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Passive leg raising: keep it easy!

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Dear Editor,

We read with interest the recently published article by Lakhali et al. [1]. The authors confirmed that the passive leg raising (PLR) test was a good predictor of fluid responsiveness when its effects were assessed on cardiac output. This study increases the level of evidence that the PLR test can serve as a "self" volume challenge. The authors also confirmed previous studies including ours [2, 3] by showing that the PLR test was less predictive of fluid responsiveness if its effects were assessed on arterial pressure rather than directly on cardiac output.

Nevertheless, we are concerned by the fact that the predictive value of the PLR effects on cardiac output was lower in the study by Lakhali et al. (area under the receiver operating characteristics curve of 0.83) than in

all previous studies on this topic. Two reasons can be found in the manuscript to explain this surprising result. The first reason is that Lakhali et al. assessed the effects of PLR on cardiac output 1 min after the beginning of the PLR manoeuvre and used the intermittent thermodilution technique, which required repetitive injections of 3–7 cold boluses. Their way to proceed is highly questionable. Indeed, we already reported that the PLR test exerts its maximal effects within 1 min and that these effects might later decrease in some patients [5]. This justifies the use of continuous real-time cardiac output monitoring to be sure not to miss the maximal haemodynamic effects of PLR and thus to improve the accuracy of this test.

Secondly, Lakhali et al. reported that the PLR manoeuvre did not significantly increase the central venous pressure in a large proportion of patients. We strongly believe that, in fact, this was due to the method by which the leg raise was performed, i.e. starting from the supine position and not from the semi-recumbent position. Indeed, we previously demonstrated that starting the manoeuvre from the supine rather than from the semi-recumbent position reduced the PLR effects on cardiac preload since it did not mobilize the blood volume of the splanchnic compartment [4]. Again, one can hypothesize that the way in which the authors performed the PLR test reduced its sensitivity.

Thus, the results of the study by Lakhali et al. might be hardly applicable to current practice. We believe

that, when PLR is performed in an appropriate way, i.e. starting from the semi-recumbent position and by using a real-time cardiac output monitoring technique [5], one can waive the cumbersome measurement of central venous pressure without reducing the accuracy of the PLR test.

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