Summary

Of 77 urological cases occurring in men of a British division in India and admitted to a British general hospital during Jan. to Dec., 1943, 43 (55%) had oxaluria. Oxaluria was also present in five cases of renal and ureteric calculus reviewed in this series, and in two cases of hydronephrosis. Of the cases of oxaluria 30 occurred in the period April-Sept., 1943.

Eight cases of epididymitis considered to be due to oxaluria were investigated.

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REFERENCE

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INTRAVENOUS ANAESTHESIA WITH PENTOTHAL SODIUM

BY

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This is a short survey of points arising out of the use of pentothal sodium since its introduction, including its administration to more than 700 acute battle casualties in a tropical area.

Most of the soluble hexobarbitones are powerful hypnotics only, and are unsuitable for continuous intravenous anaesthesia. Pentothal sodium has been of more general use in acute war surgery here than any other anaesthetic drug. The contraindications to the use of pentothal become less and less in proportion to the accumulated experience of the anaesthetist. The barbiturates are exciters of the parasympathetic nervous system. After a possible early dilatation the pupil tends to remain small, the only reliable third-stage eye sign being its central position. Hiccup and irritative spasmodic cough are not uncommon. The pharyngeal and laryngeal reflexes may remain active, and may be evoked by stimuli arising about the mouth, jaw, or pharynx, or by pain stimulus from a distance. These reflex disturbances are much more common in exhausted battle casualties, and especially in cases of injury involving the neck and thorax.

Continuous intravenous anaesthesia has been avoided in penetrating injuries of the upper abdomen and in severe wounds of the jaw or neck. The latter may be associated with oedema, or there may be mechanical obstruction by displaced tissues or blood, directly interfering with the airway.

Method

The anaesthetist should have two hands free to supervise or carry out any necessary measures of resuscitation during operation. To this end many suggestions have been published already, but the simplest method seems to be that of a rubber tube and glass cannula interposed between syringe and needle. There are obvious disadvantages in any fastening of the syringe to the patient's arm. A syringe-holding clamp has been devised (Fig. 1) which fits firmly to any arm-board. This has been used for nearly three years, and proved a definite aid. The actual syringe-holder consists of a trough which is adjustable to hold firmly any syringe from 10-c.cm. to 50-c.cm. capacity. A swivel allows of ready adjustment of the rubber tube to the line of the vein, so that the needle lies comfortably, and fixation by adhesive is seldom necessary. A three-way tap is useful in dealing with numbers of cases consecutively. One arm of the tap is connected to a pentothal reservoir, one to the syringe, and on to the third fit the tube and cannula. The syringe is easily refilled, and remains fixed and sterile. Between cases only the tube to the patient needs removal and sterilization. For success with the method good syringes, preferably all-glass, are essential, as most metal-and-glass types allow of back leakage of the solution round the piston. The tap is turned off (a) when piercing the vein; (b) in the intervals between the injection of solution; and (c) when refilling the syringe with solution. There is less possibility of blood clotting

in the needle if a 17- to 19-gauge needle is used, and also if a minute quantity of solution is injected at frequent intervals to prevent stagnation of blood in the needle. In head operations or when both arms are involved the anaesthetist must work at the ankle, where in many cases, even after compression, veins are not easily visible or palpable. In such cases anaesthesia

FIG. 1.—Apparatus connected as for combined anaesthesia and transfusion. A: Clamp to screw on to any arm-board holding syringe B. C: 3-way tap. D.: Weighted tube to pentothal reservoir E. G: Tubing from transfusion bottle plugged via glass cannula into Y-connexion H on which fits needle. T1: Tube to needle. T2: Tube and cannula to fit needle for anaesthesia without transfusion.

is induced by injection of a small hypnotic dose into any accessible vein, and, if necessary, the airway is controlled by intubation. Vasodilatation then occurs, and there will be present at the ankle, or on the dorsum of the foot, a network of prominent veins which allow of easy puncture even when no vessels were apparent before induction. Anaesthesia can be carried on at the ankle, combined, if necessary, with transfusion of any suitable fluid, without the necessity for cutting down on a vein.

