

EDITORIAL

RECENT DEVELOPMENTS IN ANAESTHESIA IN THE BRITISH ISLES WITH PARTICULAR REFER- ENCE TO INDUCED HYPOTENSION *

Achievements in the field of anaesthesia during the past thirty years are now a matter of common knowledge, and their contribution to surgical advancement is freely admitted. In these days of "physiological trespass," as John Gillies so aptly described it, the impressions of one whose time has been spent in the operating theater, as opposed to the laboratory, may be of some interest.

The present trend of anaesthesia would appear to be the subjection of the vital function of respiration, and more recently of circulation, to the complete control of the anaesthetist. This control is achieved by intravenous injection of agents that are irrecoverable and whose dosage is not easy to predict. Sodium pentothal and curarizing agents depress respiration to the point of making controlled respiration essential. A hypotensive agent may then be added which renders the pulse imperceptible. The picture can be confusing to a trainee; indeed, it sometimes can be very disturbing to the expert.

In which direction are we to look for reliable guidance in assessing the condition of a patient who has been subjected to this ominous "cocktail"? No doubt, the sensitive hand on the gas bag gives valuable information on respiration. The oscillogram and the electrocardiograph will indicate the state of the circulation, and the oximeter will give reliable information on the oxygen saturation in the blood. The electroencephalogram may indicate responses to surgical stimuli not otherwise observable, so that in due course the anaesthetist may be forced to emulate the pilot of a modern aeroplane with his countless indicators.

Guedel made a major contribution to anesthesiology when he tabulated the signs of anesthesia on a clear basis. However, his observations were founded largely on the effects of ether, and are not applicable to the same extent to modern methods. There is an obvious need, therefore, for a new code to determine the planes of anesthesia, if modern methods are to be used with safety to the patient. If such an object can be achieved without adding to equipment already cumbersome, a useful purpose will be served.

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The foregoing remarks are inspired in large part by the growing popularity of induced hypotension. In former times when chloroform and ether were liberally used, some degree of hypotension was common, and complaints about excessive hemorrhage were rare. With the adoption of the closed method and maintenance of anesthesia in lighter planes there is a tendency for hemorrhage to occur at the site of operation. Although the effort in the past has been to maintain blood pressure at an accepted normal level, the attempt to provide a bloodless field involves a reversal of this practice.

It is necessary to distinguish the hypotension accompanying shock from that resulting from autonomic block. In the former case reduction in blood pressure is followed by vasoconstriction which, if uncorrected, causes tissue anoxia and irreversible damage to the capillary bed. On the other hand, autonomic block produces vasoconstrictor paralysis which, by dilating the arterioles, may facilitate blood flow and prevent capillary damage. Blood volume is not reduced; it is simply pooled in dependent parts of the body, notably the lower limbs.

Induced hypotension for the specific purpose of reducing hemorrhage is indicated in all operations in which blood loss may be excessive or the presence of an oozing field may seriously handicap the surgeon. This is particularly true when vascular tumors, especially those within the skull, are to be removed. The benefit to the patient in the prevention of blood loss is obvious.

In addition to the advantage of reduction of hemorrhage, the method gives protection from traumatic shock as evidenced by concurrent clinical observations by Wyman. Extensive intra-abdominal procedures fall within this category. It is in the post-operative period that striking evidence of the value of the method becomes apparent. When blood pressure regains normal levels, patients who have been subjected to major surgical procedures are phenomenally well. At Westminster Hospital opinion is unanimous that the condition of these patients excels that which follows any other form of anaesthesia.

The method does not entail an easier life for the anaesthetist. When the blood pressure reads 60 mm. or below, fine discernment is necessary as to the advisability of applying restorative measures. The anaesthetist has a natural reluctance to disturb a situation which, as regards hemorrhage, is ideal to the surgeon. The margin of error is extremely small.

Patients who are acutely or gravely ill should not be subjected to this hypotensive technique. Neither should it be used in the presence of established shock, coronary or aortic disease, or impaired renal function. The possibility of acute circulatory failure must always be borne in mind. Cerebral thrombosis and suppression of renal function are a possible aftermath.

The advantages of induced hypotension are undoubted. The reduction in hemorrhage not only facilitates some forms of operation, but also makes possible some surgical procedures otherwise denied the surgeon. Furthermore, in the capacity of shock barrier, the technique has proved striking, and offers a further field of research which bids fair to be promising. These advantages, however, are gained at a great cost. The risks are considerable and the proper application of this new technique should follow the exercise of careful judgment. It is clearly a misuse of this method to employ it when the anticipated advantages are not very great and the dangers considerable. If the risks are greatly outweighed by the help provided for the surgeon, the use of the method may be considered wise. It should be strictly reserved for those cases in which a successful result depends upon its application.

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