mm Hg,  $p < 0.01$ ]. Mitral valve orifice area (MVA) was larger distinctly than that before PBMV ( $1.67 \pm 0.34$ ), ( $0.86 \pm 0.26$ )  $\text{cm}^2$ ,  $p < 0.01$ ). (2) Six-months after PBMV left atrial diameter (LAD) was smaller dramatically than that before PBMV [ $46.5 \pm 4.3$ ], ( $65.3 \pm 3.4$ ) mm,  $p < 0.01$ ]. Pulmonary pressure (PP) was lower markedly than that before PBMV [ $31.5 \pm 12.7$ ], ( $63.8 \pm 12.3$ ) mm Hg,  $p < 0.05$ ]. Steel-wire with heart and human body was in the high consistence of biocompatibility. Its standard was accorded with ISO 10993. No rejection or systemic thromboembolism occurred during the operation and 24 h after operation.

**Conclusions** PBMV on patients after sufficient anticoagulation and thrombolysis combined the min-diameter half and two convolutions atria steel-wire that is used in improving single balloon Inoue technique is safe, feasible and effective.