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Editorial Views

Hypotensive Anaesthesia: A Surgeon's View

It is an outstanding editorial courtesy to invite a British surgeon to communicate his views on a subject as controversial as hypotensive anaesthesia. But once accepted, this invitation demands candour as well as tact. Happily, despite Bernard Shaw, we speak the same (or very nearly the same) language; and the close professional links between anaesthesiologist and surgeon can never be too strong.

It may be well to begin by "declaring one's interest" in relation to hypotensive anaesthesia. Controlled hypotension by varying techniques based on ganglion-blocking drugs has been practised by the Department of Anaesthesia at East Grinstead since 1950, first tentatively and then comprehensively, subject to agreed indications. The surgical work is largely plastic and reconstructive, and over 4,000 general anaesthetics are given annually. The writer has had direct personal contact with approximately 1,600 patients, to whom the technique of hypotension was applied, during these years. It is important to emphasize that these anaesthetics have been given not by a few specialists but by perhaps forty different doctors, varying from junior residents in training to men of vast experience. This carries a clear implication that the capacity to use the method is not confined to a tiny group with exceptional talent.

We must now examine the indications. It is essential that there should be a balanced relationship among the patient, the surgeon and the anaesthetist. The patient must at all times be the central point of any discussions. Everything that is decided must be for his benefit. The surgeon must accept the responsibility for deciding whether there are positive indications for hypotension. He must relate his problems to the special needs of each patient. These problems and needs should be discussed with the anaesthetist; they must be subject to the anaesthetist's reasonable veto, who should be entitled to say "no" on two grounds: first, if in his view the patient is too poor a risk for this technique; and second, if he judges his own experience in this field to be inadequate. In such cases a surgeon will be foolish to press the matter. Equally, no wise surgeon will allow an over-enthusiastic anaesthetic colleague to persuade him to accept an unnecessary deliberate hypotension.

There are three principal surgical indications. First, where the blood loss under normal conditions must cause shock. Obvious examples are all major head and neck dissections. A deliberate reduction in blood loss makes it possible to eliminate or at least curtail the number of blood transfusions; and let us not forget that these carry a hazard to life, which has been estimated as high as one death per 2,000 transfusions. The second indication is any difficult dissection in an area where severe hemorrhage is likely to obscure the field, and so prevent the *accurate* total removal of a dangerous lesion, such as a carcinoma of the face, a parotid tumour, or a large haemangioma. In such cases surgical precision is essential to the patient's life and welfare, and in terms of both anatomy and pathology such precision is only possible in a field which remains reasonably "dry" throughout the operation. The third main indication is for those

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cases where there is an undue risk of postoperative haematoma, which in our experience can be mitigated by controlled hypotension. The hazard of haematomas after operation is commoner in reconstructive work than in some other fields. In routine procedures such as radical mastectomy, some general surgeons have found the risk of postoperative bleeding can by this technique be minimised—in addition to the great advantages of an unobscured field. This reduced incidence of postoperative haematoma by hypotension is also significant and beneficial in "blind" manoeuvres. Of course, in all open surgical procedures performed during deliberate hypotension it is important that haemostasis by ligation or diathermy should be meticulous. It is also essential that the hypotension be steadily and accurately controlled by the anaesthetist throughout the operation, maintained until firm dressings are appplied, and then tapered off gently.

This is not the place to discuss in detail the possible contraindications that must influence the anaesthetist; but surgeons should appreciate the significance of gross anaemia or of cardiovascular disease, and especially a history of coronary occlusion or of cerebral thrombosis. On the other hand, many patients with uncomplicated high blood pressure are fit for hypotensive anaesthesia and can especially benefit by it, provided the systolic pressure during operation is maintained at a steady and appropriate level. This level must be selected for each patient; an arbitrary figure cannot be given. Age is a factor to be considered, but is seldom an absolute contraindication at either end of the scale. Patients aged six as well as those aged eighty have been greatly helped by a skilful application of this technique. It would appear from our experience that cerebral hazards, meaning the alleged effects of cerebral ischemia, have been much exaggerated. Provided there is no undue restriction of the cerebral circulation by surgery or trauma, controlled hypotension has not appeared to constitute an additional hazard.

