

Collapsibility and Distensibility Indices of Critically Ill Patients

Sir,

I have read with great interest the recent article, "Inferior Vena Cava Collapsibility Index and Central Venous Pressure for Fluid Assessment in the Critically Ill Patient" by Dodhy AA.¹ This article is a well-designed cross-sectional study for the detection of the collapsibility index of inferior vena cava (IVC) in critically ill patients. Also, this topic is very important for the emergency departments and intensive care units (ICUs). The use of point-of-care ultrasound for the critically ill patients by emergency physicians and intensivists has become widespread.

In the study of Dodhy, the researcher evaluated the diameter and collapsibility index of IVC in 126 patients and compared and correlated it with central venous pressure (CVP) in both mechanically ventilated and spontaneous breathing groups. There are some points I would like to point out about the study. The collapsibility index is a volume indicator that has been used safely in patients with spontaneous breathing for several years.^{2,3} Positive-pressure ventilation elevates the pleural and right atrial pressures. Also, the venous return to the heart reduces by increasing intrathoracic pressure during inspiration. The IVC diameter increases during inspiration and contracts during expiration in a mechanically ventilated patient, unlike in spontaneous breathing.⁴ Since the researcher evaluated only IVC diameter and collapsibility index, I think that the distensibility index should be added to the study. Since the majority of the patients were mechanically ventilated, the distensibility index might give a different correlation coefficient.

Nonetheless, I think it is a very important article about the point-of-care ultrasound performed in the ICU. I think that it should be recommended to use the distensibility index as a non-invasive method in mechanically ventilated patients due to physiological changes.

COMPETING INTEREST:

The author declared no competing interest.

AUTHOR'S CONTRIBUTION:

MEC: Conceptualisation, writing, original draft, review and editing.

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AUTHOR'S REPLY

It is a good suggestion by the reader that the distensibility index be added in the study for mechanically ventilated patients and the results may differ. However, in the present study, the aim was to determine the correlation of sonographic evaluation of IVC diameter and its collapsibility index with CVP in both spontaneously breathing and mechanically ventilated patients and thus to evaluate the intravascular volume status of critically ill patients. Abdelwahab and El-Wahab, in their study, also aimed to detect the correlation between IVC diameter and collapsibility index with CVP in both spontaneously breathing and mechanically ventilated patients.¹ Karacabey et al. evaluated the strong correlation between CVP and IVC diameters and collapsibility in intubated patients as assessed by ultrasonography.² The suggestion of the reader can be incorporated in future research papers.

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