Incidence of Viral Infections as a Cause of Acute Decompensation of Heart Failure and the Prevalence of Viral Testing in a Tertiary Referral Centre

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Background: In patients with heart failure (HF), viral infection is postulated to cause acute exacerbations, resulting in more frequent hospitalisations and longer hospital stays. Early diagnosis of a viral cause for decompensation could streamline HF treatment and reduce unnecessary investigations, potentially reducing length of admission. However, the prevalence of viral testing is unclear.

Objectives: Our aims were to determine viral testing uptake in patients with acute decompensated HF, and the impact of viral infection on length of admission.

Methods: We retrospectively examined all admissions categorised as acute decompensated HF (based on DRG coding) in a tertiary hospital from 2014-2018. Demographic information, comorbidities and evidence of viral infection (defined by positive viral swabs or serology) were obtained from medical records. Length of admission was compared between patients with positive viral testing and those without.

Results: We examined 470 admissions for acute HF exacerbation, in a cohort of 248 HF patients (age 66.1 ± 15.6 years; 34% female). Investigations for viral cause of decompensation only occurred in 172 (37%) admissions. A respiratory virus was identified in 43 cases (24%). Compared to those who experienced a non-infective exacerbation of HF, patients who tested positive for a viral pathogen had significantly longer length of stay (13.4 days vs 9.1 days, \( p = 0.04 \)).

Conclusions: Our results suggest that there is significant under-testing and under-diagnosis of viral infection in patients presenting with acute decompensated HF. The uptake of viral screening in these patients should be further encouraged to better streamline management of HF exacerbations and optimise preventative strategies.

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Inclusion of Left Atrial Strain Evaluation with the “H2FPEF Score” Enhances Diagnostic Accuracy for Heart Failure with Preserved Ejection Fraction

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Background: Invasive catheterisation remains the gold standard diagnosis of Heart Failure with Preserved Ejection Fraction (HFpEF). Non-invasive assessment remains challenging due to variable diagnostic accuracy of clinical and echocardiographic features. We assessed the added utility of a sensitive and specific marker, LA strain, to the recently proposed “H2FPEF score”.

Methods: This retrospective study analysed 240 patients with unexplained dyspnoea referred for invasive and non-invasive haemodynamic assessment to differentiate HFpEF from non-cardiac dyspnoea (NCD). Logistic regression was performed on 77 patients with valid left atrial (LA) strain data using the H2FPEF score and assessing the added effect of LA strain on predictive power.

Results: Regression analysis was conducted on 54 HFpEF and 23 NCD patients, using the H2FPEF score (age >60, BMI >30 kg/m2, atrial fibrillation, echocardiographic E/e’ ratio >9 and RVSP >35 mmHg). The second model incorporated LA strain using a regression-derived beta coefficient. The odds of HFpEF was doubled for each 1-unit score increase (OR 2.79, 95% CI, 0.589–0.839, \( p = 0.003 \)) with an area under the curve (AUC) of 0.714. LA global strain augmented the predictive power of the H2FPEF score (OR 3.83, 95% CI, 0.766–0.948, \( p = 0.001 \)) with an AUC 0.857 (\( p = 0.006 \)).

Conclusions: We propose that a modification of the H2FPEF score which incorporates LA strain may augment the non-invasive diagnosis of HFpEF and also provide a tool for the development of more accurate inclusion in HFpEF clinical trials.

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