Owing to the increased sensitivity of the pharyngeal and laryngeal reflexes, any artificial airway, either pharyngeal or nasal, is very likely to set up a laryngeal spasm. This may be most troublesome and sometimes difficult to abolish completely. Spasm may occur or persist at a plane of anaesthesia deeper than that required for the operation itself. Spasm and coughing are not always evidences of light anaesthesia when using barbiturates. To deal with spasm of any severity access to the tongue and posterior pharynx must be easy, as most cases will respond to the hooking forwards of the base of the tongue with a finger or tongue forceps. The latter can be used unopened as a curved spatula. To allow of easy access a prop has been devised (Fig. 2), which is shaped to fit comfortably

FIG. 2.—"Top-hat" prop.

between the teeth before induction, without causing gagging or discomfort.

The head should be placed in a position approaching that of normal comfortable sleep. With the small prop in the mouth

the head is turned gently to one side immediately sleep is induced, and the chin is supported; the tongue does not tend to fall back, and the breathing, which formerly may have been oral, now becomes quiet and entirely nasal in most cases. The prop itself is in no sense an airway, but it has a central oval aperture which will admit any of the flat-type rubber or metal pharyngeal airways. As explained before, the introduction of any such airway is inadvisable. If an airway is used it should be greased with a stiff ointment containing one of the surface-acting local analgesics. A thick pad of sorbo rubber introduced between the chin and the clavicle is very suitable as a chin support.

Results

Pentothal gives good results in $2\frac{1}{2}\%$ solution. In this strength accidental paravenous injection has not caused irritation to the tissues. Only once has thrombosis occurred with this solution. In this patient thrombosis was at the bend of the elbow, the injection having been given at the wrist. Solutions keep well, and no clinical differences have been noted when using solutions 48 hours old. As a test, a $2\frac{1}{2}\%$ solution in ordinary tap-water in a non-sterile tube was kept open on the laboratory bench for 72 hours. Subsequent cultures were sterile. To part of this same solution were added two strains of staphylococci and one of streptococci from routine laboratory specimens. No growth was obtained after culture for 48 hours.

Respiratory depression is lessened and all-round improvement in results obtained by the use of some form of gaseous inhalation in combination with intravenous pentothal. In most of the cases oxygen alone or gas and oxygen have been used. Cyclopropane was available late in the series. The administration of a gas-oxygen mixture facilitates maintenance of anaesthesia, aids relaxation, and lessens the total amount of pentothal necessary. Enough oxygen must be used to avoid cyanosis. By this method the retardation in rate and the shallowness of respiration commonly seen in anaesthesia with pentothal alone are avoided. Early spasm, if slight, can be abolished by introduction of carbon dioxide or by an increase in the pressure of the inhaled gases. In a few cases mild spasm or irritative cough may persist despite these measures. This is of small significance in operations on the limbs, and the anaesthesia should not be deepened unless the symptoms interfere with the surgeon, provided always that there is no evidence of lack of oxygenation of the patient.

Adequate premedication with morphine $1/8$ to $1/4$ gr., combined with scopolamine $1/150$ to $1/100$ gr. or atropine $1/100$ to $1/75$ gr., decreases the tendency to spasm and also the total dosage of pentothal required. A warning is essential in acute war surgery—at least in this theatre of war. From the point of view of the anaesthetist, the battle casualty usually arrives in the operating room over-morphinized. In most cases this appears to be due to somewhat lavish use of morphine, but in the debilitated state of many severe casualties even moderate morphine dosage may have a profound effect. It has been found wiser to omit any morphine pre-operatively unless the patient has been under local observation for some hours. A very small pupil is the commonest eye sign in battle casualties reaching operation, and the size does not alter throughout the anaesthesia with pentothal.

In many cases deep anaesthesia is unnecessary. In the toilet of most wounds, using the combined method, 0.3 to 0.75 g. is sufficient. In the major surgery of multiple compound fractures and in amputations it has not been necessary to exceed a dose of 1.5 g. Three disarticulations at the hip for gas gangrene—one of 70 minutes' duration—were carried out with a dosage of 0.75 g. each; there were no untoward symptoms, and all recovered well.

