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Title: Pulmonary vascular gradient: A predictor of prognosis in pulmonary hypertension due to left heart disease

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Body: **PURPOSE:** Pulmonary hypertension (PH) is defined by a mean pulmonary artery pressure (mPAP) ≥ 25 mmHg. The disease can be further classified into pre- (pulmonary capillary wedge pressure, PCWP ≤ 15 mmHg) and post-capillary PH (PCWP > 15 mmHg). The driving pressure across the pulmonary circulation is often referred to as the transpulmonary gradient (TPG). In the current guidelines post-capillary PH with a TPG > 12 mmHg is labeled as “out-of-proportion” PH, as opposed to what is labeled as “passive” PH, i.e. PH as the consequence of elevated left ventricular filling pressures. The difference between the diastolic pulmonary artery pressure and mean PCWP theoretically represents the pressure gradient between the major pulmonary arteries and the left atrium, comprising the anatomical space of arterioles, capillaries and pulmonary veins. We refer to this hemodynamic value as pulmonary vascular gradient (PVG), and hypothesize that it reflects resistance created in the vascular compartment affected by classical pulmonary arteriopathy. The aim of this study was to test the prognostic value of PVG in post-capillary PH. **METHODS:** 3107 diagnostic right and left heart catheterizations at rest were analyzed. 1094 of 2351 complete datasets were from patients post-capillary PH. Patients were followed for 137 months. **RESULTS:** Survival analysis identified a TPG > 12 mmHg as a predictor of death in patients with PH. In patients with out-of-proportion PH median survival with a PVG ≥ 7 mmHg ($p=0.010$) was worse (78 months) than in matched patients with a PVG < 7 mmHg (101 months). **CONCLUSION:** Our data show that a PVG threshold of 7 mmHg identifies patients with out-of-proportion PH who have an increased mortality.