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Gunter correctly points out that choice of certain of the model parameters can affect the quantitative predictions of the model. However, we emphasize that choice of the parameters does not affect the usefulness of the model. Choices of these parameter values do not change whether temperature affects the relation between $S\text{v}_{\text{O}_2}$ and $\text{CMR}_{\text{O}_2}$. Changes in parameters’ values force the relation between $S\text{v}_{\text{O}_2}$ and $\text{CMR}_{\text{O}_2}$ to change for all temperatures. We quote from our discussion section, with the italic being in the original paper:

"It is important to appreciate predicted $S\text{v}_{\text{O}_2}$ at given levels of $\text{CMR}_{\text{O}_2}$ should be considered as rough estimates only... [For example,] actual $S\text{v}_{\text{O}_2}$ values required to preserve $\text{CMR}_{\text{O}_2}$ may be higher than those given for profoundly hypothermic CPB. However, determination of these estimates was not the goal of the study. Instead, our aim was to determine the effect of hypothermia on the relationship between $\text{CMR}_{\text{O}_2}$ and $S\text{v}_{\text{O}_2}$. We addressed whether conventional interpretation of $S\text{v}_{\text{O}_2}$ data, obtained either from jugular venous catheters or near-infrared spectroscopy, reliably indicates the adequacy of cerebral oxygenation during hypothermic CPB. Our assessment of these $S\text{v}_{\text{O}_2}$-measuring technologies clearly shows that they may not.

We agree with Gunter’s observation that dissolved oxygen provides almost all cerebral oxygen requirements during profoundly hypothermic CPB. We also made this potentially important observation by examining results of the mathematical model. We then contacted Drs. Frank Kern and William Greeley at Duke University, who have measured $S\text{v}_{\text{O}_2}$, $\text{CMR}_{\text{O}_2}$, and cerebral blood flow in hundreds of infants and children. We are collaborating with them to analyze statistically their clinical data to test this model prediction.

However, these observations regarding dissolved oxygen probably do not account for the failure of Diazpirin cross-linked hemoglobin to increase oxygen utilization during hypothermic CPB in rabbits. The effect of dissolved oxygen becomes significant at profoundly hypothermic temperatures (i.e., less than $20^\circ\text{C}$). At warmer temperatures, the brain has an extraordinary ability to extract oxygen. We did our Diazpirin experiments during CPB at $27^\circ\text{C}$. Diazpirin probably failed to increase $\text{CMR}_{\text{O}_2}$ because cerebral oxygen delivery was not limiting oxygen utilization at this temperature.

A perfluorocarbon emulsion would increase oxygen availability. However, we do not know whether the brain needs any more oxygen during CPB. We are not aware of evidence that, during CPB, the brain has inadequate cerebral oxygen delivery, even during low-flow conditions. Even then, the brain may be able to sufficiently increase extraction of oxygen from hemoglobin to maintain a normal $\text{CMR}_{\text{O}_2}$. We may not be able to use the mathematical model to study this question reliably. The result would probably depend on our choice of physiologic parameters. As Gunter pointed out, there is a limitation to the analyses that we can do using the mathematical model.

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Oral Obturator a Useful Adjunct for Fiberoptic Tracheal Intubation

To the Editor — In a recent article describing the results of teaching fiberoptic intubation,1 I was quite surprised regarding a comment that “mechanical aids are not applicable in an awake intubation situation.” Oral obturators are in widespread use in the United States and are frequently described in the literature, including their first reference.2 Although there are no studies that support the advantages of these devices over simple tongue retraction, the hypothetical advantages of providing a secretion-free conduit to pass the scope, helping the endotracheal tube to negotiate the turn necessary for oral insertion into the glottis, protection from inadvertent dental damage, and, especially, biting the scope by the awake patient, certainly make a compelling argument for their use.

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