It may be useful at this point to mention that a controlled "blind" investigation [1] by a psychologist, using mental acuity tests, failed to demonstrate the smallest significant retardation of cerebration during the first post-operative week after rhinoplasty performed with deliberate hypotension. A personal comment may not be amiss in this context. Prior to a year's visit in 1962 by Professor James Eckenhoff, I had some reservations on this point. It was a relief—but no surprise—to find that his carefully monitored series at East Grinstead showed that the P_{O_2} value for the cerebral venous blood was never inadequate, and thus there was no objective evidence of dangerous cerebral ischaemia. The only patient in my own series to show any significant cerebral symptoms was a frail elderly woman who, after a hypotensive anaesthetic, developed a nominal aphasia; but this, though prolonged, was happily not permanent.

What should our criteria of safety be? First, there must be full agreement and trust between the surgeon and anaesthetist. It is imperative that the surgeon work with anaesthetists who are experienced in this technique and wholly dependable in their judgment. On the other hand, relatively inexperienced residents are taught to give satisfactory hypotensive anaesthetics under superevision, and we have not been apprehensive while operating in these circumstances. Secondly, the surgeon must take especial care in securing haemostasis. Thirdly, there are those cases where speed is important; on the whole I believe it risky for temperamentally slow surgeons to carry out lengthy operations under postural ischaemia. One hears of operators who have always taken, say, three hours to do a routine block dissection of neck and who fail to respond to the advantages of hypotension by completing the procedure more swiftly. So the hazards are thus increased rather than diminished. But one of the advantages established by our experience at East Grinstead is that appropriate operations *can* be carried out more swiftly, and hence more safely. Similarly, wound healing is favourably influenced by these same factors. For we now expect, from hypotension, a striking reduction of diffuse bruising, which (even in the absence of a gross haematoma) is recognized as a prime cause of delayed healing. Finally, there must be an absolute refusal by both partners to use hypotension as a mere stunt. The question must always be asked:

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"Is this technique of benefit to *this* patient?"—and an honest answer must be given.

My series of 1,600 cases includes most of the major excisions and reconstructions done by me in this sixteen-year period. The operative mortality has been nil. The greatest possible credit for this success must go to the physicians who have provided anaesthesia for my patients. This experience inevitably makes me hostile to the assertion that hypotension is "a gross and intolerable physiological trespass."

In this context it is pleasant to recall the view of the doyen of British physiologists, Sir Henry Dale. As soon as he had studied the clinical work on hypotension in 1950, he recognised that the technique had valuable possibilities and that it was a clinical extension of experimental work he had carried out in 1915 [2] with quarternary ammonium salts. He suggested, on a friendly visit, the descriptive term "postural ischaemia," and gave his considered opinion that such techniques, properly employed, were not physiologically objectionable.

The history of medicine—and, no less, of anaesthesia—is packed with examples of timid men in opposition to new ideas. Simpson in Scotland fought a tough battle against Calvinists who believed that women were meant to "travail in childbed." Opposition to Lister was no less vicious. Hostility to endotracheal intubation still rumbles on, with autopsy findings quoted to frighten the nervous neophyte. And so it is with deliberate hypotension.

In the modern practice of medicine the duty of the anaesthetist goes rather beyond giving the patient a good sleep with amnesia and analgesia; and the capacity to ply his scalpel boldly (but often invisibly) at the bottom of a bloodsodden operative field is no longer the hallmark of the competent surgeon. Let us not risk being labelled, in Winston Churchill's devastating phrase, "modest little men who have plenty to be modest about."

In the right hands controlled hypotension in anaesthesia is a major advance and should now be acceptable in properly judged circumstances. But—and this is an imperative qualification—it must never be attempted "unadvisedly, lightly or wantonly."

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2. Burn, J. H., and Dale, H. H.: The action of certain quarternary ammonium bases, J. Pharmacol. **6**: 417, 1915.

Note from the Editor-in-Chief

Recent policy has been to encourage the preparation of interpretive editorials to accompany original articles of importance that appear in any one issue of the Journal. Thus in the March–April 1966 issue, Dr. Lester Mark comments on the paper of Drs. Saidman and Eger concerning the effect of metabolism of thiopental upon duration of anesthesia. Much is to be learned from reading the article and Dr. Mark's subsequent opinions. Some may feel, however, that the editorial writer in this instance adopts too critical a tone leaving the authors without immediate opportunity for rebuttal. Had there been time before the printer's deadline such an interchange could have been arranged. In accepting an article for publication, the Editorial Board gives full approval and stands squarely behind the authors. Likewise we accept the well-meaning intent of the editorial viewpoint. Major differences of opinion can now be settled by discussion among the interested parties, perhaps with further investigation if necessary.

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