ANAESTHESIA IN GENERAL PRACTICE

This is one of a series of articles, contributed by invitation

BASAL ANAESTHESIA FOR SHORT OPERATIONS

BY

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As this article is intended essentially for those general practitioners desiring to administer basal anaesthetics four main principles have been kept constantly in view. All practical technique will be dealt with in detail so far as possible. Dosage has been selected with the idea of playing for safety. Expensive apparatus and elaborate technique have been avoided. Only those drugs which have been duly tried and found by constant use to be satisfactory to anaesthetists will be described.

Evipan and Pentothal Sodium

Basal anaesthetics of note for short operations can be limited to evipan and pentothal sodium. The first is produced by Bayer's Products Ltd., London, and the second by Abbots Laboratories, Ltd. They are both administered by the intravenous method, and have many properties in common. The advantages of these basal anaesthetics other than as a premedication can be summed up as follows. They provide a most pleasant form of inducing anaesthesia. There is some elimination of post-operative vomiting. By their use irritating inhalants are avoided. There is quick recovery of consciousness.

Patients who are going to be given a basal anaesthetic should be in a nursing institution and under the direct care of the nursing staff for at least twelve hours following anaesthesia. In a great number of cases this is impossible, but every care should be taken that the patients are properly looked after, as in a few isolated instances mental symptoms have occurred after an apparently perfect return to consciousness even as late as some eight or ten hours following administration of the drugs.

Pre-operative Preparation

Though it is not absolutely essential premedication by omnopon 1/3 grain and scopolamine 1/150 grain at least one hour before the induction of anaesthesia is of value, doses naturally being diminished in the case of young people or the old and feeble.

Although many prolonged operations have been performed under these basal anaesthetics it is not considered advisable, except for those with considerable experience, to employ them for surgical procedures lasting more than from ten to fifteen minutes. As the time of anaesthesia is limited it is desirable that all pre-operative preparations should be carried out before the induction, probably the most important of these being the placing of the patient, if possible, in the necessary position for a particular operation. Once the needle has been introduced into the vein gross movements of the patient, such as turning him into the left lateral position, tend to displace the needle and necessitate reintroduction. In the lithotomy position the patient can be placed well down the table, though the actual elevation of the legs need not be attempted until anaesthesia has been obtained.

It is as well to mention that these barbiturates cause a fall of blood pressure, and it is therefore not advisable to administer them other than in the recumbent position;

although it must be admitted that this is constantly done with apparently little ill effect, as in dental operations.

Preparation of Evipan and Pentothal Sodium

Evipan is supplied in a glass ampoule holding one gramme of white powder, and with it another ampoule of 10 c.cm. of sterile water. The two are thoroughly mixed some ten minutes before use, and are then drawn up into an ordinary 10 c.cm. Record syringe with an eccentric nozzle, thus making a 10 per cent. solution. Pentothal sodium is also put up in ampoules containing either 0.5 gramme or 1 gramme, and is yellow in colour: 10 or 20 c.cm. ampoules of sterile water are purchased separately. The water and pentothal sodium are mixed together so as to prepare either a 5 per cent. or a 10 per cent. solution. Neither of these preparations should be used if it has been mixed for more than two hours.

Syringes and needles employed for intravenous work can be sterilized either by being kept in spirit or by boiling. The latter tends to be expensive as so many syringes crack. Whichever method is adopted it is well to wash all the parts thoroughly in distilled water before using. The skin should be cleaned with spirit or iodine before introducing the needle. For actually mixing the preparations an old spinal needle is of great advantage, as it is sufficiently long to go to the bottom of the ampoule, thus thoroughly mixing the contents without spilling them, and leaving the intravenous needle ready for use in perfect condition.

Method and Technique of Administration

Before deciding to administer either of these basal anaesthetics it is as well to examine the patient and to ascertain if he or she has suitable veins for an intravenous injection. There is no greater disappointment to the patient or the anaesthetist than failure of this type of anaesthesia if it has once been promised. Any vein that appears to give easy entry will do, with the exception of a varicose one, in which the drug is likely to stagnate, thus producing slow anaesthesia, possibly thrombosis, or damage to the vein.

