



Response to letter to the editor

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To the editor:

We thank the readers for their attention to and valuable comments on our recent publication [1]. Indeed, definite conclusions should be delayed until further prospective studies address their concerns. However, we would be honored if our findings provoke interest in further research.

Blood samples were collected through a single venipuncture instead of sampling from the jugular bulb to minimize patient risks. As the internal jugular vein drains blood from the skull and superficial parts of the face [2], our method may be associated with extracerebral contamination. Nevertheless, we consider that our method can better reflect ipsilateral cerebral oxygenation than indicators of global oxygenation, such as mixed venous oxygen saturation.

The effects of excluding 40 patients on the study results cannot be determined; however, they were not significantly different from those included in the study in terms of patient characteristics (Supplementary Table 1). Although the sample size was smaller than expected, our initial hypothesis could be demonstrated because the degree of underestimating the cerebral oxygenation using the near-infrared spectroscopy in patients undergoing hemodialysis (HD) was larger than expected.

To respond to their concern on residual confounding, we conducted an additional multivariable analysis adjusting for age, mean arterial pressure, and hemoglobin level and found that HD was independently associated with difference between regional cerebral oxygen saturation and jugular venous oxygen saturation (Supplementary Table 2).

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Compliance with ethical standards

Conflict of interest No conflict of interest to declare.

References

1. Matsukawa S, Kai S, Mizota T. Near-infrared spectroscopy underestimates cerebral oxygenation in hemodialysis patients. *J Anesth*. 2019;33:478–81.
2. Watkinson JC, Gleeson M. Neck. In: Standring S, editor. *Gray's anatomy: the anatomical basis of clinical practice*. 41st ed. New York: Elsevier; 2016. p. 442–474.

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