ENDOTHELIN-1 LEVELS IN PULMONARY HYPERTENSION: A COMPARISON BETWEEN PULMONARY ARTERIAL HYPERTENSION AND DIASTOLIC HEART FAILURE-INDUCED PULMONARY HYPERTENSION

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Background: Endothelin-1 (ET-1), a potent vasoconstrictor, is elevated in heart failure states as well as in pulmonary arterial hypertension (PAH). Additionally, ET-1 receptor blockade is a mainstay of PAH treatment. Diastolic heart failure (DHF) is a common cause of secondary pulmonary hypertension (D-PH), and elevated pulmonary arterial pressure is associated with increased mortality in DHF. As new clinical trials are designed to evaluate the role of ET-1 antagonism in D-PH, we compared serum ET-1 levels in patients with PAH, D-PH, and normal controls to more clearly understand the neurohormonal milieu of D-PH.

Methods: We measured serum ET-1 levels in patients with PAH (mean PA pressure >25 mmHg, PCWP <15 mmHg, gradient PA-diastolic PCWP >5 mmHg), D-PH (left ventricular ejection fraction ≥50%, mean PA pressure >25 mmHg, gradient PA-diastolic PCWP ≤5 mmHg), and normal controls.

Results: Thirty, 34 and 18 patients comprised the above patient groups, respectively. Median ET-1 levels were significantly different across all groups (p=0.001) with higher levels in the PAH (1.545 fmol/ml, range 0.31-100) and D-PH (1.30 fmol/ml, range 0.14-1000) groups as compared to controls (0.44 fmol/ml, range 0.02-3.88; p=0.0001 and p=0.0005, respectively). There was no significant difference in median ET-1 levels between D-PH and PAH groups (p=0.25).

Conclusions: This study is the first to compare ET-1 levels in PAH, D-PH, and normal controls and suggests a role of ET-1 in the pathogenesis and perhaps treatment of D-PH.