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Predicting fluid responsiveness: should we adapt the scale to measure the central venous pressure swing?

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Sir: We read with great interest the study by Barbier and colleagues [1] proposing respiratory change in inferior vena cava diameter (RCIVCD) to assess fluid responsiveness in patients ventilated with positive pressure ventilation. Their data suggest that RCIVCD is an accurate predictor of fluid responsiveness in septic patients. Moreover, baseline central venous pressure (CVP) did not accurately predict fluid responsiveness.

We have three remarks regarding these results. Firstly, we are surprised that no decrease in cardiac output was observed after volume infusion considering that six patients developed acute respiratory distress syndrome with one confirmed acute cor pulmonale. Indeed the same team has recently stated that dynamic indices are not reliable predictors of fluid responsiveness in patients with high right ventricular impedance related to positive pressure venti-

lation [2]. Furthermore, a possible explanation of this phenomena is that the decrease in venous return related to positive pressure inspiration decompresses the overdistended right ventricle by a back flow from the right chambers to the inferior vena cava. Thus this situation should cause a ventilatory variation in the diameter of the latter vessel without an authentic fluid responsiveness state. Secondly, as demonstrated by the same team, a high incidence (100%) of tricuspid regurgitation and vena cava backward flow has been observed in mechanically ventilated patients [3] which can affect the size of inferior vena cava and then RCIVCD. The impact of this regurgitation can be avoided if RCIVCD measurement is made at end-diastole (R wave on ECG) period when vena cava backward flow is not possible [4]. However, this method was not used by Barbier et al. Thirdly, as dynamic indices have already demonstrated their superiority to static indices, we suggest another competitor to this new method proposed by Barbier and colleagues. Indeed, recently we have demonstrated that CVP is well correlated to inferior vena cava diameter when the method of measurement used is accurate [4]. Thus, emphasizing the dynamic indices, we propose to the authors to contrast RCIVCD with respiratory change in CVP. We expect that their results should remind us that respiratory change in CVP has already been shown to be accurate predictor of fluid responsiveness in spontaneous breathing patients [5].

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