arterial pressure [5,6], and changes in cardiovascular dynamics could result in changes in V/Q state in the lung and hence in (PaCO2-PE'CO).

Second, in the absence of capnographic recordings, the authors could have estimated the components of physiological deadspace using traditional formulae [4,7] instead of speculating that anatomical deadspace may have decreased during laparoscopy.

Finally, negative values of (PaCO2-PE'CO) have been observed during anaesthesia in pregnant subjects (50%), in infants (50%) and in patients after cardiac bypass surgery (81%) [8]. The increased cardiac output and increased carbon dioxide production, reduced R.C and low compliance are factors that have been implicated in the production of negative values. Therefore, one would be interested to know the incidence of negative values, particularly during stage II of Puri and Singh's study where, after insufflation of carbon dioxide into the peritoneum, the subjects may resemble the pregnant in some features, namely reduced R.C, low compliance and increased carbon dioxide production.

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Sirs, —Although (PaCO2-PE'CO) in individual patients changed at different stages of laparoscopy, there were no overall meaningful changes in (PaCO2-PE'CO) at various stages of laparoscopy studied (indicated in table 1 of our paper [1]). Some of these individual changes in this difference may have resulted from the changes in haemodynamic state produced by increased FRC, low compliance and increased cardiac output and increased carbon dioxide production.

Regarding the incidence of negative values of (PaCO2-PE'CO) there were three of 14 patients (21%) with negative values of (PaCO2-PE'CO) at stage I (before insufflation of carbon dioxide) and the number increased to five of 14 (35%) after insufflation (stage II) during laparoscopy, but the trend was not similar in all patients: it decreased in some, while increasing in others.

Finding various fractions of physiological deadspace by the conventional formulae would have been a futile statistical exercise, as the derived values would not represent the actual anatomical and alveolar deadspaces [2].

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EUROPEAN STANDARDIZATION COMMITTEE ON ANAESTHETIC EQUIPMENT

Sirs, —Our publication [1] on fresh gas utilization of eight circle systems was one of the first testing the new European CEN standard. Dr Greenbaum's statement [2] that our reference to the draft document of the CEN/TC215 proposal was not authorized, is incorrect. As stated in the introduction of the proposal, the standard may be quoted with the approval of the Convener of the working group or the Chairman. Approval for our publication was obtained from both before submitting the manuscript (the Chairmanship of the Technical Committee has changed in the meantime).

As already mentioned, our publication describes a testing procedure under well defined circumstances and nothing else. It does not set performance limits. I have no knowledge of any other type testing standard which reliably evaluates the efficiency of anaesthesia systems. It is left to the member states of CEN to accept, alter or omit it completely from the final document.

We consider it as essential that standards are discussed and evaluated by an international readership of various journals before they become accepted standards. In the past, too many standards have been designed in theory only and therefore tend to lack data for their applicability in clinical practice. By testing the standards we would hope, therefore to make a contribution towards avoiding such problems in the future.

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RADIOIMMUNOASSAY TESTS AND ANAPHYLAXIS

Sirs, —Dr Fisher's letter [1] has raised doubts about the ability of the commercial paper radioallergosorbent tests (RAST) to categorize correctly patients who have suffered anaphylactic reactions when the commercial test is compared with their own laboratory methods. The documentation of false negatives with the commercial RAST is an important finding and suggests that diagnostic skin testing [2] also should be performed for appropriate drugs, particular if sera from known RAST-positive patients are not available to validate the commercial test.

Another area of concern is the use of these RAST for screening before anaesthesia [3]. Here, because larger numbers of patients would be tested, the false positive rate, in addition to the false negative rate, would be important [4]. After a fatality in Aberdeen from presumed suxamethonium-induced anaphylaxis, a prospective pilot study was undertaken to ascertain the rate of false positive reactions. Serum from 206 patients presenting for elective surgery were analysed using commercial RAST (Pharmacia) to detect antibodies to thiopentone, suxamethonium and alcuronium. Eight (3.9 %), seven (3.4 %) and 20 (9.7 %) patients tested positive for these agents, respectively, in this patient sample. None of these patients was reported to have had adverse reactions. Moreover, one patient documented as having increased antibody titre to suxamethonium has undergone several uneventful anaesthetics which included that agent. This finding is at variance with Assen's assertion that "high RAST was always associated with a severe reaction." [5].

If these results are representative, the concerns of Fisher regarding the use of RAST for screening [3] and the conclusions of the Association of Anaesthetists Working Group that "there is no support for routine screening of patients for specific drug antibodies at present" [6], are upheld.

