CORRESPONDENCE

Overpressure isoflurane at Caesarean section: a study of isoflurane concentrations

Sir,—We were interested in the article by McCrirrick, Evans and Thomas [1] but disagree with their observations.

The study was set out to measure the arterial concentrations of isoflurane resulting from two different patterns of administration. They concluded that there was a significantly higher arterial concentration in the group that received a higher inspired concentration. This result would have been expected. In their conclusion they acknowledged the limitations of the study (n = 18) and suggested that an increased inspired concentration of volatile agent may further reduce awareness at Caesarean section, without adverse consequences for the mother or child. This conclusion may be correct, but it cannot be suggested as a result of this research.

The main concern of the obstetric anaesthetist with the overpressure technique is increased maternal blood loss and adverse effects on the neonate. In this small study, maternal blood loss was estimated visually by an apparently non-blinded observer. The 18 neonates were assessed using the simple Apgar score. To ascertain whether or not the overpressure technique does adversely affect the neonate would require much larger blinded studies and the use of a sophisticated neurological scoring system to detect central nervous system depression caused by drugs, for example the Neurological and Adaptive Capacity Score [2].

In summary, this study supports the conclusion that increased inspired isoflurane concentrations result in higher concentrations of isoflurane in arterial blood. It does not support any conjecture on the absence of consequent adverse effects for the mother or baby.

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The primary aim of the study was to examine plasma isoflurane concentrations in patients receiving either 1% isoflurane or an initial 2%. We believe the important points to note are that huge variations in plasma concentrations were observed in patients from both groups and that three patients in the low inspired concentration group had plasma concentrations less than that which may permit awareness, compared with no patients in the 'overpressure' group. Our calculations regarding the threshold plasma concentration for awareness are clearly theoretical but the argument for using an overpressure technique in these patients remains valid.

The primary aim of the study was to examine plasma isoflurane concentrations. Further work is required to accurately assess the effects of high inspired isoflurane concentrations on the neonate and maternal blood loss. We considered it reasonable, however, to report our initial impressions that neither maternal blood loss nor the Apgar score of the infant was adversely affected by an overpressure technique.

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Oxygen uptake during rebreathing in a Mapleson A system

Sir,—We read with interest the paper by Fried, Warren and Drummond [1]. Their results contrasted markedly with the apparent increase in oxygen uptake which we found and reported at the Anaesthetic Research Society [2]. At that meeting there was some concern that our results may have been influenced by technical errors. Subsequent to the suggestions made at that meeting we repeated the work using first, Douglas bags to collect expired gases and second, we tried to use the Datex Delatrack to assess oxygen uptake. We could find no apparent increase in oxygen uptake with either method.

Reappraisal of our original technique with the mass spectrometer highlighted two main sources of error. These were the variable measurement time lag between the gas concentration signals (mass spectrometer) and respiratory flow (pneumotachograph). As oxygen uptake was assessed by computed analysis of the two signals, a small error in the time base accentuates the calculation of volume of oxygen. Additionally, deriving true differences between the inspired and expired volumes of oxygen using the pneumotachograph was also subject to errors.

We thank the authors of this paper for clarifying an issue which we have inadvertently confused.

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Adrenaline-induced hypotension in neurosurgery

Sir,—We read with interest the article by Phillips and colleagues [1] on adrenaline-induced hypotension in neurosurgery. It discusses an important question but in our opinion the methodology is inadequate and part of their discussion is misleading.

The volume of injectate used by the authors did not exceed 20 ml. If this is taken as 15 ml then the amount of adrenaline infiltrated would be 75 μg, that is 1–1.5 μg kg⁻¹. Adrenaline in smaller doses (i.e. 0.1 μg kg⁻¹) may cause a decrease in arterial pressure because of greater sensitivity of vasodilator B₂ receptors, especially in the skeleton muscle bed compared with a constrictor receptors [2]. How can the authors explain the observed hypotension by adrenaline infiltration in a dose of 1–1.5 μg kg⁻¹. We would further suggest that attenuation of haemodynamic responses, if any, to skin incision after scalp infiltration should also have been studied as it is one of the main objectives of scalp infiltration.

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Sir,—Thank you for the opportunity to respond to the comments of Agarwal, Maheshwari and Kaushik, who seem to have confused the effects of an infiltrate with those of an infusate. It is important to recognize that s.c. administration does not produce the same blood concentration and consequent effect as i.v. administration of the same dose.

When administered s.c. all solutions have a much slower absorption than those given i.v. and the blood concentrations reached are lower. The vasoconstrictive properties of adrenaline

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