TEST DOSES IN EXTRADURAL ANALGESIA

Sir,—Dr D. B. Scott, in answer to Dr Boys (1977) criticism of the avoidance of a test dose when administering an extradural block for labour, says that “5 min of extra pain does not sound very much unless you happen to be the patient”. Were Dr Scott the patient would he exchange 5 minutes of extra pain for an emergency intubation and artificial ventilation for nearly 2 h.

Some years ago, an extradural block was administered by a consultant anaesthetist to the wife of one of the surgeons in this hospital. He inserted an extradural catheter, and after a test dose, injected a standard dose of local anaesthetic for relief of labour pain. The pain was abolished completely 10–15 min later for about 2 h. Because the first injection produced a good extradural block, when the patient was ready for delivery and required a second dose, the anaesthetist did not repeat the test dose, but gave the full dose over about 1 min. Three minutes later, the patient showed all the signs of a high spinal block, and required endotracheal intubation and ventilation for 2 h.

Dr Scott says he “has to admit to not doing so [using a test dose] because a positive result from a test dose is so infrequent”. One would hope that injection of local anaesthetic into the spinal canal (when administering an extradural block) would be infrequent, and it is for this reason that I believe in the use of the test dose every time an injection is made into the extradural space. There have been a few reports of catheters finding their way into the dural canal accompanied by problems for both the radiologist and anaesthetists and I accept the consequences that may follow it.

I believe in the use of the test dose every time an injection is introduced, the whole practice of midwives including “top-ups”. I can assure him that this is not the opposite view. I have no wish to impose my view on other anaesthetists and I accept the consequences that may follow it.

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VENTURI VENTILATION FOR BRONCHOGRAPHY

Sir,—The procedure of bronchoography in children is accompanied by problems for both the radiologist and anaesthetist. The patients subjected to this procedure usually have impaired respiratory function and this is worsened by the introduction of an oily medium into the bronchial tree. In addition, the procedure takes place in a darkened room and involves continuous alteration of the patient’s position; it is difficult, therefore, to monitor the adequacy of respiratory and cardiovascular function.

The following technique, based on the venturi principle, is helpful in overcoming some of these difficulties.

An adaptor is utilized, and this consists of a serrated, slightly tapered male connector (fig. 1). The internal diameter of the “Rambam” adaptor is not less than that of the tracheal tube to which it is inserted. A venturi needle, approximately 3 cm in length, is welded to the rim of the adaptor but does not encroach on its lumen. The size of the needle varies with the size of the adaptor, and these are altered to suit the size of the tracheal tube. By means of the Luer lock fitting of the venturi needle, oxygen is injected through the needle at a pressure of 300 kPa in children and 400–500 kPa in adults (Gregoretti, 1976). The inspiratory/expiratory time ratio is controlled by means of an automatic device.

REFERENCES


SIR,—Thank you for the opportunity of replying to Dr Galloon’s letter. His little homily would have been better taken if, in the case he describes, the test dose had not failed singularly to predict a subarachnoid injection. He is suggesting that a test dose be given before every injection including “top-ups”. I can assure him that this is not the practice in any hospital that I know in this country. Indeed, if it were to be introduced, the whole practice of midwives “topping-up” would have to be abandoned, as it is clearly unfair to expect nurses to decide if the test dose has been injected into the subarachnoid space.

An important principle is to determine how much time and effort (and patient discomfort) should be expended in the prevention of untoward results of our actions. Many years ago it was customary to give a test dose of tubocurarine before giving a large dose, to eliminate the possibility of the patient having latent myasthenia gravis. In such patients, endotracheal intubation and ventilation were required, not for 2 h but for many days. Patients with latent myasthenia gravis are still encountered, but presumably anaesthetists have decided, albeit tacitly, that such patients present so infrequently that it is perfectly acceptable to treat them after the event rather than give test doses to every single patient requiring a non-depolarizing neuromuscular blocking drug. I have made a similar decision in regard to extradural block and Dr Galloon is free to adopt the opposite view. I have no wish to impose my view on other anaesthetists and I accept the consequences that may follow it.
During anaesthesia, the following are monitored: Intratracheal pressure by means of a fine polyethylene tube inserted via the adaptor and connected to a Loosco manometer, e.g., and continuous arterial pressure monitoring and random blood-gas analysis by means of an indwelling arterial line.

After the procedure has been completed, most of the contrast medium may be removed by aspiration via the tracheal tube.

