expense. So great is the pressure on scientists in some countries to have visible evidence of work done that a journal of that type manages to survive in spite of the disapproval of the more orthodox scientific community.

Another type of publication is exemplified by the post-graduate educational issues of British Journal of Anaesthesia and in a different way by the unsigned editorial columns of the great medical weeklies in the U.K. Those who provide the material for such journals count it an honour to be asked to contribute. Signed articles are written for such journals at the invitation of the Editor. All the world can see, not only from the quality of the article but from the fact that an Editor has picked a worker in a particular field as a contributor, that the man so chosen deserves to be highly regarded by his fellows. In the case of the U.K. weeklies, nearly the same situation exists, for it is an open secret that certain of our colleagues provide regular annotations for those journals. Further, those who contribute to the columns of such publications have also the satisfaction of knowing that they are able to guide the thinking of colleagues and indeed to be leaders of their profession, whatever the pecuniary rewards.

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Those who write text books and, perhaps even more, chapters in text books are exploited. To be acceptable to a pecuniary rewards and indeed to be leaders of their profession, whatever the pecuniary rewards. To some extent the rewards of sole authors have increased pari passu with the increase in the price of books. The rewards offered to those who are asked to provide chapters for multi-author books, to be paid for on a cash basis, have scarcely altered over the past few years. Our medical publishers should review the position with a view to encouraging those who could make a worthwhile contribution, but are discouraged from doing so.

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POTENTIAL HAZARDS OF ANTISTATIC HOSE

Sir,—I read with interest the letter from Tilling and Hancox (1981). I have long thought that anti-static precautions in operating theatres were a waste of money, and now we have evidence that they may be dangerous.

In effect it was demonstrated that anti-static breathing hose may become more electrically conductive than is safe, and capable of carrying a dangerous leakage current. The consequence of this is that we must test their conductivity regularly and discard those (otherwise sound) that fail the test if we are to protect our patients properly.

In this hospital it is about 17 years since either ether or cyclopropane were used. All the surgeons use diathermy, and would resist any suggestion that they should operate without it. We have acquired apparatus that carries a warning against use in the presence of inflammable agents, without being worried. When one considers the extra purchase price of anti-static rubber goods, and the need for electrical testing, and occasional premature replacement of these goods, the few anaesthetics administered with ether or cyclopropane must be unbelievably expensive in money and in the time of skilled staff.

Surely we could spend this on something more likely to benefit patients?

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REFERENCE


HYPOTENSION AFTER INTERCOSTAL NERVE BLOCK

Sir,—The article entitled “Hypotension after intercostal nerve block during thoracotomy under general anaesthesia” raises a significant point (Skrøtering, 1981). Similar reports and reports of total spinal block following intrathoracic block of the intercostal nerves have been published (Benumof and Semenza, 1975; Cortell et al., 1978; Moore and Reitan, 1978). The common factor in these reports was the surgeon attempting to block the intercostal nerves under direct vision. We have performed unilateral and bilateral percutaneous blocks of the intercostal nerves in more than 12 000 patients for thoracic and upper abdominal surgery and for diagnosis and therapy. Profound hypotension with or without total spinal anaesthesia has yet to occur.

On the basis of other reports (Atkinson, Rushman and Lee, 1977; Nunn and Slavin, 1980), Skrøtering theorizes that the local anaesthetic solution can spread centrally to the paravertebral space of the intercostal nerve injected and into the extradural space, thus effecting a sympathetic blockade which is responsible for the reported hypotension. In a previous study using computer tomography, we showed that, when percutaneous injection of an intercostal nerve is made in the groove of the rib at its angle, the solution does not spread into the extradural space (Moore, Bush and Scurlock, 1980). Nor did hypotension result.

Using Nunn and Slavin’s article (1980) as a basis, Dr Skrøtering further theorizes that, in addition to the nerves of the rib injected, the intercostal nerves of the ribs above and below the injected rib are also anaesthetized. Our investigations showed, however, that the injection of solution into the groove of one rib blocks only that groove’s intercostal nerve, and not the ones above and below (Moore, Bush and Scurlock, 1980; Moore, 1981).
Sir—We observed that intrathoracic intercostal nerve block under general anaesthesia resulted in hypotension and a decrease in heart rate in five of 30 blocks performed. We attributed this to paravertebral spread of the local anaesthetic drug affecting sympathetic nerve fibres. None of our patients showed signs of total or partial spinal anaesthesia.

In an attempt to explain the hypotension and the associated moderate decrease in heart rate I theorized on the basis of other reports (Atkinson, Rushman and Lee, 1977; Nunn and Slavin, 1980) that the local anaesthesia solution may have spread to the paravertebral space of the nerve injected and into the extradural space, thus effecting sympathetic blockade. According to Nunn and Slavin, spread of the anaesthetic round the internal aspect of the rib and into the spaces above and below may also occur.

I had noted the recent studies of Moore, Bush and Scurlock (1980) showing that the solution does not spread into the extradural space, and of Moore (1981) showing that injecting solution into the groove at one rib blocks only that intercostal nerve. These results are contrary to the previous reports.

The observed hypotension and the associated decrease in heart rate was, in my view, attributable to a sympathetic block of thoracic nerve fibres. The period of time between the decrease in arterial pressure and the administration of the drug (mean 11.6 min), the effectiveness of ephedrine and the absence of any sign of spinal anaesthesia may support this theory.

I do not think intercostal nerve block per se causes hypotension. However, one important point in my conclusion was the circumstances under which the block was performed: namely general anaesthesia and open chest. According to Guyton (1977) both general anaesthesia and thoracotomy increase considerably sympathetic activity. An unintentional sympathetic block will more or less eliminate this defence reaction.

Our surgeons did not perform intraneural injection, but tried to deposit the anaesthetic solution round the intercostal nerve. I agree with Moore’s conclusion that percutaneous block normally does not cause hypotension, and our experience is that this approach is a good and safe method under other circumstances. During thoracotomy the block may be performed better after closure of the chest or after operation. It would have been interesting to perform percutaneous intercostal nerve block during thoracotomy under general anaesthesia before closing the chest for comparison.

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When the intercostal nerve is injected under direct vision, an attempt is usually made to inject it intraneurally. With the percutaneous approach, this is not done. In fact, the anaesthetist tries to avoid intraneural injection by jiggling the needle in the groove of the rib, that is, moving it forward and backward approximately 2–3 mm as the local anaesthetic solution is injected. If the surgeon performs an intraneural injection proximal to the angle of the rib or close to the point where the rib articulates with the vertebra, the solution can spread centrally in the perineural spaces of the nerve or in a long dural cuff, resulting in total or partial spinal anaesthesia (Moore et al., 1954; Benumof and Semenza, 1975).

Percutaneous block of the intercostal nerve(s) is a much safer technique than injection under direct vision. To date, percutaneous block has avoided hypotension and total spinal anaesthesia, both of which have been reported from direct injection of the intercostal nerves during thoracotomy. Perhaps the surgeons should consider the alternative intrathoracic method of blocking the intercostal nerve for pain relief after operation—namely, freezing (Nelson et al., 1974). Finally, if the intercostal nerves are injected with a local anaesthetic drug intraneurally under direct vision, hypotension with or without spinal block should be an expected complication.

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