Regurgitant volume to left ventricular end-diastolic volume ratio: another step to risk stratification in patients with secondary mitral regurgitation?

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Funding Acknowledgements: Type of funding sources: None.

Background: Quantitative evaluation of secondary mitral valve regurgitation (MR) remains an important yet challenging step in the evaluation of this entity. Its severity can be underestimated when using the proximal isovelocity surface area (PISA) method, which does not take left ventricular (LV) volume into account. Normalizing mitral regurgitant volume (Rvol) for the LV end-diastolic volume (EDV) might overcome this key limitation. This study aimed to investigate the prognostic implication of Rvol/EDV ratio in patients with secondary MR.

Methods: Patients with at least mild secondary MR and reduced left ventricular ejection fraction (<50%) under optimal guidelines-directed medical therapy were retrospectively identified at a single-center. The cohort was divided into terciles according to the RVol/EDV ratio. 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). Median measures of secondary MR were EROA 14 mm2 (IQR 8-22) and RegVol 23 ml (12-34). 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 increases across terciles distribution. Patients at the 2nd and 3rd terciles of the RVol/EDV ratio showed significantly higher mortality when compared to those at the 1st one (baseline reference) (figure 1). After multivariable analysis, terciles of the Rvol/EDV ratio remained independently associated with increased all-cause mortality (considering the 1st tercile as the reference; adjusted HR for the 2nd tercile 1.46 [95% CI 1.05- 2.02] p = 0.023; adjusted HR for 3rd tercile 1.56 [95% CI 1.09 – 2.22], p = 0.015).

Conclusion: In patients with secondary MR, Rvol/EDV ratio is independently associated with all-cause mortality. However, the appropriate cut-off to determine any kind of clinical decision remains to be determined.

Abstract Figure.