The vein selected (usually the median basilic in the antecubital fossa is most convenient), manual pressure is applied or a constricting band is placed above the site chosen and sufficient pressure exerted to engorge the vein but not to impede the arterial pulse. This is best done by an assistant constricting the arm above and steadying the patient's wrist below. Any tourniquet that cannot be immediately and smoothly released tends to change the position of the intravenous needle and jerk through or out of the venous wall. A sharp needle with a short bevel, about 1½ inches long, size No. 17, is most suitable. Blood is aspirated into the syringe to ascertain whether the needle is in position; when it is, it is most important that the manual pressure or constricting band should be completely released, otherwise it is possible for a large dose of the injection suddenly to be liberated into the blood stream.

Two to three c.cm. are injected in about fifteen seconds, during which time the patient is encouraged to talk or asked to count. Unconsciousness occurs in about fifteen to thirty seconds. A safety pause in the administration is very advisable at this point to ensure that the patient's

condition is within the normal limits of safety. The time taken to inject the next 3 or 4 c.cm. should be approximately thirty seconds, when another safety pause is essential, after which, if it is deemed necessary, the remainder of the syringe-full can be injected.

The main points to watch during the whole time of administration are that (1) the patient has a perfect airway and the jaw is well supported; (2) depression of respiration is not allowed to progress too far; (3) the pulse rate should not rise. Should it be thought necessary to prolong the anaesthesia the syringe can at this stage be refilled in preparation for further injections. If anaesthesia is being used for operations in the mouth it is essential that a prop or gag should be introduced before the onset of anaesthesia, as spasm of the jaw may make the operation difficult if not impossible.

The signs of the onset of anaesthesia are slurring speech and depressed respiration; nystagmus; sometimes sighing or yawning; pupils small and turned down, later becoming central; early loss of corneal reflex. During the induction stage tremors or movements may occur with evipan, but rarely with pentothal sodium.

Indications and Contraindications

Basal intravenous anaesthesia may be used as a premedication to put patients completely to sleep in their beds; for short surgical procedures such as dental extractions, insertion of radium, dilatation and curettage, eye operations, painful dressings, etc.; to counteract ether convulsions; for childbirth, especially in mental patients—when 2 c.cm. of 10 per cent. pentothal sodium should be given at the onset of strong pains, 2 c.cm. more after one minute, and then 1 c.cm. as required.

The following are contraindications to basal intravenous anaesthesia.

1. Patients who have any respiratory obstruction or dyspnoea. Operations on the air passages.
2. Liver diseases or any impairment of its function. Kidney disease is not considered a contraindication, but should this be advanced it would be well to avoid this type of anaesthetic.
3. In children, in whom small air passages make it difficult to maintain a perfect airway. It is also difficult to give intravenous injections to a child.
4. Hypotension, hypertension, and myocarditis are poor anaesthetic risks generally.
5. Toxic patients, who take a long while to eliminate the drug.

Comparison of Evipan and Pentothal Sodium

Those about to embark on intravenous anaesthesia would be advised to start with evipan, for the following reasons. Should the drug be injected into the tissues outside the vein no local reaction will occur with evipan, although there will be a failure of anaesthesia; with 10 per cent. pentothal sodium acute local inflammation and even ulceration may take place, especially if not recognized and treated immediately with hot packs for five or six hours. Even with a 5 per cent. solution local reaction may occur and should be carefully treated. Respiratory depression is less marked with evipan. The depth of anaesthesia is usually not so great with evipan. Some patients complain of a smell or taste of sulphur after anaesthesia with pentothal.

The advantages of pentothal sodium are as follows. The induction is smoother and there is less likelihood of twitching and jactitation, which do occasionally occur with evipan, especially if it is mixed immediately before use. The fall of blood pressure is less marked. The depth of anaesthesia is more profound. Therefore, if a

10 per cent. solution is used its rate of injection should be much slower than as described in a previous paragraph, and a third or even fourth safety pause introduced during the injection of the 10 c.cm. Premedication is not essential, but, if given, much smaller doses of pentothal are required. Post-operative vomiting when pentothal has been administered alone is practically unknown.

