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A noninvasive algorithm to exclude pre-capillary pulmonary hypertension.

Abstract:
Current guidelines recommend right heart catheterisation (RHC) in symptomatic patients at risk of pre-capillary pulmonary hypertension (PH) with echocardiographic systolic pulmonary artery pressures \( \geq 36 \) mmHg. Growing awareness for PH, a high prevalence of post-capillary PH and the inability to distinguish between pre- and post-capillary PH by echocardiography have led to unnecessary RHCs. The aim of our study was to assess whether standard noninvasive diagnostic procedures are able to safely exclude pre-capillary PH. Data from 251 patients referred for suspicion of pre-capillary PH were used to develop a noninvasive diagnostic decision tree. A prospectively collected data set of 121 consecutive patients was utilised for temporal validation. According to the decision tree, patients were stratified by the presence or absence of an electrocardiographic right ventricular strain pattern (RVS) and serum N-terminal brain natriuretic peptide (NT-proBNP) levels below and above 80 pg·mL\(^{-1}\). In the absence of RVS and elevated NT-proBNP, none of the patients in the prospective validation cohort were diagnosed with pre-capillary PH by RHC. Combining echocardiography with the diagnostic algorithm increased specificity to 19.3\% (\( p = 0.0009 \)), while sensitivity remained at 100\%. Employing ECG and NT-proBNP on top of echocardiography helps recognise one false positive case per five patients referred with dyspnoea and
echocardiographic suspicion of PH, while not missing true pre-capillary PH.