

## Distinguishing echocardiographic findings in acute pulmonary embolism: Useful features to differentiate acute from chronic pulmonary hypertension & useful echocardiographic findings in differentiating acute from chronic pulmonary hypertension

**Angel Lopez Candales**

University of Cincinnati College of Medicine, USA

**Background:** Chronic pulmonary hypertension (cPH) and acute pulmonary embolism (aPE) are known to increase pulmonary vascular resistance through drastically different mechanisms. Regardless, of the mechanistic injury, both conditions are characterized by varying degrees of right ventricular (RV) dilatation and systolic dysfunction. Based on our understanding of pulmonary circulation dynamics and vascular-ventricular interactions; detrimental effects of aPE on the RV should be accounted for more accurately than relying in crude visual assessments of RV hypo kinesis and dilatation. This study attempted to determine whether objective measures of RV size and systolic function not only would be useful in the echocardiographic diagnosis of aPE, but also in differentiating aPE than cPH.

**Methods:** Standard echo measures of main RV as well as RV outflow tract (RVOT) size and systolic performance calculations were retrospectively measured from 15 patients with confirmed aPE by chest computed tomography and compared to similar data collected from 15 patients with moderate (mcPH), 15 patients with severe (scPH) and 15 patients without pulmonary hypertension.

**Results:** Patient data is shown (Table). There was no statistical difference in terms of age between the groups. Even though estimated pulmonary pressures in aPE patients range between mcPH and scPH patients; all parameters of RV size and systolic function in aPE mirror those of scPH patients with the exception of end systolic RV to left ventricular length ratio (Figure A), RVOT fractional area change (Figure B), and velocity time integral of the RVOT signal (Figure C) were all significantly lower in aPE when compared to both mcPH and scPH patients.

**Conclusion:** RVOTfac is lower than traditional RVfac calculation in aPE and this reduction in RVOTfac appears useful in diagnosing aPE. Finally, a significantly reduced RVOTfac not only is suggestive of impairment in global RV contractility but also reflective of the acute hemodynamic derangement seen in aPE patients.

lopezcal@ucmail.uc.edu