

Abstract Submitted
for the DFD12 Meeting of
The American Physical Society

Right Ventricular Hemodynamics in Patients with Pulmonary Hypertension JAMES BROWNING, University of Colorado Boulder, BRETT FENSTER, National Jewish Health and University of Colorado Denver, JEAN HERTZBERG, University of Colorado Boulder, JOYCE SCHROEDER, National Jewish Health and University of Colorado Denver — Recent advances in cardiac magnetic resonance imaging (CMR) have allowed for characterization of blood flow in the right ventricle (RV), including calculation of vorticity and circulation, and qualitative visual assessment of coherent flow patterns. In this study, we investigate qualitative and quantitative differences in right ventricular hemodynamics between subjects with pulmonary hypertension (PH) and normal controls. Fifteen (15) PH subjects and 10 age-matched controls underwent same day 3D time resolved CMR and echocardiography. Echocardiography was used to determine right ventricular diastolic function as well as pulmonary artery systolic pressure (PASP). Velocity vectors, vorticity vectors, and streamlines in the RV were visualized in Paraview and total RV Early (E) and Atrial (A) wave diastolic vorticity was quantified. Visualizations of blood flow in the RV are presented for PH and normal subjects. The hypothesis that PH subjects exhibit different RV vorticity levels than normals during diastole is tested and the relationship between RV vorticity and PASP is explored. The mechanics of RV vortex formation are discussed within the context of pulmonary arterial pressure and right ventricular diastolic function coincident with PH.

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Date submitted: 02 Aug 2012

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