Abstract: P912

Echocardiographic analysis of acute effects after treatment of functional mitral regurgitation by percutaneous mitral annuloplasty

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Topic(s):
Echocardiography: Valve Disease

Citation:
Background: Secondary or functional mitral regurgitation (FMR) is associated with increased morbidity and mortality, especially in heart failure patients, patients with many comorbidities and/or in the elderly. Previous studies about percutaneous mitral annuloplasty have shown evidence for long-term reduction of degree of FMR severity and left ventricular (LV) remodeling. In comparison to previous studies the present study did focus on the echocardiographic analysis of acute effects after percutaneous mitral annuloplasty (PMA).

Methods: Transthoracic echocardiography (TTE) has been performed in 30 patients with moderate or severe FMR before and after (± 3.5 days) percutaneous mitral annuloplasty (Carillon®). LV volumes and LV ejection fraction and semi-quantitative parameters, e.g. tenting Area, vena contracta and velocity-time-integral ratios of transmitral inflow and LV outflow (VTIMV/VTILVOT) were assessed. The assessment of the regurgitant volume (RV), regurgitant fraction (RF) and effective regurgitant orifice area (EROA) was quantitatively performed by the PISA method. RV and RF was also estimated by subtracting the effective forward stroke volume (SVLVOT, SVRVOT) from the total stroke volume (SVLV planimetry). Further, parameters of left ventricular contractility, e.g. global longitudinal strain (GLS), cardiac efficiency, peak power index etc., were assessed.

Results: a postinterventional reduction of degree of FMR severity was achieved in 25/30 patients (83%). In average, RF was reduced from 49 ± 11% to 34 ± 13% (p < 0.001), RV from 33 ± 13ml to 25 ± 12ml (p < 0.001) and EROA from 0.24 ± 0.1cm² to 0.19 ± 0.1cm² (p < 0.05). Significant decreases were also noted for vena contracta and VTIMV/LVOT. DiamMV (long axis) was reduced from 3.6 ± 0.6cm to 3.4± 0.6cm (p < 0.001), DiamMV (4-chamber view) from 3.9 ± 0.5cm to 3.6 ± 0.6cm (p < 0.05). In patients with sinus rhythm (SR) or pacemaker stimulation a considerably higher reduction of RF was observed (?RF 20 ± 12%) in comparison to patients with atrial fibrillation (?RF 10 ± 12%). No significant changes were obtained for parameters of LV remodeling and LV contractility, e.g. GLS, cardiac efficiency, peak power index etc., were assessed.

Conclusion: A reduction of degree of FMR severity can be achieved by percutaneous mitral annuloplasty (PMA) and acute effects can be quantitatively assessed by echocardiography. Further data are necessary to evaluate whether these acute effects will maintain in follow-up investigations.
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