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High Output Heart Failure, A Lethal and Forgotten Cause of Heart Failure

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Introduction

Cardiac output (CO) is usually low or normal in patients with heart failure. However, some patients have a high CO deemed high-output heart failure (HOHF). HOHF is not well characterized and continues to be under-recognized clinically. At the Detroit VA, we conducted a quality improvement project to define the characteristics of this unique patient population, identify predictors and increase awareness of this entity.

Methods

Patients with HOHF were compared to patients with heart failure with preserved ejection fraction (HFpEF) and normal CO. HOHF was defined as CO >8 L/minute on right heart catheterization performed between 2008-2021. Retrospective data regarding hemodynamics, comorbidities, and mortality were collected and compared using descriptive and univariate analyses.

Results

There were no significant differences in age or race between the groups or in the rate of comorbidities analyzed except for tobacco smoking and CKD which were higher in the HOHF group. Majority of the patients in the HOHF group had preserved EF (91%). Patients had a similar mean wedge pressure, but the HOHF group had significantly lower pulmonary vascular resistance and systemic vascular resistance. Mortality among patients with HOHF was 48.6% compared to the comparative group of 18.9% ($p < 0.05$). The diagnosis of HOHF was made only 13% of the time.

Conclusion

In this single center study comparing HOHF to HFpEF, the HOHF group had significantly higher mortality compared to the HFpEF group, despite similar comorbidities, wedge pressure and demographics. The diagnosis of HOHF was not made in majority of the cases, suggesting under recognition. We aim to create awareness of this entity among providers and highlight the need for early referral for right heart catheterization, given that HOHF can be erroneously diagnosed as HFpEF without invasive measurements. Clinical trials allocated towards management of this entity is overdue.