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**Effectiveness of treatment
based on transpulmonary
thermodilution in critically ill
patients: response to comments
by Sánchez et al.**

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Dear Editor,
We fully agree with the insightful comments made by Dr. Sánchez and colleagues that the result of our work is attributable to the treatment algorithm based on PiCCO monitoring, rather than the device itself [1]. Therefore, the negative result of current study only implies that the algorithm used in our study failed to improve clinical outcome of the study population [2]. It is still largely unknown whether treatment based on other algorithms (e.g. still based on parameters obtained by using PiCCO device) can improve clinical outcomes for critically ill patients.

However, there are many difficulties in standardizing the treatment algorithm based on parameters derived from the PiCCO device. By using the PiCCO device, we are able

to evaluate pulmonary edema, cardiac function and volume status in a quantitative way. Most of these parameters have been validated in both experimental and human studies. However, it is difficult to use these parameters in a holistic manner. Also, the interpretation of some parameters can be quite different in different conditions. As mentioned by Dr. Sanchez and colleagues, dynamic parameters such as stroke volume variation (SVV) and pulse pressure variation (PPV) are superior to static parameters such as intrathoracic blood volume (ITBV) and central venous pressure (CVP). However, the best diagnostic accuracy of SVV in predicting fluid responsiveness is when a patient is under controlled mechanical ventilation [3]. Otherwise, the diagnostic performance of SVV is suboptimal. In our study, only a minority of patients received controlled mechanical ventilation. Thus, we did not incorporate SVV in the study. For patients with ARDS alone (e.g. no circulatory shock), the fluid resuscitation was not stressed and we primarily focused on the extravascular lung water (EVLW). The aim is to reduce it to normal range with diuretics. The treatment algorithm was used as a general guidance, that is, the treating physician could still have room in the management of patients. For example, for a patient with evident circulatory shock, the primary aim is first to provide adequate

volume, but it does not mean vasopressors cannot be given before ITBVI reaches above 850 ml/m². In such a situation, vasopressors were actually given after fluid bolus but before a second measurement of ITBVI.

Conflicts of interest There is no conflict of interest.

References

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