CORRESPONDENCE

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Are the Data Missing?

To the Editor:—The Highlight* presented with the recent article by Hoffman *et al.*[1] regarding the cerebral vascular effects of fentanyl and remifentanil contains the information that both opioids were associated with decreases in cerebral blood flow (CBF) "although neither drug significantly reduced cerebral metabolic rate for oxygen (CMR_{O_2})." That caught my attention because it implied the possibility of a direct vasoconstrictive effect by these opioids. However, I discovered that, although the authors of the article indicate in the methods section that they made measurements that would have allowed them to calculate cerebral atrioventricular oxygen difference and therefore CMR_{O_2}, no CMR_{O_2} data are presented or mentioned. I wondered whether the editorialist had access to information that did not make it into the published version. The CMR_{O_2} data would be helpful in understanding the mechanism of the observed changes in CBF. The pattern of electroencephalogram and CBF changes described would lead one to anticipate a reduction in CMR_{O_2}. In fact, it would be extremely noteworthy if an opioid caused substantial changes in CBF that were independent of changes in Pa_{CO_2}, mean arterial pressure, and CMR_{O_2}. I suspect that many readers will appreciate clarification.

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Reference

1. Hoffman WE, Cunningham F, James MK, Baughman VL, Albrecht RF: Effects of remifentanil, a new short-acting opioid, on cerebral blood flow, brain electrical activity, and intracranial pressure in dogs anesthetized with isoflurane and nitrous oxide. ANESTHESIOLOGY 79: 107–113, 1993.

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* Todd MM: Highlight. ANESTHESIOLOGY 79:26A, 1993.

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In Reply:—Drummond is to be congratulated for his close reading of both the article by Hoffman *et al.* and my Highlight regarding that article. He is indeed correct that my comments regarding cerebral metabolic rate for oxygen (CMR_{O_2}) are not accompanied by any data on CMR_{O_2} in that article—even though the data needed to calculate CRM_{O_2} were collected by the authors. The explanation is simple, and the responsibility for the error is mine. The article as originally submitted indeed did include CMR_{O_2} calculations. However, because of statistical and methodologic limitations (*i.e.*, trying to calculate CMR_{O_2} from cortical flow measurements combined with whole brain AV_{O_2} measurements (*i.e.*, which may not reflect the same tissue compartment as that measured by the microsphere CBFs), these data were deleted from the revised manuscript returned by the authors. However, in my haste to meet a deadline for the Highlight, I neglected to notice this deletion.

Since this error was made, I (and Hoffman) believe that some added comment regarding the CMR_{O_2} values needs to be made, regardless of their limitations. In brief, CMR_{O_2} values (based on AV_{O_2} calculated from a sagittal sinus blood sample, combined with cortical CBF measurements) did not statistically decrease in either the remifentanil or the alfentanil groups. For example, in the alfentanil group, baseline CMR_{O_2} was 5.9 ± 1.5 (SD) ml · 100 g^{-1} · min^{-1}. After the high-dose infusion, recorded CMR_{O_2} was 5.1 ± 0.9 ml · 100 g^{-1} · min^{-1} (not significantly changed). In the remifentanil group, the comparable values were 5.1 ± 1.4 and 4.8 ± 0.5 ml · 100 g^{-1} · min^{-1}, respectively (again, NS).

Again, I apologize for this error and thank Drummond for his attentiveness.

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