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Title: Right ventricular global strain and right ventricular dyssynchrony can predict success to pulmonary vasodilators therapy in PH patients

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Body: Background Transthoracic echocardiography (TTE) is used to evaluate right ventricular (RV) function in pulmonary hypertension (PH) patients. RV function is assessed using TAPSE or RV end-diastolic area/ LV end-diastolic area ratio (RVEDA/LVEDA). RV speckle tracking strain can quantify regional contraction. Pulmonary vasodilators can improve functional status and prognosis but their effects on RV function are poorly described. The aim of our study is to test whether response to pulmonary vasodilators can be predicted by change in RV regional strain. Methods 16 patients were prospectively included. They underwent right heart catheterization, usual and 2D strain TTE at baseline and after 3 months of pulmonary vasodilators: PDE5 inhibitors,endothelin receptors antagonists,prostacyclin (single or combination therapy). Success or failure to pulmonary vasodilators were defined according to the guidelines. Results At baseline:MPAP was 44±11 mmHg, PAPO 11± 3 mmHg, cardiac index 3.06± 0.73 L/min/m^2, RVEDA/LVEDA 1.03 ± 0.43, RV global strain: 12.29± 5.34% and RV dyssynchrony: 124± 78 msec. A change in global RV strain higher than 70% (-100 to 122%) could predict success to pulmonary vasodilators with a specificity of 100%, a change in RV dyssynchrony of 96 msec could predict success to treatment with a sensitivity of 100%. Change in TAPSE or RVEDA/LVEDA were not accurate enough to predict response to pulmonary vasodilators. Conclusion Success to pulmonary vasodilators therapy in PH patients can be predicted by changes in regional right ventricular contraction using longitudinal right ventricular strain and right ventricular dyssynchrony analysis.