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RESPIRATORY DEPRESSION AFTER EXTRADURAL FENTANYL

Sir,—I read with interest the case report by Brockway and colleagues [1] and the article by Noble and colleagues [2] on respiratory depression after extradural fentanyl. In view of the apparent rarity of this complication, I wish to report a similar case which I encountered recently.

A healthy, 30-yr-old patient (gravida 1) presented for elective Caesarean section because of uterine abnormality. The current pregnancy had been uneventful. Preoperative examination was unremarkable (weight 56.0 kg, height 1.54 m). She was premedicated with two doses of oral ramitidine 150 mg and sodium citrate 30 ml before surgery.

Before an extradural block was induced, the patient received Ringer’s lactate solution 1 litre. Patient monitoring included ECG, non-invasive arterial pressure measurement (Dinamap) and pulse oximetry (Nellcor). With the patient in the left lateral position, the L2–3 extradural space was identified with a 16-gauge Tuohy needle, using loss of resistance to saline. An extradural catheter was passed 4 cm cephalad and 0.5 % bupivacaine 3 ml was injected through a Millipore filter as a test dose. After 5 min, and with no evidence of intrathecal or intravascular administration, 0.5 % bupivacaine 7 ml was injected in divided doses over approximately 10 min.

Bilateral sensory block to T6 was obtained after 5 min. Maximum block height was obtained at 10 min: bilateral T2. The motor block was assessed using a Brumage scale: the patient was just able to move both knees and was graded 1. There was a decrease in systolic arterial pressure from 96 to 87 mm Hg and heart rate decreased from 56 beat min\(^{-1}\) to 51 beat min\(^{-1}\). Ephedrine 8 mg and atropine 0.3 mg were given i.v. Thereafter, arterial pressure and heart rate returned to normal.

Surgery was commenced 30 min after completion of the injection. Before delivery, the mother received oxygen 3 litre min\(^{-1}\) via an intranasal cannula and the pulse oximeter showed 100 % saturation. Just before the start of surgery, the patient said that she felt drowsy and complained of persistent nausea; she was given metoclopramide 10 mg i.v. A healthy child was delivered that she felt drowsy and complained of persistent nausea; she was given metoclopramide 10 mg i.v. A healthy child was delivered with an Apgar score of 9 at 1 min; syntocinon 10 iu was given.

1 min after delivery, the patient became alert and the ventilatory frequency repeatedly increased to 86% (breathing air). Her heart rate remained unchanged. >

It was considered that the respiratory depression in this patient was probably caused by the larger dose of fentanyl being administered, enhancing rostral spread via a direct perimedullary vascular channel [3].

This case further strengthens the importance of continuous monitoring of patients for an adequate period after extradural fentanyl and highlights the need to limit extradural administration of fentanyl to small doses.

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A PUNCTURE TECHNIQUE FOR CONTINUOUS SUBARACHNOID BLOCK

Sir,—Continuous spinal anaesthesia is a well-described technique [1], but the occurrence of postdural puncture headache (PDPH) is the main factor limiting its popularity. Loss of CSF and its relation to intraspinal compliance is one of the causative factors of PDPH [2]. The variability of CSF loss during continuous spinal anaesthesia is a matter of controversy [3, 4].

We have used the technique of continuous spinal anaesthesia since January 1990. Perifix extradural equipment (Braun, Germany) is used with a Tuohy 18-gauge needle and 20-gauge polyamide multiperforated catheter, as part of a technique which detects the subarachnoid space while minimizing initial CSF loss.

Regardless of patient position, the needle bevel is introduced parallel to the ligamentous and dural fibres. The extradural space is located initially by loss of resistance (air) or using an electronic detector (Episensor, Palex, Spain) [6]. The detection system is then removed, and a catheter threading aid is fitted, where the catheter tip emerges from the diaphragm end of a transparent needle hub. The total unit is introduced smoothly with the non-dominant hand. At the moment when the hub fills with CSF, the needle is rotated with the outlet orifice cephalad; the dominant hand is then used to advance the catheter inside the needle to 3–5 cm within the subarachnoid space.

During conventional dural puncture when the needle stylet is removed, an uncontrolled loss of CSF occurs—particularly when larger needles are used, even when the stylet is replaced quickly by the catheter threading aid. With our system, the initial loss of CSF is limited to the needle hub volume (approximately 0.12 ml in an 18-gauge needle)—a minimum, controllable volume that is always predictable. The catheter within the needle hub acts as a plug against the loss of CSF and facilitates easy and rapid introduction into the subarachnoid space.

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3. Harris A. Continuous spinal anaesthesia does not prevent headaches following unintentional dural puncture in pregnant patients. Regional Anaesthesia 1990; 15 (Suppl.): 80.