Characterization of Patients with Pulmonary Hypertension According to Pulmonary Capillary Wedge Pressure and Pulmonary Vascular Resistance: A Doppler Echocardiographic Study

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Background: Systolic pulmonary artery (PA) pressure which is usually reported in echo results might not be sufficient to characterize the underlying mechanisms

Methods: 150 adult outpatients with systolic PA pressure > 40 mmHg were identified from the data-base of our echo-lab. Pulmonary capillary wedge pressure (WP) was calculated from early mitral inflow and flow propagation velocity according to validated equation. A cutoff value of 18mmHG was used to separate between groups with high and low values. PA vascular resistance (PVR) was calculated from tricuspid regurgitation velocity and time velocity integral at the RVOT. A value of 1.8 wood-units was used to separate among groups. Patients were divided into 4 groups: 1- low WP low PVR, 2 - low WP high PVR, 3- high WP low PVR, 4-high WP high PVR.

Results: Mean age was 71, 57% women, 71% hypertension, 25% post MI and 13% post CABG. Groups 1-4 included 48, 37, 22 and 43 patients respectively. PA pressure (mmHG) was similar in the 4 groups: 47, 52, 48 and 55 respectively. LV ejection fraction (%) were 51, 46, 47 and 38 respectively ($p<0.001$). left atrial area was significantly higher and mitral regurgitation was graded as more severe in groups 3 and 4. Cardiac output was related to PVR (significantly higher values in groups 1 and 3).

Conclusions: Ambulatory cardiac patients with pulmonary hypertension differ in the pathophysiology of their disease as defined by left heart function and PVR. Characterization of these pathophysiological parameters might have implications to therapy and prognosis.