ANAESTHESIA IN GENERAL PRACTICE

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

LOCAL ANAESTHESIA

BY

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The outstanding feature of local anaesthesia is that it enables a patient to undergo an operation without loss of consciousness—a feature shared with spinal anaesthesia. It is obvious that the retention of consciousness may be both an advantage and a disadvantage. Local anaesthesia, however, supplies the best answer to the patient suffering from some minor surgical complaint who states that he is perfectly willing to undergo the operation but cannot face a general anaesthetic. Owing, however, to the great progress made in recent years in general anaesthetics, in which both the safety and the comfort of the patient have been increased, the employment of local anaesthesia has become somewhat restricted.

With the exception of certain special conditions local anaesthesia finds its chief usefulness in minor surgery. For this reason it is invaluable to the general practitioner. This does not imply that it should be limited to minor surgery, as it is safe to state that every operation can be, and has been, performed under this form of anaesthesia. It still can be regarded as a useful alternative to general anaesthesia for most operations and the anaesthetic of choice for many. A local anaesthetic may with advantage be employed in the following circumstances.

1. Used alone, or after preliminary medication with morphine and hyoscine, in minor surgical conditions such as removal of sebaceous cysts, adenoma, lipoma, excision of scars, removal of small foreign bodies, etc.
2. In more extensive operations: (a) when the patient dreads a general anaesthetic; (b) when the patient's condition is such that a local anaesthetic would be less dangerous than a general.
3. In combination with general anaesthesia to obtain relaxation and lessen the amount of general anaesthetic given.
4. When the practitioner is single-handed and has to act as both anaesthetist and surgeon.

Contraindications include such conditions as sepsis round the site of the injection and patients who dread being "awake" during an operation. Young children are not considered good subjects, although it is interesting to note that a local anaesthetic is advocated for Rammstedt operations.

Among the advantages are ease of administration, absence of extensive preparation of the patient, freedom from unpleasant after-effects, and last, but by no means least, safety. The surgeon must remember that the patient is not unconscious and that the area of anaesthesia is limited; gentleness must therefore be of the highest order.

Local Anaesthetic Agents

Many drugs are available which appear to give good results. As my experience has been chiefly with novocain that drug only will be referred to here. It may be used in dilutions of 1/2 per cent. to 2 per cent., and unless otherwise stated it will be assumed that 1/2 per cent. is the strength referred to throughout this paper.

Novocain solutions can be repeatedly boiled for sterilization and as much as 200 c.cm. of the 1/2 per cent. solution be injected with safety. The addition of

adrenaline hydrochloride (1 in 1,000) in the proportion of three drops to each fluid ounce of the solution gives two advantages: the duration of the anaesthesia is increased, and there is less haemorrhage in the field of operation. Where adrenaline may be harmful on account of its action on the circulation, as in toxic goitre, novocain and "cobefrin" may be used. "Cobefrin" is claimed to have no adverse effect on the circulation, and certainly produces a satisfactory ischaemia.

Instruments and Method

A good syringe capable of being sterilized—one of 10 c.cm. capacity is a handy size—and an assortment of needles ranging from fine hypodermics to those of from two to three inches in length are needed. Longer needles may be used but they are rather more difficult to direct. A "continuous-flow" type of syringe saves time when an extensive area requires infiltration.

Local anaesthesia may be produced by (1) local infiltration, (2) nerve blocking, or (3) a combination of the two. Before the injections are started the patient, if at all nervous or if the area to be infiltrated is extensive, should be given a hypnotic. For adults morphine 1/6 to 1/4 grain or omnopon, if preferred, combined with hyoscine 1/150 grain will prove helpful. The more powerful basal narcotics, as avertin or nembutal, are not as useful as one might suppose, for should the patient be only lightly under these drugs he may resent the discomforts of the infiltration and become restless and difficult to control. The area to be infiltrated, the syringe, needles, solution, and the hands of the anaesthetist must be prepared with the care that is given to any surgical operation.

