Cerebral Oximetry Determination of Desaturation with Norepinephrine Administration May Be Device Manufacturer Specific

To the Editor:
The recent cerebral oximetry study by Sørensen et al. 1 outlining the impact of cutaneous blood flow on near-infrared spectroscopy derived measurements of cerebral saturation highlights a potentially important confounder in the interpretation of information provided by most currently available cerebral oximetry monitors. Although cerebral oximetry is intended to provide information on the blood oxygen saturation of the brain, it has inherent limitations related to the variable contamination from the extracranial tissues2 that, to date, have been incompletely addressed. Whereas Sørensen et al.1 report an elegantly conducted and interpreted clinical investigation, we believe that they have not adequately highlighted the manufacturer-specific impact of norepinephrine-induced extracranial vasoconstriction on the accuracy of near-infrared spectroscopy. It is likely that their findings are more specific to the INVOS (Covidien; Mansfield, MA) monitor that they used and should not be generalized to all devices.

We have previously reported that when compared to several other devices that are commercially available, the specific oximeter they used appears particularly prone to extracranial (i.e., cutaneous) contamination. As a result, the norepinephrine administration results in falsely lowering the cerebral saturation as a result of reduction in blood flow to the extracranial tissues. Although they correctly identify this mechanism, it is much less likely to happen with some of the other devices that are also widely available. Thus, the generalizability of this finding to all oximeters implied by this study is somewhat questionable and should wait until similar types of investigations are undertaken with these other devices. In particular, the title of the paper and accompanying abstract, which in this day and age of online search strategies are arguably the most frequently searched aspects in published literature, would prevent the casual reader from appreciating this potentially important limitation.

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References

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