Reviewer's report

Title: Higher cerebral oxygen saturation may provide higher urinary output during continuous regional cerebral perfusion

Version: 1 Date: 19 May 2008

Reviewer: PM Lemmers

Reviewer's report:

The paper of Miyamoto et al. (Higher cerebral oxygen saturation may provide higher urinary output during continuous regional cerebral perfusion) report on the use of cerebral oxygen saturation measurements during aortic arch surgery under regional cerebral perfusion in 12 newborn babies and young infants. They conclude that cerebral oxygen saturations over 75% are associated with significantly higher urine outputs than saturations under 75%, due to higher renal perfusion.

There are some important issues to be addressed:

The use of cerebral oxygen saturation measurements using NIRS technique during regional cerebral perfusion certainly provides another useful application of this monitoring technique.

However, we do have some major problems with the design of this observational study and the interpretation of its results.

First, the number of patients is rather small, limited to such an extent that statistical analysis of any result is highly questionable.

We also have our doubts about the cut-off point of 75% to identify groups. Normal cerebral oxygen saturation ranges from 60 to 80% in babies and young infants. Therefore a cut-off point of 75% seems rather high, and authors have not been able to provide evidence for their choice.

In addition, it appears that 2 patient groups of patients have thus been defined that have significantly different ages at operation. Consequently, although no thoracic surgeons, we suspect that major circulatory differences have played a role in who was selected for operation at what time.

Finally, there are significant differences in both renal function and pharmacokinetics of a variety of vasoactive drugs between the newborn (<1 week old) and older infants. We presume that not just the cerebral oxygenation but the overall clinical condition and the age of the patient may be at the basis of reported findings.

Therefore we think, although monitoring cerebral saturation in this group of patients would be very useful and interesting, this paper seems not eligible for publication in its present form.
I declare that I have no competing interests.

**Level of interest:** Reject as not of sufficient priority to merit publishing in this journal

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

None