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LETTER TO THE EDITOR

The Maze of Vasodilator Response Criteria

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With great interest we read the article of Barst et al. [1]. We agree with their statement that the definition of a positive acute vasodilator response in patients with pulmonary arterial hypertension (PAH) remains controversial. We believe it is very important to minimize this controversy and use uniform criteria when studying the acute pulmonary vasodilator response in patients with PAH.

In their article, Barst and coworkers defined acute response criteria based on a 20% or more decrease in mean pulmonary arterial pressure (mPAP) with no decrease in cardiac index, or on a 25% or more decrease in the pulmonary vascular resistance index (PVRI) with no decrease in cardiac index (the latter only in case of an unrestricted shunt at the ventricular or ductal level). We do not recognise these criteria from previously published reports. A review of the literature provides the following definitions of a positive response to acute pulmonary vasodilator tests:

1. An mPAP decrease of 20% or more, no decrease in cardiac index and no change or a decrease in the pulmonary-to-systemic vascular resistance ratio [2, 3]
2. A decrease of more than 20% in both mPAP and PVRI [4, 6]
3. A fall in total pulmonary resistance of more than 30% [7]
4. A decrease in mPAP of 10 mmHg or more, reaching an mPAP of 40 mmHg or less and a normal cardiac output [5].

To our knowledge, the criteria used in the current article have not been published previously. The use of different response criteria in different studies results in different prevalences of acute vasodilator response and different predictive values for identifying long-term responders to calcium-channel blocker treatment and patients with improved survival [5].

Furthermore, as a result, data from these studies cannot be compared directly. For example, the prevalence of acute responders among children with PAH (42%) is reported to be higher than among adults (12–26%) [2, 4, 5]. However, because the criteria used differed between children and adults, this comparison does not hold.

We commend Barst and coworkers for their success in comparing the use of different vasodilating agents (inhaled nitric oxide, oxygen, or the combination of the two) for vasodilator testing in children. However, the introduction again of new response criteria prohibits interpretation of these data in the perspective of previously published data.

It is not our intention to discourage the quest for new response criteria aimed at reaching better prediction of treatment effect or survival or at expanding its use to broader patient populations other than those with idiopathic PAH (iPAH) or familial PAH (FPAH). However, in view of the ongoing discussion on the optimal definition of acute response criteria, we strongly advocate presenting the use of new criteria in a manner comparative with the use of previously published criteria.

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