First of all a wheal is raised in the skin with a fine hypodermic needle at the proximal end of the area requiring anaesthetization; through this wheal a larger and longer needle is thrust and the infiltration carried on under the skin. If the infiltration is done gently and slowly the discomfort is reduced to a minimum. In loose skin the area of subcutaneous infiltration can be followed with ease and the exact spread of the solution accurately determined. Subsequent insertions of the needle should always be through the anaesthetic area, so limiting the pain to the first prick of the hypodermic needle.

While infiltrating, care must be taken to avoid direct injection into the circulation. This may be guarded against by taking the following precautions. As the needle is pushed forward under the skin the plunger should be pressed down to send a stream of the solution before the needle point. This will tend to push aside small vessels and lessens the possibility of injection into their lumen, or of causing a haematoma. When in the proximity of large vessels the plunger should be withdrawn slightly from time to time to see that no blood is aspirated into the syringe. Perhaps the safest way is to thrust the needle to the limit of the area and infiltrate only while it is being slowly withdrawn. It is possible that the failure to observe these precautions have been responsible for the rare accidents which have been reported.

For conditions such as small cysts, or when skin incisions only are required, a single broad line of infiltration is all that is necessary. For larger tumours an elliptical area surrounding the tumour must be infiltrated

and some of the solution placed deep to it as well. A liberal amount of the novocain solution will contribute to the success of the anaesthesia. When a large area has been treated in this way a short wait of from ten to fifteen minutes before operating will allow the solution to soak well into the tissues. Some anaesthetists advocate the gentle massaging of the infiltrated area to assist the diffusion. A pin or towel-clip can be used for testing the degree and extent of anaesthesia obtained and the result noted by watching the reaction of the patient's face. This is better than asking him whether he is hurt, as that suggests pain and increases his apprehension. This subcutaneous infiltration method may be elaborated and applied for a large variety of operations.

For fingers and toes the method is slightly changed; a nerve block is effected by ringing round the base of the digit. Here again a wheal is raised on the dorsal aspect at the base of the finger or toe and the circle of infiltration completed by employing a longer needle. In this case it is safer to use very little, if any, adrenaline with the solution, as the ischaemic effect of the adrenaline is very marked when injected in this way. I have seen a finger apparently bloodless when adrenaline had been injected, and although no ill effects followed, the risk of sloughing must have been considerable. After five to ten minutes the whole finger becomes anaesthetized, and a large number of minor operations may be carried out without pain to the patient. This method of anaesthetizing fingers must not be adopted in cases of whitlow when the inflammation involves the base of the finger.

When General Anaesthesia is Contraindicated

In the second class are included a large number of operations which may be performed under local anaesthesia owing to the condition of the patient contraindicating a general anaesthetic. In this class it is usual whenever possible to give a preliminary hypnotic. Some typical cases will be described.

RIB RESECTION FOR EMPYEMA.

Here the patient may be seriously ill from an antecedent pneumonia, or pneumonia may still be present. The portion of rib to be resected is determined, and it is helpful to outline it with an indelible pencil. A wheal is raised at the dorsal extremity of this marked area and a two-inch needle is thrust down till its point touches the surface of the rib. The needle, detached from the syringe for greater mobility, is then pushed down till the lower border of the rib is detected, and the point is then directed into the subcostal groove; 5 c.cm. of the solution is then injected to block the intercostal nerve and render that segment of the chest wall analgesic. The periosteum along the outer surface of the rib is then infiltrated, and finally the skin along the proposed incision is thoroughly dealt with. The infiltration must be sufficiently wide to include the intercostal space both above and below the selected rib. Some three to four ounces of the solution may be necessary to produce complete analgesia.

One warning may be given to the surgeon. The rib must be cleanly cut through and no wrenching or traction made, else pain is transmitted to the unanaesthetized parts of the chest wall.

DRAINAGE OF BLADDER

Another example in this class is the drainage of the urinary bladder in cases of prostatic obstruction. Here again the patient may be in a condition in which a general anaesthetic is not considered advisable. A line of anaesthesia is laid down extending from just below the umbilicus

to the symphysis pubis. The skin and fat are thoroughly infiltrated and the linea alba between the two recti injected, and the two muscles as well. As in all operations under a local anaesthetic, should the patient complain of pain while the operation is in progress a pause may be made and the sensitive layer or part directly infiltrated. If the opening of the bladder causes discomfort a syringe full of the solution can easily be injected into its wall.

