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Echocardiographic probability of pulmonary hypertension: a validation study

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Shareable abstract (@ERSpublications)
Echocardiography with measurement of direct and indirect signs as suggested by the 2015 ESC/ERS guidelines can still be used to assess the probability of pulmonary hypertension and pulmonary vascular disease according to renewed definitions https://bit.ly/3m9w45k

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Abstract

Background According to current guidelines, the diagnosis of pulmonary hypertension (PH) relies on echocardiographic probability followed by right heart catheterisation (RHC). How echocardiography predicts PH recently redefined by mean pulmonary arterial pressure (mPAP) >20 mmHg instead of ⩾25 mmHg and pulmonary vascular disease defined by pulmonary vascular resistance (PVR) ⩾3 or >2 WU has not been established.

Methods A total of 278 patients referred for PH underwent comprehensive echocardiography followed by RHC. 15 patients (5.4%) were excluded because of insufficient quality echocardiography.

Results With PH defined by mPAP >20 mmHg, 23 patients had no PH, 146 had pre-capillary PH and 94 had post-capillary PH. At univariate analysis, maximum tricuspid regurgitation velocity (TRV) 2.9–3.4 $m \cdot s^{-1}$, left ventricle (LV) eccentricity index >1.1, right ventricle outflow tract acceleration time (RVOT-AT) <105 ms or notching, RV/LV basal diameter >1 and pulmonary artery diameter predicted PH, whereas inferior vena cava diameter and right atrial area did not. At multivariable analysis, only TRV ⩾2.9 $m \cdot s^{-1}$ independently predicted PH. Additional independent prediction of PVR ⩾3 WU was offered by LV eccentricity index >1.1, and RVOT-AT <105 ms and/or notching, but with no improvement of optimal combination of specificity and sensitivity or positive prediction.

Conclusions Echocardiography as recommended in current guidelines can be used to assess the probability of redefined PH in a referral centre. However, the added value of indirect signs is modest and sufficient quality echocardiographic signals may not be recovered in some patients.