Poster Session

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Contractile reserve predicts reverse remodelling after successful percutaneous mitral valve repair in patients with functional mitral regurgitation

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Background: Recent randomised trials have shown conflicting results regarding the usefulness of percutaneous mitral valve repair using MitraClip in patients with severe functional mitral regurgitation (FMR). At present, it remains unclear whether patients with FMR and advanced heart failure might benefit from MitraClip therapy. Moreover, it has been shown that left ventricular reverse remodelling (LVRR) post-MitraClip is associated with a favourable outcome.

Purpose: We sought to assess whether baseline contractile reserve (CR) can predict LVRR and improvement of LV ejection fraction (EF) in FMR patients undergoing MitraClip therapy.

Methods: Consecutive patients with symptomatic severe FMR referred for MitraClip were recruited in two tertiary centres. All patients were scheduled for a semi-supine bicycle exercise echocardiography before and 6 months after the intervention. Patients who were not able to perform an exercise test and who did not complete 6 month follow up were excluded from further analysis. Baseline CR was obtained by subtracting peak exercise LVEF from LVEF at rest. LVRR was defined as a 10% decrease in LV end systolic volume (ESV) at follow-up.

Results: 34 patients completed 6 month follow up (61% male, age 71 ± 10 years, LVEF 32 ± 8%). LVRR was observed in 15 patients (44%). We found a trend towards a moderate correlation between baseline CR and relative decrease in LVESV at 6 months (Pearson Rho -0.321, $p = 0.064$). This correlation became significant in a sub-analysis considering only patients with post-procedural FMR grade ≤2 ($n = 27$; Pearson Rho -0.444, $p = 0.020$). In contrast, LVRR was not related to baseline LVEF, LV dimensions or volumes. Furthermore, baseline CR was strongly correlated with an increase of LVEF at 6 months post-MitraClip in these patients (Pearson Rho 0.653, $p < 0.001$).

Conclusion: CR predicts LVRR and improvement of LVEF in patients with FMR after successful MitraClip therapy (reduction of FMR towards grade ≤2), in contrast to resting indices of LV dysfunction and dilatation. More studies with outcome data are needed to determine whether CR is a useful parameter to identify patients with FMR who might benefit from MitraClip therapy.