In a sudden military emergency with influx of wounded in large numbers, nursing facilities are strained and patients must return to bed from the operating theatre in a state in which they will need little or no immediate post-anaesthetic care. It has been found that most patients arouse in the theatre after provision of all anaesthesia necessary for their surgical needs. Vomiting has been conspicuously absent, and there has been no anxiety as to maintenance of free airway after return to the ward. Most of the men can take fluid and nourishment soon after their return to bed. They are encouraged to drink water in plenty up to 20 minutes before operation.

Sulphonamides have not been regarded as a contraindication to the use of pentothal. In the presence of sepsis and debility, caution and a much-decreased dosage of pentothal are essential. In this series no state of toxæmia or exhaustion has been an absolute bar to its use. It has not been employed in jaundiced patients. Although working in adverse tropical conditions and with patients debilitated by infective states, no case of delayed recovery of consciousness has been seen, despite the probability of latent liver deficiencies. Shock is not always a contraindication to pentothal anaesthesia. Some casualties arrive pale, restless, and confused, and in these the intravenous injection of a few cubic centimetres of solution facilitates the introduction of plasma or other fluids and the use of a face-mask for inhalation of oxygen. These patients are kept only just asleep, and operation is not begun until recovery from shock is evident. If ether or high cyclopropane percentages are thought necessary a few cubic centimetres of pentothal are used merely as a single-dose pre-hypnotic, but ether is avoided wherever possible.

Conclusions

Pentothal in $2\frac{1}{2}\%$ solution by the continuous method, preferably combined with inhalation of oxygen, gas-oxygen, or cyclopropane mixtures under slight pressure, is an anaesthetic of wide and satisfactory application in the treatment of acute battle casualties. A syringe-holding clamp, which facilitates administration, is described, also a mouth-prop. It is recommended that no artificial airway should be introduced, owing to the likelihood of cough and spasm. Intubation necessitating the maintenance of deeper anaesthesia was reserved for special indications.

I am indebted to Lieut.-Col. B. B. Hickey, R.A.M.C., for permission to publish this article, and to Dental Mechanic S. Dale of A.D. Corps for his advice in the design of the prop. Acknowledgment and thanks are due to the staff of the various Army workshops for their ready help in making the clamp and prop, and for prompt aid at all times in the construction and repair of anaesthetic apparatus.

The syringe, tap, and two-way adapter shown in Fig. 1 are made by Messrs. Becton Dickinson, but suitable apparatus is obtainable from Medical and Industrial Equipment Ltd., 12, New Cavendish Street, London, W.1.

TREATMENT OF SOFT WARTS WITH PODOPHYLLIN

BY

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A treatment for condylomata acuminata which deserves to be widely known because of its simplicity and high rate of success has been described by Culp, Magid, and Kaplin (1944). From their results in a series of 100 cases treated with podophyllin they claim that:

"(i) Podophyllin has been found to be unusually successful in producing prompt and complete disappearance of condylomata acuminata regardless of the size, number, location, or duration of the growths. . . (ii) Podophyllin may be applied locally to the lesions as a 25% suspension in mineral oil or as a paste composed of the powdered drug and water. Anaesthesia is not required. (iii) Treatment is simple, the convalescence usually is painless, and the lesions disappear within two or three days after a single application, leaving no ulceration or scarring. Repeated applications of the drug may be necessary in a few instances. . . (iv) The surrounding normal tissue is unaffected by the drug, but in isolated cases of extensive application under tight prepices some balanitis may result. . . (v) The dramatic results obtained in this series of 100 cases and the simplicity of the treatment with podophyllin prompt us to recommend more widespread application of this type of therapy."

I have treated a series of 25 cases of condylomata acuminata and have confirmed the success achieved in the U.S.A. In addition one case of extensive warts of the face has responded equally well to podophyllin treatment.

Method

A suspension of podophyllin resin B.P. 25% in liquid paraffin B.P. was shaken and then applied liberally to the affected area, care being taken to ensure that the numerous crevices of a profuse crop of warts were penetrated and no attempt being