Abstract: 4306

Hemodynamic correlates of tricuspid annular pulmonary systolic excursion (TAPSE)/systolic pulmonary arterial pressure (SPAP) ratio in heart failure with reduced ejection fraction

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Background: the TAPSE/SPAP ratio has gained a role as an easy-to-use surrogate of right ventricle-to-pulmonary circulation (RV-PC) coupling, showing a strong prognostic significance in heart failure (HF) patients. The hemodynamic determinants of TAPSE/SPAP ratio, as assessed by invasive approach, have not been fully elucidated.
Aim: To identify the right heart hemodynamic variables correlated with TAPSE/SPAP in a HF with reduced EF (HFrEF) cohort, at rest and during exercise.
Methods: 24 HFrEF patients (age 67±11 years LV EF 27±7) underwent to rest and exercise echocardiography and performed right heart catheterization within 24 hours. Bivariate correlations between TAPSE/SPAP ratio (at rest and exercise), right heart hemodynamic variables, RV systolic function and NTproBNP have been explored.
Results: TAPSE/SPAP ratio at rest showed a moderate correlation with pulmonary artery wedge pressure (PAWP: r= 0.432; p= 0.039), pulmonary artery pressures (PAP systolic: r=0.474; p= 0.026; PAP diastolic: r= 0.434; p= 0.043; mPAP: r= 0.476; p= 0.025), pulmonary vascular resistance and compliance (r= 0.475; p= 0.041), while a stronger correlation was identified with right atrial (RAP systolic: r= 0.571; p= 0.017; RAP diastolic: r= 0.675; p= 0.006) and right ventricular pressures- in particular diastolic ones (RVP systolic: r= 0.584; p= 0.004; RAP diastolic: r= 0.646; p= 0.002). No significant correlation was found with NTproBNP and RV 3D EF. Exercise TAPSE/SPAP ratio significantly correlated with right atrium (RAP systolic: r= 0.564; p= 0.036) and right ventricle systolic pressures only (RVP systolic: r= 0.765; p< 0.001).
Conclusions: TAPSE/SPAP ratio at rest showed a stronger correlation with invasively derived diastolic right heart pressure rather than pulmonary vascular bed pressures. A similar correlation was also observed for exercise TAPSE/SPAP ratio. This tight correlation with RV, rather than vascular pressures, supports the significance of the ratio as a marker of RV adaptation to vascular overload.
Abstract:
Hemodynamic correlates of tricuspid annular pulmonary systolic excursion (TAPSE)/systolic pulmonary arterial pressure (SPAP) ratio in heart failure with reduced ejection fraction (HFrEF) have not been fully elucidated.

Aim: To identify the right heart hemodynamic variables correlated with TAPSE/SPAP in a HFrEF cohort, at rest and during exercise.

Methods: 24 HFrEF patients (age 67±11 years LV EF 27±7) underwent rest and exercise echocardiography and performed right heart catheterization within 24 hours. Bivariate correlations between TAPSE/SPAP ratio (at rest and exercise), right heart hemodynamic variables, RV systolic function and NTproBNP have been explored.

Results: TAPSE/SPAP ratio at rest showed a moderate correlation with pulmonary artery wedge pressure (PAWP: r= 0.432; p= 0.039), pulmonary artery pressures (PAP systolic: r=0.474; p= 0.026; PAP diastolic: r=0.434; p=0.043; mPAP: r=0.476; p=0.025), pulmonary vascular resistance and compliance (r=0.475; p=0.041), while a stronger correlation was identified with right atrial (RAP systolic: r=0.571; p=0.017; RAP diastolic: r=0.675; p=0.006) and right ventricular pressures— in particular diastolic ones (RVP systolic: r=0.584; p=0.004; RVP diastolic: r=0.646; p=0.002). No significant correlation was found with NTproBNP and RV 3D EF. Exercise TAPSE/SPAP ratio significantly correlated with right atrium (RAP systolic: r=0.564; p=0.036) and right ventricle systolic pressures only (RVP systolic: r=0.765; p<0.001).

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