The advantages of this technique are that it provides a continuously patent airway and enables aspiration of purulent secretion in these patients, most of whom suffer from bronchiectasis. In addition, the apparatus close to the head of the patient is less cumbersome, thereby allowing mobility of the patient during the procedure.

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REFERENCE

GAS EVACUATION FROM PAEDIATRIC ANAESTHETIC SYSTEMS
Sir,—With reference to the letters of Cestone, Ryan and Loving (1977) and Valentin (1977), we would like to draw attention to another method of solving the difficult problem of gas evacuation from paediatric anaesthetic systems. Ayre's T-piece is modified by connecting a reservoir bag (capacity 0.75-1.5 litre depending on the flow rate used) to the expiratory limb. The connecting tube from an ejector flowmeter of the type developed by Jergensen (1974) is attached to the open tail of the reservoir bag. The amount of gas evacuated from the system is equilibrated with the fresh gas inflow by adjusting the ordinary flowmeter (capacity 0.75-1.5 litre depending on the flow rate used) to the expiratory limb. The connecting tube from an ejector flowmeter of the type developed by Jorgensen (1974) is attached to the open tail of the reservoir bag. The amount of gas evacuated from the system is equilibrated with the fresh gas inflow by adjusting the ordinary flowmeter (capacity 0.75-1.5 litre depending on the flow rate used) to the expiratory limb. This technique can be applied to the Jackson-Rees paediatric system in a similar manner without any difficulty.

This method has several advantages: (1) The use of valves in the system with the subsequent possibility of malfunction is not required. (2) The evacuation rate of the jet evacuator is adjustable visually with considerable accuracy within the range 0-15 litre min⁻¹. Equalization of gas evacuation and gas inflow is easily carried out at any time during anaesthesia. (3) It is an active scavenging system which, according to Armstrong and colleagues (1977), is more effective than passive systems, when used in conjunction with semi-closed anaesthetic circuits. (4) Controlled ventilation can be performed with greater safety and more easily than by compression of the expiratory limb of the T-piece, since the capacitance of the tubes in the system is very limited (Valentin, 1977). (5) As gas extraction takes place from the anaesthetic system, the evacuation rate can be confined to the range of the fresh gas inflow. The potential risk of damaging the lungs and altering central haemodynamics by the sudden application of sub-atmospheric pressure, caused by a cessation of fresh gas flow, is diminished in this way. Such damage is more likely to occur during the use of scavenging from open reservoirs, as the high evacuation rate needed in open reservoirs (25-40 litre min⁻¹) may result in sub-atmospheric pressures of considerable magnitude occurring within a few seconds if the reservoir is occluded accidentally. This will apply also when a valve is positioned between the system and the reservoir (Sharrock and Leith, 1977).

If a positive or negative pressure occurs as a result of a sudden considerable discrepancy between fresh gas inflow and gas evacuation, the system can be disconnected immediately at two locations. Because of the capacitance of the reservoir bag, it is unlikely that such an accident will have any deleterious effects. However, it would be feasible to insert a pop-off valve and a negative pressure relief valve.

This method has been in use in our clinic for several years and has proved to be safe and easy to handle.

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REFERENCES

HYPERSENSITIVITY TO ATROPINE
Sir,—A female patient (aged 70 yr, weight 71 kg) with a known, proven hypersensitivity to atropine presented with a retinal detachment. She suffered from myocardial ischaemia and was receiving Equatrate 20 three times per day (pentaerythritol tetrani trate 20 mg plus meprobamate 200 mg).

The anaesthetic management comprised a premedication of diazepam 5 mg i.m. 1 h before surgery and anaesthesia was induced with thiopentone 300 mg. Endotracheal intubation was facilitated with suxamethonium 100 mg i.v. Anaesthesia was maintained with 50% nitrous oxide in oxygen and droperidol 5 mg with fentanyl 0.05 mg. Ventilation was controlled and neuromuscular blockade induced with pancuronium 8 mg. With this technique, the heart rate was maintained at 70-80 beat min⁻¹, the arterial pressure at 140/80 to 150/85 mm Hg and there were no arrhythmias as demonstrated by continuous monitoring of the e.c.g.

After 2 h, residual neuromuscular blockade was antagonized by the use of neostigmine methylsulphate 4 mg which was administered in doses of 1-mg increments i.v. This was preceded 5 min earlier by hyoscine 0.2 mg i.v. Following the administration of neostigmine, a decrease in heart rate to 40 beat min⁻¹ was treated with three 10-μg doses of isoprenaline, following which the heart rate remained stable at 80 beat min⁻¹ during the first 60 min after operation.

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