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Title: Prognostic value of ventricular volumes and function in patients with pulmonary hypertension due to chronic obstructive pulmonary disease

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Body: Background This study investigated the relationship between ventricular structure and function and survival in patients with pulmonary hypertension due to COPD (PH-COPD). Methods 55 patients were evaluated with cardiac magnetic resonance imaging, right heart catheterization, lung function and CT emphysema scoring. Cardiac gated CINE MR and phase contrast imaging sequences were acquired in all patients. During follow-up of 42 months, 16 patients died. Cardiac volumes and function were analysed as predictors of mortality. Results Low SV measured by phase contrast MRI predicted mortality independent of demographic, haemodynamic, lung function and emphysema severity data ($p=0.029$). LVEF predicted mortality from univariate analysis ($p=0.017$), but did not reach significance at multivariate analysis ($p=0.573$). According to Kaplan–Meier survival curves, outcome was less favourable for patients with an inframedian SV index $< 40 \text{ mL/m}^2$ (log rank; $p=0.007$), and worse outcome was associated with a LVEF $< 61\%$.

Right ventricular end-diastolic and systolic volume and left ventricular end-diastolic and end-systolic did not significantly predict mortality at Cox proportional hazards regression or Kaplan -Meier analysis. Conclusions Low SV is a strong predictor of adverse outcome in patients with PH-COPD. Static ventricular volumes did not aid the prediction of adverse outcome.