

Clinical and other Notes.

ANÆSTHETICS IN THE FIELD.

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COMPARATIVELY few surgical operations are now performed in the immediate vicinity of the firing-line, since it is the routine practice to evacuate cases requiring operative treatment to the casualty clearing station with all possible speed. There are, however, circumstances in which the administration of anæsthetics to patients in field ambulances may be indicated, and it is the purpose of this article to discuss briefly the conditions in which the employment of anæsthesia may be useful and to give a short account of the equipment available.

It will be well to deal initially with the question of equipment. The most important items of the anæsthetic outfit are contained in field surgical pannier No. 1, which includes among its contents chloroform (three pounds) in sealed glass tubes, two drop-bottles, a hypodermic case with the essential drugs, and an excellent saline infusion apparatus. Further supplies of chloroform (one pound) are to be found in field medical pannier No. 1, together with a spare drop-bottle and a reserve set of hypodermics. Medical units in the field have lately received certain additional articles of operative equipment in the shape of an "outfit," which includes among other things a mouth-gag, tongue-forceps, and a Skinner's mask. Ether is also now available, while should the administration of oxygen be urgently indicated, even this commodity will frequently be at hand, though it must be remembered that oxygen cylinders are supplied to dressing-stations for another purpose and should accordingly only be made use of in cases of grave emergency. There is always plenty of lint and gauze, a stomach tube can be improvised, and there are good rubber hot water bottles. Lastly, there is a set of tracheotomy instruments of an up-to-date pattern. It will thus be evident at once that from the anæsthetist's point of view the equipment of a field ambulance leaves nothing to be desired. It may be added that all the materials supplied are of admirable quality.

The cases which may require the administration of an anæsthetic before being evacuated to a casualty clearing station may be divided into three main classes:—

- (1) Cases where it is desirable to dress or redress a severe wound of an extensive nature or to immobilize a fracture.
- (2) Cases where it is considered necessary to perform an immediate operation for the relief of some urgent symptom.
- (3) Cases of wounds or injuries accompanied by shell-shock of an acute maniacal type.

In the first group of cases are included severe shell injuries which can only be thoroughly investigated when the patient is under an anæsthetic owing to the extent and situation of the wound. The cleansing and dressing of many cases of this type cannot possibly be carried out properly without anæsthesia, yet adequate

disinfection of a wound at an early moment may mean all the difference between recovery and death from septicæmia. Again, something more than the first-aid treatment of fractures is necessary in order to secure the comfort of patients who may subsequently have to make a journey of several miles in a motor-ambulance over bad roads. In these cases the value of anæsthesia in facilitating investigation and treatment is at once apparent. The administration of ether or chloroform is usually necessary in cases of severe burns, owing to the extreme pain which dressing of the parts entails.

It must be clearly understood that many of the cases in this first group would, in time of great stress and urgency, be evacuated from the dressing station almost immediately. It is at normal periods that the conditions are most suitable for the exercise of the methods outlined above. There are undoubtedly many advantages in dealing as effectively as possible with patients in field ambulances when the opportunity presents itself.

The majority of these cases offer the anæsthetist little difficulty. There are, however, certain complications which are always likely to be met with when a patient is anæsthetized within a short distance of the line. They may be briefly summarized as follows: (1) Shock; (2) hæmorrhage; (3) vomiting; cardiac collapse.

Shock is usually present in a greater or less degree in cases of extensive and destructive injury to the tissues, even when the part involved is in a relatively insensitive area. Hæmorrhage is of less common occurrence, the torsion of the vessels which usually takes place in the severe laceration resulting from large shell wounds effectually preventing much loss of blood. Occasionally severe venous bleeding has occurred before the patient's arrival at the dressing station, and he may then exhibit definite symptoms of collapse which call for the exercise of special care. An attempt should always be made to differentiate between collapse due to shock and that resulting from hæmorrhage, since treatment by intravenous saline, of the utmost value in some cases of hæmorrhage, would now appear to be contra-indicated in conditions of shock.¹

Vomiting is of frequent occurrence and is often very troublesome. The explanation of its frequency is to be found in the fact that the patient has almost certainly been given a quantity of stimulating fluid to drink after being hit, either at the aid-post or on arrival in the field ambulance. Interrogation of a patient will often elicit the information that two or three cups of hot soup or coffee have been taken during the journey down from the trenches, with the result that the stomach is distended with fluid at the time of operation. It is well to bear this fact in mind and to remember that an empty stomach is the exception rather than the rule. In cases where a man has been wounded immediately after a heavy meal and has been brought in for operation a stomach tube should be passed and the gastric contents removed.

Symptoms of cardiac failure are not common in this class of case, but this possibility must always be guarded against in view of the fact that the patient has almost invariably been treated with an injection of morphia before coming under the anæsthetist's hands. It frequently happens that more than one injec-

¹ "Surgical Shock and some Allied Conditions" (Medical Research Committee), *British Medical Journal*, March 24, 1917.

tion has been given, and I have seen cases where misguided energy in this direction has nearly led to the patient's undoing. A severely wounded man who has been given an excessive amount of morphia before being brought in is scarcely in a fit condition for the administration of an anæsthetic even under the most favourable circumstances. The greatest care is necessary in dealing with cases which have been overdosed in this way, circulatory failure occurring very frequently even under ether.