GASTROSTOMY

An emaciated and cachectic patient undergoing an operation for gastrostomy may benefit by having it performed under a local rather than a general anaesthetic. A subcutaneous band of infiltration is placed along the left rectus muscle, starting from just above the costal margin and extending down to the umbilicus. The rectus sheath and muscle are deeply infiltrated, and an attempt is made to infiltrate the peritoneum below. Should this layer escape the solution and prove painful it may be directly infiltrated during the operation. The stomach wall does not require infiltration and the patient will complain of no pain while it is opened provided there is no undue traction. The solution should be used freely, and as much as four or five ounces may be necessary to obtain good anaesthesia.

TRACHEOTOMY

A tracheotomy or laryngotomy may be easily and quickly performed under local anaesthesia, and in some cases it may be the only anaesthetic that can be given with safety. For this purpose a 1 per cent. solution of novocain and adrenaline should be employed. A subcutaneous band of infiltration is placed down the middle line from the cricoid to the manubrium sterni. Before the trachea or the larynx is opened 1 c.cm. of a 10 per cent. solution of cocaine should be injected between the cartilaginous rings of the trachea, or in the case of a laryngotomy through the cricothyroid membrane. This will help to check the paroxysmal coughing that otherwise occurs when the tracheotomy or laryngotomy tube is first inserted.

THE INGUINAL REGION

For operations in the inguinal region, such as for herniae, varicoceles, and hydroceles, the following technique, slightly modified to meet each operation, will prove serviceable. The usual small preliminary wheal is raised at a point one and a half to two inches internal and above the anterior superior spine of the ilium. Through this wheal a larger needle is thrust downwards and outwards towards this bony point. Some 20 c.cm. are injected deeply under the aponeurosis of the external oblique and down between the internal oblique and transversalis muscles till the needle makes contact with the ilium. This should block the hypogastric branch of the ilio-hypogastric nerve and the ilio-inguinal nerves as they lie between these layers. Without withdrawing the needle from the skin its direction is now changed to lie parallel to Poupart's ligament, and some 20 c.cm. injected widely under the aponeurosis of the external oblique, and lastly the subcutaneous area reached through this puncture infiltrated. The needle is withdrawn and inserted through the now analgesic skin over the internal abdominal ring, and 20 c.cm. are injected under the aponeurosis through the internal oblique as it covers the inguinal canal and into the cord itself, infiltrating these structures thoroughly and blocking the genital branch of the genito-crural nerve. The subcutaneous area is injected last, as this enables the deeper infiltration to be more easily carried out. One more injection over the lower part of the inguinal canal

will reach the external abdominal ring, where the cord must be infiltrated as it crosses the pubis. On completion of the infiltration the patient should be allowed to lie quietly for some twenty to thirty minutes, while the solution is taking effect, before the operation is started.

Many operations, such as evulsion of the phrenic nerve in cases of active phthisis, colostomies or caecostomies in patients dangerously ill with obstruction, may be performed with advantage under a local anaesthesia, but space does not permit of giving details of each case.

OTHER CONDITIONS

In the third class mention may be made of blocking the lower intercostal nerves, as already described, with 2 per cent. novocain and adrenaline on one or both sides.

An extensive field blocking of the abdominal wall with 1/2 per cent. novocain and adrenaline may be combined with nerve blocking or employed alone. These measures should be carried out while the patient is under gas and oxygen, and when successfully performed contribute markedly towards obtaining muscular relaxation and so limiting the amount of ether or chloroform that has to be used.

Other uses of local anaesthesia include its employment in dental work and its recent application for injection of fractures, while cocaine or its substitutes are largely utilized for nose, throat, and eye operations.

The few examples of the application of local anaesthesia given in this article, while by no means exhaustive, may serve to show its value both to the whole-time anaesthetist and to the practitioner, and may encourage its employment by those who have as yet not been tempted to try it.

