

LETTER

Mind the influence of arterial oxygen tension on central venous oxygen saturation

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See related research by Hernandez et al., <http://ccforum.com/content/13/3/R63>

We read with great interest the study by Hernandez and colleagues published in *Critical Care* [1]. The study showed that central venous oxygen saturation (ScvO₂) increased significantly in response to emergency intubation, and the authors suggested that the early normalization of ScvO₂ after intubation might not be reliable to reflect successful resuscitation. However, they might have ignored the influence of arterial oxygen tension (PaO₂) on ScvO₂.

It is well known that when arterial oxygen saturation is approaching 100%, the increase in oxygen delivery would be limited in response to the increase of PaO₂. However, a very high PaO₂ could significantly influence ScvO₂ even if arterial oxygen saturation reaches 100%. Pre-oxygenation may result in a very high PaO₂ in the emergency intubation, so PaO₂ should be taken as a potentially confounding factor. Very high PaO₂ (about 288 mmHg) has a more significant and consistent effect on ScvO₂ than a relevant change in cardiac index (>10%) [2]. Moreover, a decrease in the whole body oxygen consumption under hyperoxia has been reported in critically ill patients [3], and animal studies also noted that hyperoxia could result in the redistribution of cardiac output [4]. Recently, Legrand and colleagues documented that an increase in PaO₂ could increase ScvO₂ without increasing oxygen delivery [5].

It is worth paying attention to the impact of PaO₂ on ScvO₂ in the management of critically ill patients.

Abbreviations

PaO₂: Arterial oxygen tension; ScvO₂: Central venous oxygen saturation.

Competing interests

The authors declare that they have no competing interests.

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