OPERATION SHOVELLER

ANAESTHESIA IN JORDAN

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SUMMARY: A brief description is given of the anaesthetic techniques employed while in Jordan, and special reference is made to the use of the drug Ketamine.

Introduction

Last September I listened with some interest to the news bulletins regarding the situation in Jordan, little thinking that it would soon involve 50 Field Surgical Team (F.S.T.), the staff of which is drawn from the Royal Herbert Hospital. It was with no little surprise therefore that we found ourselves some days later in Cyprus en route for Jordan.

In the event we did not arrive in Jordan until the end of the month and it was not until the 1st October 1970 that 'knife was actually put to skin'. The first twenty-four hours were spent identifying boxes and crates destined for the operating theatre, and then removing the equipment from them and assembling it ready for use. Fortunately, the members of the team had been on a well run and useful exercise sometime previously and the experience gained on this made our task of setting up the operating theatre much easier.

As mentioned elsewhere in this Journal, 2 Field Hospital, to which 50 F.S.T. is attached, was allocated a block in the King Hussein Hospital (Fig. 1); an American Army

Fig. 1. The King Hussein Hospital showing the blocks in which 2 Field Hospital and the American Army Hospital were accommodated. The Hospital Mosque is also seen.

Hospital was situated next door to us in a similar block. The upper story of our block was used for wards and theatre and the ground floor for staff accommodation and dining hall.

Organisation of the Theatre and the Resuscitation Ward

Most of the ward space allocated to us in the hospital block was divided into almost equal areas by approximately four foot high walls with provision made to fill the gap between the top of these and the ceiling with curtains. The area made available for the operating theatre and recovery wards was similar in design. It was decided to set up the recovery and resuscitation wards as close to the theatre as possible. The advantages to this was that the surgeon and the anaesthetist, in particular, were readily available for advice to the staff caring for acutely ill patients and those recovering from a general anaesthetic. We had no idea, until we started admitting patients just how heavy the work load was going to be. In fact, during the first few days the team was very busy indeed, and resulted in the pre and post operative care of patients being left almost entirely to Major Adrian Davies, our Physician, and Captain John Foxley, the Transfusion Officer. The latter was also responsible for the resuscitation ward in addition to his duties as Transfusion Officer.

Fig. 2. The operating theatre 2 Field Hospital.

The disadvantages of having patients close to the operating theatre was primarily one of noise, particularly during visiting hours. The visiting friends and relatives often brought in large quantities of food, and it was not unusual to see it being forced into the mouth of some patient recovering from an anaesthetic. This problem was more apparent in the main ward, and it was often very difficult for the staff to keep patients fasting for an afternoon operating session. Notwithstanding all this, our theatre was spacious and bright (Fig. 2) and we had a splendid view of the countryside with the hospital Mosque in the foreground.

Just prior to operation the patients were brought on a stretcher from the ward and placed on a trestle. When their turn came they were brought into theatre on their stretcher which was then placed on the field pattern operating table. They were then anaesthetised.

Pre-medication

In virtually every case premedication was either intramuscular or intravenous atropine. The reason for this was that planned lists could well be disorganised by the arrival of more urgent cases which was certainly the pattern in the first week or two. Secondly, if a patient were transferred from elsewhere, he may well have been given Morphine or some similar drug previously. Thirdly the anaesthetist, due to theatre commitments, may have been unable to assess patients preoperatively; and lastly, for the convenience of the ward staff, who were very busy indeed administering repeated doses of antibiotics because, as noted by Boyd (p. 76 this issue) infection was very common.

Anaesthetic drugs

The usual range of intravenous fluids to be found in any Military Hospital was available; those not normally found on the scale of an F.S.T. were obtained quite easily from Cyprus. Blood was obtained from the same source, and altogether 120 units were used.

Disposable items of equipment—syringe, intravenous catheters and cannulae were in plentiful supply, likewise there was a reasonably comprehensive range of anaesthetic drugs. Because most of the cases dealt with by the team were either limb injuries or burns many of the drugs supplied were not required, particularly the relaxant drugs. The routine anaesthetic which proved to be the most satisfactory was a sleep dose of Thiopentone followed by Halothane and oxygen. In fact, only 13 anaesthetics, out of the total 230 administered, were given using relaxant drugs and controlled respiration. However, in another situation this could well be reversed if more abdominal or chest wounds were found.

