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Reply to Scheeren: monitoring the microcirculation in the critically ill patient: reflectance spectroscopy

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Dear Editor,

We read with interest the comments by Scheeren [1] on our review article on the methods for evaluating the microcirculation [2]. The section on reflectance spectroscopy was indeed relatively short not because of lack of experience but on purpose, due to some methodological concerns with recent developments of the technique. Indeed, as mentioned in our review, O₂C (Lea, Giessen, Germany), the only commercially available version

of reflectance spectroscopy, provides the mean value of SO₂ only, which is unfortunate, as information on heterogeneity is lost.

More importantly, the relevance of reported mean SO₂ value can be questioned. It is false to state, as Scheeren did in his letter, that this value reflects the oxygen saturation of haemoglobin (μHbO₂) at the venous end of the capillaries (the so-called last meadow). Reflectance spectroscopy devices measure the microvascular O₂ saturation of all vessels within the beam, which probes an area of 0.09 mm² (a circle of 200-μm diameter) over a depth of 250 μm [3]. This sampling volume is far better than many other techniques of O₂ measurement, and is likely to decrease with refinements of the technique, but still comprises many vessels of different nature. The mean value seems to be mostly affected by arterial (or arteriolar) vessels. In Sakr et al's study [4], sublingual SO₂ was 91 ± 5% in healthy volunteers (interquartile range 87–96). This value is incompatible with measurements at the venous end of capillaries as it would imply that VO₂ is close to 0. Hence, great caution should be taken when looking at average measurements of SO₂ to

assess the microcirculation, whatever the device used.

References

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