

## Mitral regurgitation in acute heart failure: prevalence and response to treatment

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Heart failure (HF) affects an estimated 90 000 people within the UK. As a consequence of ventricular remodelling, mitral regurgitation (MR) is common in patients with HF, further contributing to poor prognosis, frequent hospitalisation, and higher rates of mortality. Conventional treatment options include medical therapy, cardiac resynchronisation and conventional mitral valve surgery, with transcatheter mitral valve repair (TMVR) reserved for symptomatic patients with left ventricular dysfunction and multiple comorbidities, considered high surgical risk.

**Aim:** Our objectives were to determine: (1) the proportion of patients with an acute HF admission, ejection fraction (EF) of <50% and moderate or more MR; (2) the effectiveness of optimal medical therapy (OMT) in reducing the severity of MR and symptoms; (3) the number of patients with moderate or more MR, EF <50% and symptoms despite OMT.

**Method:** We performed a retrospective analysis of patients who presented with acute HF to two large tertiary centres over a five-year period. Based on a combination of electronic care records, and national registry and mortality data, we determined baseline symptoms, symptom progression, and co-morbidities. Echocardiography data was used to assess the degree of MR and EF. Where patients underwent a subsequent echocardiogram on OMT, the change in the degree of MR, EF and symptoms (NYHA class) was examined.

**Results:** Over a five-year period (Jan 2012–Dec 2017), 1884 patients pre-

sented with acute HF. Of this cohort, 302 (16%) had moderate or more MR and EF of <50%. Mortality amongst patients with moderate or more MR was 29.9% at one year (compared to 26.9% for those with less than moderate MR,  $p=0.058$ ). Of this cohort, 45% had sufficient clinical and echocardiographic paired follow up data to enable assessment of the effects of OMT (Age  $78\pm 20.78$ ; Male  $n=76$  (56.3%). This analysis showed, despite OMT, all 135 patients still had moderate or more MR. When compared with previous echocardiography data, 11 (8%) patients showed a reduction in the severity of MR which meant 92% (124) of patient with MR either saw no improvement or worsening of their MR severity. Of those with severe MR, 23% (7) demonstrated an improvement in the degree of MR following OMT. Clinically 70 (51.4%) patients had an improvement in symptoms. There was significant improvement in the NYHA class pre and post optimisation of medical therapy ( $p<0.001$ ) across all grades of MR. Despite OMT, 124 (92%) patients with moderate or more MR and EF <50% remained symptomatic.

**Conclusions:** A large portion of patients who present with acute HF have moderate or more MR. Although medical therapy is effective in providing some relief from symptoms, the large majority of patients continue to have moderate or more MR. We propose a portion of these patients are potential candidates for TMVR, and should be considered for further intervention.