Adapting the concepts of proportionate and disproportionate functional mitral regurgitation to clinical practice

Lopes P.; Albuquerque F.; Freitas P.; Gama F.; Horta E.; Reis C.; Abecasis J.; Trabulo M.; Ferreira A.; Canada M.; Ribeiras R.; Mendes M.; Andrade MJ.

Hospital Santa Cruz, Carnaxide, Portugal

Funding Acknowledgements: Type of funding sources: None.

Background: Despite its theoretical appeal, the concept of Proportionate and Disproportionate FMR has been limited by the lack of a simple way to assess it and by the paucity of data showing its prognostic superiority over currently established ways of grading FMR.

Objectives: This study sought to evaluate the prognostic value of a new and individualized method of assessing Functional Mitral Regurgitation (FMR) Proportionality.

Methods: Patients with at least mild FMR and reduced left ventricular ejection fraction (< 50%) under optimal guideline-directed medical therapy were retrospectively identified at a single-center. To determine FMR proportionality status, we used a novel approach where two simple equations establish an individual cut-off of regurgitant volume/effective regurgitant orifice area, categorizing the study population into non-severe, proportionate and disproportionate FMR (Figure 1). The primary endpoint was all-cause mortality.

Results: A total of 572 patients (median age 70 years; 76% male) were included. Median LVEF was 35% (IQR 28-40) and LVEDV was 169 ml (IQR 132-215). Disproportionate FMR was present in 109 patients (19%) with a median EROA of 26 mm2 (IQR 22-31) and a median RegVol of 40 ml (IQR 34-48), proportionate FMR in 148 patients (26%) with a median EROA of 16mm2 (IQR 12-21) and a median RegVol of 26 ml (IQR 19-32). During a median follow-up of 3.8 years (interquartile range: 1.8 to 6.2 years) there were 254 deaths (44%). The unadjusted mortality incidence per 100 persons-year rose as the degree of FMR disproportionality worsened. On multivariable analysis, disproportionate FMR remained independently associated with all-cause mortality (adjusted hazard ratio: 1.785; 95% confidence interval [CI]: 1.249 to 2.550; P = 0.001). The FMR proportionality concept showed greater discriminative power (C-statistic 0.639; 95% CI: 0.597 to 0.680) than the American (C-statistic 0.588; 95% CI: 0.550 to 0.626; P for comparison = .001) and European guidelines (C-statistic 0.563; 95% CI: 0.534 to 0.591; P for comparison < .001). It was also able to increase the net reclassification index (0.167 [P < 0.001] and 0.084 [P = 0.001], respectively).

Conclusions: A new, simplified and individualized method of assessing FMR Proportionality showed that disproportionate FMR is independently associated with all-cause mortality. This approach seems to outperform the risk stratification of current guidelines.

Abstract Figure 1