Antidotes

The main complications are respiratory depression or respiratory embarrassment caused by lack of a perfect airway. The obvious remedy is to maintain so far as possible a perfect airway and to administer respiratory stimulants. By far the most efficient is carbon dioxide, 5 per cent. or 7½ per cent. in oxygen, administered under slight pressure in a closed bag. Lobeline 3/20 grain may be injected subcutaneously, or, in bad cases, intravenously. Coramine, 5 c.cm. hypodermically or 3 c.cm. intravenously, is of the greatest value in cases of collapse.

In the event of a patient becoming restless and more or less uncontrollable following this type of anaesthesia the intravenous injection of omnopon 1/3 grain will be found immediately to have the desired quietening effect.

The annual congress of the Chartered Society of Massage and Medical Gymnastics will be held at the London School of Economics, Houghton Street, Aldwych, W.C., from Monday, September 20, to Friday, September 24. The meetings are open to all medical practitioners, and lectures will be given as follows: September 20, 10.30 a.m., Professor G. R. Girdlestone, "Treatment of Scoliosis in an Orthopaedic Hospital"; 12 noon, Miss Maud Forrester-Brown, M.S., M.D., "The Place of Physiotherapy in the Treatment of Injuries"; 2.30 p.m., Mr. K. O. Parsons, "Treatment by Manipulation." September 21, 10 a.m., Mr. A. Lawrence Abel, "Surgery of the Sympathetic Nervous System"; 11.30 a.m., Mr. J. G. Yates Bell and Dr. F. S. Cooksey, "Faradism and Pelvic Floor Exercises for Urinary Incontinence"; 2.30 p.m., Dr. A. T. Todd, "A System of Treatment for Chronic Rheumatism"; 8.30 p.m., Dr. Noel Harris, "Hysteria." September 22, 10 a.m., Dr. Doris M. Odlum, "Psychological Factors in Physical Disease"; 11.30 a.m., Mr. H. J. Seddon, "The Application of Occupational Therapy to Orthopaedic Conditions"; 2.30 p.m., Dr. W. S. C. Copeman, "Chronic Rheumatism." September 23, 10 a.m., Mr. A. E. Porritt, "Ruptures—Ancient and Modern"; 11.30 a.m., Lady Barrett, "Effect on Maternity of Physical Activities during Adolescence"; 2.30 p.m., Mr. A. Wilfrid Adams, "Orthopaedic and Other Operations under Spinal Anaesthesia"; 6 p.m., Miss E. R. Clarke, "Development of the Movement to Improve the Physical Fitness of the Nation"; 8.30 p.m., Dr. J. Kalmanson, "Indications for Short-wave Therapy." September 24, 10 a.m., Mr. E. R. Desoutter, "Artificial Limbs"; 11.30 a.m., Dr. Clement Nicory, "Importance of the Physical Therapist in Preventive Medicine"; 2.30 p.m., Dr. R. L. Kerr, "Remedial Exercises in the Treatment of Abnormalities of Binocular Vision and Asthenopia"; 6 p.m., Miss Ann Driver, "Music and Movement"; 8.30 p.m., Founders' Lecture by Mr. H. A. T. Fairbank, "Some Unusual Causes of Backache." The annual general meeting will be held on September 20, at 5.30 p.m., and will be followed, at 8 p.m., by a debate and discussion. The annual dinner will be held at the Café Royal, Regent Street, W., on September 22, at 7.30 p.m. Arrangements have been made for visits to be paid to various hospitals and institutions during the congress, and practical classes will be held daily. Applications for tickets and for all information regarding the exhibition and annual dinner should be made to the secretary, Chartered Society of Massage and Medical Gymnastics, Tavistock House North, Tavistock Square, W.C.1.