Abstract: 4971

Blood viscosity and its relevance to the diagnosis and management of pulmonary hypertension: a new elephant in the cathlab

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Topic(s):
Pulmonary Circulation, Pulmonary Embolism, Right Heart Failure – Diagnostic Methods

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Background: Pulmonary vascular resistance (PVR) is an essential parameter assessed during cardiac catheterization. It is used to confirm pulmonary vascular disease, to assess response to targeted pulmonary hypertension (PH) therapy and to determine the possibility of surgery, such as closure of intra-cardiac shunt or transplantation. While PVR is believed to mainly reflect the properties of the pulmonary vasculature, it is also related to blood viscosity (BV).

Objectives: We aimed to assess the relationship between measured (mPVR) and viscosity-corrected PVR (cPVR) and its impact on clinical decision-making.

Methods: We assessed consecutive PH patients undergoing cardiac catheterization. BV was assessed using the Hutton method.

Results: We included 465 patients (56.6% female, median age 63y). The difference between mPVR and cPVR was highest in patients with abnormal Hb levels (anemic patients: 5.6 [3.4–8.0] vs 7.8 Wood Units (WU) [5.1–11.9], P<0.001; patients with raised Hb: 10.8 [6.9–15.4] vs. 7.6 WU [4.6–10.8], P<0.001, respectively). Overall, 33.3% patients had a clinically significant (>2.0WU) difference between mPVR and cPVR, and this was more pronounced in those with anemia (52.9%) or raised Hb (77.6%). In patients in the upper quartile for this difference, mPVR and cPVR differed by 4.0WU [3.4–5.2].

Conclusions: We report, herewith, a clinically significant difference between mPVR and cPVR in a third of contemporary patients assessed for PH. This difference is most pronounced in patients with anemia, in whom mPVR significantly underestimates PVR, whereas in most patients with raised Hb, mPVR overestimates it. Our data suggest that routine adjustment for BV is necessary.
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