Anaesthetic Equipment

Three machines are on the scale of a Field Surgical Team, they are:

- a. The portable Medical and Industrial Equipment Ltd. (M.I.E.) Machine with open and closed circuit. It carries cylinders of cyclopropane and carbon dioxide in addition to the usual nitrous oxide and oxygen.
- b. The Epstein McIntosh Oxford (E.M.O.) (Ether/Air) with a Penlon vapouriser for Halothane.
- c. The Haloxair, capable of delivering concentrations of Halothane up to 5 per cent with air or oxygen. It is usually used with oxygen. This machine was used on more occasions than any of the others.

A disadvantage of the M.I.E. Machine was that the cylinders of nitrous oxide and oxygen were of a very small capacity necessitating frequent cylinder changes. This machine was used for the occasional case which required controlled ventilation and when maintaining a patient with nitrous oxide/oxygen following induction with Ketamine. When dealing with small children it was also useful, and an Ayres T-piece was used or alternatively the British Oxygen Company (B.O.C.) childrens' anaesthetic set.

The E.M.O. Machine was not used to any great extent for three reasons. Firstly, deep levels of anaesthesia were not required; secondly, a prolonged recovery period resulted and thirdly, there was the postoperative nausea and vomiting associated with an ether anaesthetic.

As an F.S.T's purpose in life is to deal with wounded adults endotracheal tubes suitable for young children had to be acquired rather hurriedly from Cyprus. However, we were fortunate in having sufficient disposable urinary catheters which could be modified to provide an excellent substitute while awaiting the arrival of suitable endotracheal tubes.

One point which comes to mind following our experiences in Jordan is the difference in role which a Field Hospital can be called upon to play in a situation such as then existed. We rapidly found ourselves playing the part of a base hospital, accepting cases from other hospitals instead of just 'patching up and passing on', which is the conventional role of a Field Hospital. If this peace-time 'hearts and minds' role is to be played again, then I feel certain that additional items of equipment are required in particular some form of positive pressure ventilator and humidifying apparatus for use in the intensive care ward.

The use of Ketamine

I should like to mention briefly the non-barbiturate anaesthetic drug Ketamine, which was found to be most useful in our particular situation. Infection was a severe problem and those patients who had been burned were no exception. It was decided to place these severely burned cases in a bath of Hibitane solution, but the majority were young children who found the procedure unpleasant and painful, particularly while eschars and sloughs were bathed off and attempts made to move and straighten their limbs. Some attempt had to be made to heavily sedate or anaesthetise them and for this Ketamine was tried with great success, the drug being given intramuscularly. The dose range used was in the region of 10mg/Kg body weight. I should add here that one could only make an inspired guess regarding the patients weight as there were no scales available. Following an adequate intramuscular dose a sufficient level of anaesthesia was reached in three to five minutes for the patient to be placed in the bath of Hibitane solution. One member of the staff supported the patients head, while another bathed the burnt areas and gently manipulated the patients limbs. (Fig. 3).

It was found that the patients respiratory exchange was adequate and that they could maintain their own airway. With the dose/weight ratio mentioned above the patient was able to sustain the treatment for at least thirty minutes and on average up to sixty minutes. Postoperative complications were found to be rare. Only two patients vomited severely postoperatively and one complained of having unpleasant dreams. This was considered to be satisfactory as the drug was used 51 times on 22 patients. It is considered that the low number of complications was due to the fact that the average age of the

Fig. 3. Patient being treated in a bath of hibitane.

patients concerned was only twelve years and also because all patients on which Ketamine was used as an anaesthetic were allowed to recover quietly and undisturbed.

Conclusion

I feel that the experience gained in Jordan was most valuable for an Army Anaesthetist as one was able to utilise fully the equipment supplied to an F.S.T. and gain first-hand knowledge of the problems which may confront one under active service conditions.

Acknowledgement

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