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CORRESPONDENCE

INTERCOSTAL NERVE BLOCKADE

Sir,—Since the work of Nunn and Slavin (1980) discussions have been conducted as to the mechanism by which a large volume of local anaesthetic solution, injected to a single intercostal space, can induce analgesia over several adjacent dermatomes (Moore, 1981; Murphy, 1984). In a small study involving 48 patients undergoing cholecystectomy through a subcostal oblique incision (which ranges over several dermatomes), we have compared the average duration and percentage failure of intercostal nerve blockade performed by two different techniques. The patients were randomized into two groups of 24 patients each, and the anaesthetic procedure was standardized. At the end of the operation a right-sided intercostal nerve blockade was performed by injecting either 0.5% bupivacaine 20 ml at T9 or 0.5% bupivacaine 4 ml at each segment T7–T11 (a total dose of 20 ml). No additional postoperative analgesic was given to supplement the block. The nurses in the recovery room, and later in the general wards, were instructed to give pain-relieving drugs, usually opiates, "on demand".

We defined the duration of blockade as the time between the injection of bupivacaine an the first on demand injection. This is, of course, a rather vague method of defining the endpoint of blockade, but we chose it because we wanted to get as close as possible to the normal clinical situation. Seven patients, four and three in each group, received no postoperative on demand analgesic and we estimated the duration of blockade to be 15 h in these patients.

Failure of blockade was defined as a duration of less than 2 h. Failure with the single injection technique was 12.5% (3/24) and with the multiple injection technique 20.8% (5/24). This difference was not statistically significant with this number of patients.

Using the single injection technique we found a mean duration of 9.2 h (range 2.84–15.00 h) and with the multiple injection technique mean duration was 10.48 h (range 2.33–21.08 h). Mann–Whitney test was used for statistical analysis and the difference was not significant. There were no complications in either group; in particular, there was no clinical evidence of pneumothorax. Routine x-rays were not taken.

Although the number of patients in this study was small, it seems that the single injection technique was as effective clinically as the conventional multiple injection technique. Since only one injection is needed instead of four or five, it should produce a lower incidence of pneumothorax and, therefore, is recommended for use in situations with unilateral pain arising from the dermatomes supplied by the intercostal nerves.

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MAPLESON A (MAGILL) BREATHING SYSTEM

Sir,—The standard information presented to junior anaesthetists about the Mapleson A (Magill) breathing system is that it is less efficient, that is it requires a higher fresh gas flow for elimination of carbon dioxide, when used for artificial ventilation, and Professor Conway (1985) reiterated this in his excellent review. However, although this is true because of the way the circuit is used, I find that, without further explanation, many junior anaesthetists think that this is inherent to the circuit.

As I am sure Professor Conway realizes, the system is inefficient in this mode only because the anaesthetist tends to screw the valve down partically and leave it in this position. If a sleeved expiratory valve is used and left fully open then, if it is occluded during inspiration and left free during expiration, the circuit behaves in exactly the same way as it does when used for spontaneous ventilation. This does not allow for scavenging and it is a nuisance to have to screw the valve down and up with each respiratory cycle, so it is better, as Professor Conway states, to use a different breathing system for prolonged artificial ventilation.

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Sir,—As I stated in may article, the inefficient behaviour of the Magill attachment during controlled ventilation is related to the loss of gas from the system through the valve during inspiration, and the tendency for expired gas to be retained within the system. These problems can, to some extent, be overcome by using the approach suggested by Dr Goodman. This is, however, a very inconvenient way to administer an anaesthetic. It is feasible to automate his approach by using a pneumatic linkage, so that an increase in pressure within the reservoir bag activates valve closure.

When the Magill attachment is used in the manner described by Dr Goodman, it may not necessarily behave in the same way as during spontaneous breathing. The more sudden reversals of flow that occur during manual controlled ventilation are likely to promote mixing of fresh and expired gas in the system. If high tidal volumes are used, the storage capacity of the tubing of the system may not suffice to prevent expired gas entering the reservoir bag. When a high fresh gas flow is used with the system during spontaneous breathing, excess fresh gas can