Disproportionate MR and 5-year mortality following acute heart failure hospitalisation

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Background: The clinical implications of disproportionate mitral regurgitation (DispMR) is contentious and uncertainty remains if this cohort of patients benefit from intervention. Its prognostic significance in acute heart failure remains incompletely investigated.

Purpose: To examine whether DispMR, defined by the ratio of the effective regurgitant orifice area (ERO)/LVEDV >0.14mm²/ml, is an independent predictor of long-term mortality following hospitalisation for AHF.

Methods: 418 consecutive AHF patients were recruited and followed up for the primary outcome of all-cause, 5-year mortality. A key secondary outcome was cardiovascular (CV) death. Patients were recruited if they displayed signs and symptoms of AHF, had point-of-care brain-natriuretic peptide >100pg/ml and had evidence of AHF on comprehensive bedside transthoracic echocardiography. 30 variables encompassing age, gender, BMI, a history of COPD, CKD, hypertension, diabetes, previous CVA, CAD, AF on admission ECG, admission systolic BP, NYHA classification, heart rate, Na, BNP, urea, anaemia, LA size, RA size, TR severity, lateral E/e’>14, RV diastolic area, TAPSE, SPAP, LVEF phenotype, a loop diuretic, MRA, beta-blocker, ARB/ACE-I, CCB or statin prescribed on discharge were included. Multivariate Cox-proportional hazard models were constructed to test for an independent prognostic role of DispMR. Missing outcome data was right-censored.

Results: 313/418 (74.8%) displayed secondary MR and had quantifiable ERO and LVEDV (median age 81, 53.4% male) and were included in analysis. 217/313 (66.5%) displayed DispMR. Kaplan-Meier curve analysis revealed worse all-cause mortality in DispMR vs. proportionate MR (HR 1.72 95% CI 1.31-2.27 [p<0.001]). On multivariable analysis DispMR was independently associated with all-cause mortality (HR 1.77 (95% CI 1.26-2.51 [p=0.0012]), 284/313 (90.7%) had CV mortality data available. DispMR was associated with increased risk of 5-year, unadjusted, CV mortality compared to proportionate MR (HR 1.72 95% CI 1.31-2.27 [p<0.001]). These effects were present across all ejection fraction phenotypes.

Conclusions: Among patients with quantifiable MR in AHF, the presence of DispMR was independently associated with long-term outcome. These results suggest assessment of MR within the context of LV volumes can identify patients at increased risk and should have implications for future guidelines.
Unadjusted CV death HR 1.72 (95% CI 1.31-2.27 [p<0.001])

Survival probability (%)

- Proportionate MR
- Disproportionate MR