For the dressing of wounds and the immobilization of fractures anæsthesia may be conveniently induced with the A.C. mixture (alcohol one part, chloroform nine parts), and maintained with open ether or the original agent. Ether should not be used extravagantly or unnecessarily, for it is now an expensive commodity. It is, however, readily obtainable from the advanced depot of medical stores. The A.C. mixture is usually very well borne. It should be administered from a drop-bottle and should invariably be given by the open method on a folded square of lint held well away from the patient's face. Given under these conditions it forms an admirably safe and effective agent. Little muscular relaxation can, however, be produced at an early stage of anæsthesia, and the more complete degrees necessary for the manipulation of fractures are more readily obtained by the use of ether. The widespread habit of cigarette smoking is responsible for a great deal of chronic pharyngeal irritation, which is met with very frequently among patients of all ranks, and unless atropine $\frac{1}{120}$ grain is given as a routine practice before the commencement of etherization considerable difficulty may be experienced from the accumulation of mucus in the throat. Ether should be given by the open method, the mask being covered with eight thicknesses of gauze. A narrow ribbon of gauze may be interposed between the side of the bottle and the cork in order to maintain a continuous flow, a bottle with a perforated cork and two-way tube not being available.

Formal surgical operations are occasionally undertaken in field ambulances, immediate operative treatment affording the patient the only chance of recovery. The majority of such cases are of an exceedingly grave type, amputations and laparotomies being perhaps most common. These patients are naturally difficult subjects for anæsthesia and need the greatest care and attention. Induction is best carried out with a C.E. mixture (chloroform two parts, ether three parts) given on folded lint by the open method, anæsthesia being subsequently maintained with open ether and oxygen. I believe that pituitary extract is of real value in these cases in maintaining the blood-pressure and tiding the patient over a dangerous period. At the same time every effort should be made to maintain the body temperature, and too much stress cannot be laid on the necessity for keeping these cases under careful observation after they have been removed from the operating table. They should be placed in the warmest available position, while an orderly should be placed in special charge of each patient in order that he may be properly looked after and any change in his condition reported at once. In the hurry and confusion of dealing rapidly with a large number of patients these cases are apt to be neglected once the operation is over, chiefly owing to the fact that the nursing staff do not sufficiently realize the gravity of their condition. These operations, frequently undertaken under most adverse circumstances and solely with the idea of giving the patient some slight chance of recovery, are occasionally brilliantly successful, and the anæsthetist should be prepared to take any risk which the decision to operate may involve.

Certain cases of shell-shock arrive at the dressing station in a state of excitability bordering on acute mania. Very frequently such patients have some wound or injury which needs to be treated, but owing to the violence of their struggling it is often exceedingly difficult to deal with them. A little chloroform or C.E. administered very cautiously and gradually will save an infinite amount of time and unpleasantness, while the wounds can be properly dressed, the patient removed to a suitable spot, and due precautions taken before the return of consciousness. Unless there is reason to suppose that an injection of morphia has already been given, $\frac{1}{2}$ grain may be administered, with an added small dose of hyoscine at the conclusion of anæsthesia.

NOTES ON THE TREATMENT OF AMŒBIC DYSENTERY WITH EMETINE AND BISMUTH IODIDE.

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DURING the months of July and August, 1917, forty cases of amœbic dysentery admitted to a military hospital in Mesopotamia were treated with emetine and bismuth iodide, used either alone or in conjunction with emetine hydrochloride.

These cases formed twenty-five per cent in July and thirty-four per cent in August of all cases admitted in which blood and mucus were present in the stools. They also furnished all the severe cases and the deaths from dysentery during the above period. Four deaths occurred, in two of which hyperpyrexia from the intense heat undoubtedly hastened the end. The remaining two were due to peritonitis following perforation of dysenteric ulcers, and occurred in very debilitated subjects two or three days after admission.

The duration of the disease before admission to this hospital varied from three days to a fortnight, the average being about six days. In many cases could be elicited a history of previous attacks of dysentery in either Mesopotamia or India.

All patients treated were natives of India, and came from widely separated districts of that country. As this was the first opportunity afforded the writer of making a trial of emetin and bismuth iodide in a series of cases of amœbic dysentery the diagnosis of which could be confirmed, and the results of treatment checked by microscopical examination of the fresh stools, the following points were considered worthy of investigation:—

- (1) The tendency, or otherwise, of the drug to produce vomiting.
- (2) Its action, either when given alone, or in conjunction with emetin hydrochloride, in
 - (a) Acute cases showing active amœboid forms in the stools;
 - (b) Less acute cases in which encysting forms are appearing in the stools;
 - (c) Chronic relapsing cases; the results in all cases being checked by microscopical examination of the stools.

(1) The action of the drug in producing vomiting had to be taken into consideration, as keratin capsules were not available, and the drug had to be administered in the form of a powder or pill. Happily it was found that the Indian tolerates the drug very well. The maximum single dose of three grains was never exceeded, and not more than four grains were given during the twenty-