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 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 concerns of the obstetric anaesthetist with the overpressure technique are 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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We thank Drs Girling, Ohaiseda and Reid for their interest in our paper. The study examined early 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 these concerns we repeated the work using first, Douglas bags to collect expired gases and second, we tried to use the Datex Deltrace 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 infiltrate 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 α 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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Further reduce its absorption rate and systemic effects. As stated in our paper, we did not measure blood concentrations of adrenaline and can only hypothesize that the hypotension we observed in the patients receiving adrenaline may be a result of blood concentrations similar to those produced by i.v. administration of 0.1 µg kg⁻¹.

We agree that attenuation of the haemodynamic responses to skin incision after scalp infiltration are of interest. However, our study was designed to identify which component of the infiltrate in use at our hospital was responsible for observed hypotension and not to compare the efficacy of different solutions.

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An impression of British anaesthesia by a visiting Romanian doctor

Sir,—As I am involved in teaching, it is important for me to be well informed about different medical schools and health care systems. Over the past decade I have managed this by visiting several centres in many western European countries.

From my experiences I feel that British anaesthesia leads the world. Many of the achievements of anaesthesia in Great Britain are well reported in the literature, but less is published on the way in which the system is managed. Therefore, to fully understand this, I feel that it is important to visit teaching departments. In the early 1970s I worked in a German university hospital and realized then that only by working within a health care system and having responsibilities for the provision of health care can one really appreciate the standards of medical care.

I was therefore keen to spend a period of time working as an anaesthetist in the UK. Unfortunately, because of domestic, social and political reasons this was not possible for a considerable length of time; after December 1989 it became feasible. While there are thousands of overseas doctors working throughout the UK, they are trainees for whom it is relatively simple to obtain GMC registration (section 27). Only 44 were issued throughout 1992 and my eastern European origin seemed to delay the process. However, for someone like myself, wishing to work as a consultant, it is not easy to obtain the necessary GMC registration (section 27). Only 44 were issued during 1992 and my eastern European origin seemed to compound the problem. After a great deal of effort I was at last able to obtain work in a busy district general hospital, in Cheltenham, Gloucestershire. I worked for 4 months as a Consultant Anaesthetist and during this time I was presented with many challenges, conceptual, linguistic and technical. I would like to outline my impressions of British anaesthesia formulated during this time.

I was interested in why British anaesthesia is held in such high regard in many countries. In my opinion this is fully justified for the following reasons. The examination system in British anaesthesia demands uncompromisingly high levels of knowledge in all three parts of the fellowship examination. This is primarily the responsibility of the Royal College of Anaesthetists. There exists a well organized network for training in anaesthesia, which I found very impressive coming from a country with over-centralized university departments. Each university department is free to organize courses and lectures, each having particular expertise in areas of anaesthetic training. I found the local atmosphere where everyone teaches and everyone is willing to learn very efficient. In addition to the clinical tutor, each department has staff involved in teaching and learning. This is conducted through a series of seminars, lectures, case histories and clinical work, allowing trainee doctors to question and learn from the consultants’ experience. It is also beneficial for consultants to have their reasoning questioned. I found the levels of equipment and staffing impressive, with facilities to monitor cardiac output (which we do not have at home in our heart institute because it is too expensive). I also witnessed a Hayek oscillator in use which is only a dream in Romania.

Patients presenting for anaesthesia and surgery in the UK are well prepared. During my 4-month experience I rarely encountered poorly controlled hypertensive patients, most were well controlled with beta blocker therapy which led to greater stability during induction of anaesthesia. Sudden extreme tachycardias were rarely seen in Britain, unlike in my country. The primary care afforded in the UK allows early diagnosis and treatment of conditions, minimizing damage to vital organs and this contrasts with the states of advanced pathology I see in my country.

I found it surprising that in Fleming’s country with many therapeutic agents available, many doctors use what I consider to be inferior antibiotics, but the number of postoperative complications is small. At home we also respect antisepsic principles, but many of our patients are chronically undernourished and consequently have poor biological resistance. For years we have only given a coupon for 100 g of butter a month, whereas presently I work for 3 days in order to be able to buy 1 kg of good quality sausage. Consequently, I find it interesting how little attention is given to nutritional state, particularly in the anaesthetic literature.

Compared with my countrymen I found that British patients were far more co-operative towards their doctors. It was impressive to see how stoically they approach a given diagnosis, investigation and surgery. I found that British patients trust their doctors to care for them during illness. In situations where two types of anaesthetic management were equally appropriate, most patients in the UK are happy to let their doctor decide which is best. The official badge of a hospital doctor is highly respected.

One of my great concerns before visiting Great Britain was the language. I found the usual dialogue with patients different from the language used in meetings. I came across many English dialects but I found that patients were very understanding. Even some private patients, who I thought would be more demanding, showed me the same understanding.

It is no secret that the anaesthesiologist–surgeon relationship is highly controversial in many countries and for socioeconomic and financial reasons is a genuine problem in my country. I found that in Britain there is a very easy working atmosphere and in Cheltenham it was a pleasure to see such peaceful co-existence.

My hosts in the UK were generous and friendly and not only helped me to work well in their operating theatres and wards but also organized visits to other medical centres including Plymouth, Manchester, Oxford, Bristol and Gloucester. This experience was very helpful for me to consolidate my experience of British anaesthesia.

In conclusion, I found the experience the most fruitful of my whole career, and I would like to thank all my British hosts.

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Risk of aspiration with the laryngeal mask

Sir,—The striking differences between the results of Akhtar and Street (4%) [1] and El Mikati and colleagues (0%) [2] compared with Barker and colleagues (25%) [3] using essentially similar techniques to detect the incidence of regurgitated dye in anaesthetized patients managed with a laryngeal mask airway (LMA), underlines the importance of the conduct of anaesthesia in influencing regurgitation, as postulated by Illing, Duncan and Yip [4]. It is worth examining some of the factors related to conduct of anaesthesia which may increase the risk of regurgitation with the LMA, particularly during IPPV, and briefly discuss management and prevention.

Using the LMA, the vocal cords are free to react, unhindered by the presence of a tracheal tube, to any surgical stimulus which is not effectively abolished by either neuromuscular block or anaesthesia. During IPPV, vocal cord closure will force ventilator-driven gas to escape from the mask and part of this gas may be driven into the stomach [5, 6]. Should the patient react further to surgical stimuli by generalized abdominal contraction accompanied by attempted inspiration against a closed glottis, the combination of negative intrathoracic pressure and high intra-abdominal pressure is likely to result in forceful ejection of gas from the stomach into the oesophagus, accompanied by any fluids present.

The practice of allowing anaesthesia to lighten or neuromuscular block to fade in anticipation of the expected completion