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Tissue Doppler imaging, volume responsiveness and impaired relaxation: reply to comment by Wiersema

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Dear Editor,

We thank Dr. Wiersema for his interesting comment about our previously published article [1]. Nevertheless, it seems important to add some precision to this comment.

We agree that numerous variables can influence tissue Doppler parameters; that is why we extensively discussed this point in our article [1].

Choi et al. [2] had published a very interesting article showing that patients with impaired relaxation and $E/E' < 15$ at rest can be divided in two groups (stable and unstable relaxation abnormality) according to the effect of a passive leg raising manoeuvre (PLR) on E/E' ratio. Those with persistent E/E' ratio < 15 ("stable relaxation abnormality") showed an increased E' after PLR, whereas those with an increase in E/E' ratio to a value > 15 ("unstable relaxation abnormality") had a minimal increase in E' .

Based on this, Wiersema concluded that in our study, fluid responder patient belong to the "stable relaxation" group, whilst

nonresponders belong to the unstable relaxation group. We think that it is difficult to draw this conclusion, for different reasons:

First, Choi et al. have not divided their patient in responders and non-responders group according to the effect of PLR on stroke volume; hence, we do not know if only the "stable relaxation abnormality" group is fluid responsive.

Secondly, the study of Choi et al. focused on patients with chronic relaxation impairment, mainly related to hypertension, and in a stable state whilst in our study, patients are in septic circulatory failure with acute and reversible relaxation impairment [3].

Thirdly, in our study the E/E' ratio after fluid infusion for nonresponder patients increases only by 1.74 ± 0.61 (Table 4) from a baseline value of 8.2 ± 2.9 m/s. Moreover, among the 47 patients with diastolic dysfunction, only one patient (a non-responder) had an $E/E' > 15$ after fluid infusion.

Fourthly, the E' wave measured at the septal part of the mitral annulus (as performed by Choi et al.) seems to be more sensitive to preload changes than at the lateral side (as we did) [4].

Finally, despite Dr. Wiersema's interest, a concept developed on stable patients is difficult to apply to critically ill unstable patients in circulatory failure.

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