

From the authors:

In their letter about our report on autonomic nervous system disturbances in severe pulmonary hypertension [1] and its companion editorial [2], B. Raffestin and M. Leroy are right that we only measured baroreceptor heart rate control. However, the criticism that we measured this with the wrong method is incorrect. The sequence and a-index method is widely accepted in the cardiology community and the administration of vasoconstrictors (phenylephrine method) considered obsolete, and I cannot see any clinician involved in pulmonary arterial hypertension (PAH) administering this to his/her patients. The statement that the variations in blood pressure are spontaneous and small is simply wrong as far as the controlled breathing method is concerned: in a very elegant study, DAVIES *et al.* [3] showed that a respiratory rate of 6 breaths·min⁻¹ produces substantial synchronous fluctuations in arterial blood pressure, which is thought to arise from resonance (as the blood pressure changes at lower or higher respiratory rates are much smaller). They were able to show that baroreceptor sensitivity could be reliably calculated from these blood pressure oscillations and the consecutive oscillations in heart rate. In fact, the controlled breathing method was more reliable/reproducible than any other method in heart failure and controls, including the phenylephrine method.

The second criticism addresses the fact that we did not measure vagal or sympathetic activity directly. This comes down to the question of whether we should or not should use analogies in science. The mechanism of autonomic control of the baroreflex control has been studied (mostly in animals) and these studies resulted in an accepted concept. Sympathetic activation has been shown to occur in various forms of circulatory failure, including PAH (as cited in our manuscript).

I think that we can and should use these data in designing and interpreting studies. Therefore, our interpretation including sympathetic and vagal mechanisms is reasonable. I fully agree that direct measurement of sympathetic activity is more accurate. The soundest approach for the further investigation of autonomic control in PAH would, therefore, be the integrated use of direct, yet more involving and invasive, measures and indirect, but noninvasive and also reproducible, measures like noninvasive baroreflex testing and heart rate variability.

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- 3 Davies LC, Francis DP, Jurak P, *et al.* Reproducibility of methods for assessing baroreflex sensitivity in normal controls and in patients with chronic heart failure. *Clin Sci* 1999; 97: 515–522.

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