

The association of 6-minute walking distance and real-time three-dimensional echocardiography in pulmonary hypertension

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Abstract

Abstract Background: The aim of this study was to evaluate the potential effect of 6-minute walking distance (6MWD) on exercise tolerance in patients with pulmonary hypertension (PH). To clarify whether 6MWD and right ventricle (RV) function measured by three-dimensional echocardiography (3D-echo) could result in better correlation with exercise capacity. **Methods:** 72 consecutive patients underwent right heart catheterization (RHC) and diagnosed with PH. Associations between 6MWD and measures of RV function were evaluated using the Pearson correlation coefficient. Receiver operating characteristic (ROC) curve analysis was applied to evaluate the clinical prognosis of patients. **Results:** RHC-derived parameters were significantly correlated with 6MWD: (RPVR = -0.719, RPAPs = -0.501, RPAPd = -0.404, and RPAPm = -0.468, all $P < 0.001$). Meanwhile, 6MWD was positively correlated with CO ($R = 0.54$, $P < 0.001$). Good correlations between 6MWD with 3D-echo parameters were shown as follows: R3D-RVEDV = -0.584, R3D-RVESV = -0.598, R3D-RVEF = 0.554, R3D-RV mass = -0.507, all $P < 0.001$. The predictive value from 6MWD was not much inferior to the predictive values of PVR (AUC6MWD = 0.779 vs. AUCPVR = 0.875, both $P < 0.0001$). **Conclusions:** 6MWD has a significant correlation with hemodynamic parameters obtained by RHC. And RV function obtained by 3D-echo result in better correlation with exercise capacity. 3D-echo might be candidate for RHC to assess right heart function in patients with PH.

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