REPLY

We appreciate the interest by Chemla et al. in our study concerning the analysis of pulmonary arterial reflection in the differential diagnosis of chronic pulmonary thromboembolism (CPTE) and primary pulmonary hypertension (PPH) (1). We used a fluid-filled system to analyze arterial pressure waveform in previous studies (1–3). If we had used a high-fidelity pressure transducer, the recorded pressure waveform would have been more accurate. As a high-fidelity catheter manometer is an expensive and intricate system, high-fidelity measurement makes the analysis of reflection waveform impractical in a clinical setting (4). To give the analysis of pulmonary arterial reflection the clinical implications, we measured inflection point using a fluid-filled recording system and examined whether the inflection time was correctly defined. To quantify the artery reflection, we used the augmentation index and inflection time (1,2). Both the augmentation index and the inflection time using a fluid-filled recording system were reliable and unchanged by repeated measurements. The fact that we could differentiate CPTE from PPH using the fluid-filled system should be interpreted not as a weakness but as a strength of the study (1,2).

Many workers have investigated the analysis of pulmonary arterial reflection, and with controversial results (1,2). Main factors contributing to this diversity include: 1) the effect of different ethnic groups; 2) the effect of different measuring systems; and 3) the effects on aging, the treatments and vasodilator severity of pulmonary hypertension. Body mass index in the general Japanese population is smaller than in Europeans and Americans. Thus, it is natural that our results using fluid-filled catheters in Japanese subjects are inconsistent with the results using high-fidelity catheters in European subjects, to greater or lesser degree. Furthermore, the effects on aging, the treatments and vasodilator severity of pulmonary hypertension modify pulmonary arterial reflection. Comparison of our study with the study of Chemla et al. produces controversial results without adjustment for these factors.

In conclusion, measurement of pulmonary artery pressure by fluid-filled catheters is an inexpensive and simple procedure compared to measurement by high-fidelity catheter. As analysis of pulmonary arterial reflection added to pulsatility of pulmonary artery pressure waveform can help in differentiating between CPTE and PPH, measurement of pulmonary reflection waveform by fluid-filled catheters is an extremely attractive clinical tool.

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REFERENCES

Scopolamine?

On page 748 of the Kop et al. article (JACC 2001;38:742–9), shouldn't the third line from the end of the manuscript contain the word "pilocarpine" or "physostigmine" instead of "scopolamine?"

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REPLY

We thank the author for his interesting comment. Cumulating evidence indicates that vagomimetic agents enhance measures of cardiac parasympathetic activation, such as heart rate variability (HRV) (1,2). Compared to other agents affecting parasympathetic function, scopolamine has been most widely investigated in patients with documented coronary disease. In postmyocardial infarction patients, scopolamine increases HRV and baroreceptor reflex sensitivity (3,4). Transdermal scopolamine is also reported to reduce ambulatory ischemia and ischemic threshold during exercise testing in patients with severe coronary disease (5). Effects of vagomimetic agents other than scopolamine have not been systematically studied in patients with established coronary disease.

Consistent with the comment above, a recent investigation by Nobrega et al. (6) documented increased HRV in response to pyridostigmine in healthy individuals. However, despite beneficial effects on HRV and other indirect indices of autonomic nervous system activity, vagomimetic agents do not necessarily reduce arrhythmic vulnerability (1,2). Our data suggest that transient pre-ischemic vagal withdrawal may be specific to ischemic events triggered by mental stress (7). Further investigations are needed to examine the potential benefits of vagomimetic agents in preventing ischemia occurring at low cardiac demand thresholds, as commonly occurs with ischemia during ambulant monitoring and during mental stress in the laboratory (8).

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