Local News

ENGLAND AND WALES

West Riding Medical Charitable Society

The one hundred and ninth annual meeting of this long-established Yorkshire charity was held at Harrogate under the chairmanship of Dr. Edgecombe. The objects of this society are to help medical men who have fallen on evil times and to give financial assistance to the dependants of members who die without having made provision for them. Of late years the society has interested itself to a greater extent than formerly in securing adequate education for the children of its members. In some twenty different centres of the West Riding one or two stewards are elected to report on the financial condition of the applicants for help, and in many cases they are able to give that personal information which is such a valuable supplement to mere documentary evidence. Any grants that are made are handed to the stewards, who are given discretionary powers in the dispensing of the money. Membership now numbers 1,261, and the financial condition of the society is very sound. The invested funds amount to £55,577, and the ordinary income is about £3,100, which represents the amount derived from investments and the one guinea annual subscriptions of members. At the annual meeting just held grants amounting to £2,713 were awarded, and a special grant of £50 was again made to Epsom College towards their fund for the provision of foundation scholarships for the

sons of medical men. Dr. Wardrop Griffith, who has acted as honorary treasurer of the society for the last sixteen years, has resigned that position, and will be succeeded by Mr. Harold Collinson. At the end of the meeting the president, Dr. Edgecombe, asked Dr. Griffith to accept from the officers and stewards of the society an antique silver loving-cup as a token of their appreciation of his devoted service during his sixteen years' tenure of the office of treasurer.

Nutrition in Lancashire

The annual report for 1936 of the county medical officer of health and school medical officer to the Lancashire County Council Education Committee includes an interesting paper dealing with the nutrition of children at a council school. Some ten years ago a shop in the vicinity of this school greatly increased its turnover by providing fried chipped potatoes for children who were unable to go home for dinner. It then occurred to the head master to arrange for a well-cooked and varied midday meal at the school itself, and this scheme, by careful organization and by the delegation of the greater part of the housekeeping, marketing, and finance to the children, soon worked so smoothly that the head master found less than an hour a week to be adequate time for its supervision. The school in question serves a fair-sized village with a surrounding agricultural district. Medical surveys of 147 children, of whom rather less than a third were "school-fed," demonstrated that with the exception of one case these children were in better condition than the "home-fed." There were no badly nourished children in the "school-fed" group. The beneficial effect of the school midday dinner was most marked among the older children, who had in most cases been "school-fed" for two or three years. These striking results were obtained in a district where there is little poverty, and are attributed not to a calorific superiority but to a greater variety of diet in the school regime, for the home dinners were too frequently either stew or chipped potatoes. It is suggested that even more satisfactory results would be obtained by the application of this scheme in really poor districts.

Harlow Wood Orthopaedic Hospital

On July 28 Mr. R. H. Bernays, Parliamentary Secretary to the Ministry of Health, opened the new ward and extensions of the Harlow Wood Orthopaedic Hospital at Nottingham. These will provide twenty-one beds for male patients, rooms for about eight private patients, and additional accommodation for nurses. The total number of beds in the hospital is now approximately 155. Before the ceremony the eighth annual meeting of the hospital was held under the presidency of the Duke of Portland. The president of the hospital, the Duchess of Portland, in proposing the adoption of the annual report, said that the waiting list was larger than it had been at any time since the opening of the third ward three years ago. Mr. Bernays, in seconding the proposal, was impressed by the happy union of voluntary effort with support from employers, employees, and local authorities. He hoped that the progress made at Harlow Wood might be an incentive to the initiation of similar co-ordinated schemes in other areas. Mr. S. A. S. Malkin, supporting the adoption of the report, said that the Midland Colliery Owners' Mutual Indemnity Company had offered to give £5,000 as a contribution towards the provision of additional beds for the treatment of injured miners. This was an indication that what had been done in the past by the hospital had not only been beneficial to the men but had been a success from the financial point of view. Referring to co-operation between hospitals, he said that he hoped to see in the Nottingham area a grouping of hospitals with a joint contributory scheme, so that every patient could be admitted to the hospital best suited to deal with his or her case. Lieut.-Colonel G. A. Lewis, chairman of the Midland Colliery Owners' Mutual Indemnity Company,