

heid van die finansiële hulp nie, maar deurdat dit die geneesheer bind vir 'n paar jaar, besluit hy gewoonlik om te spesialiseer weens finansiële voordele. Hierdie geneesheer is feitlik verlore vir algemene praktyk.

Ek sluit af deur te sê dat die wêreldwye ommeswaai wat die belangrikheid van die algemene praktisyn beklemtoon,

hoofsaaklik die gevolg is van 'n mensdom wat nie meer tevrede is met tegnologiese behandeling nie. Wat hulle werklik wil hê is die warme menslikheid en aanvaarding en privaatheid, wat hulle nie kan kry in groot hospitale en klinieke nie, maar wel in die spreekkamer van die privaat algemene praktisyn.

Medical Aid at the Roadside

A. G. MAC MAHON

SUMMARY

Aid given to patients at the roadside may be divided into three categories, namely first aid, ambulance aid and medical aid. The type of assistance actually rendered by the doctor will depend on how well he is equipped. The main situations with which a doctor may be faced, are dealt with under these three headings.

S. Afr. med. J., 50, 1948 (1976).

In the period that I have been associated with emergency care, probably the most often heard remark from my colleagues has been, 'I don't stop at road accidents because I don't have anything with me'. As I have made clear on a number of occasions, I find this statement quite unacceptable, as it is basically untrue. All medical personnel have certain qualities not often found among the general public under these conditions. Firstly, they have the ability to 'keep their heads while all about are losing theirs' and, secondly, they do not have that morbid fascination with the injured that so often leads the public to irrational action or no action at all. This is demonstrated by the number of times that I have had to call an ambulance, a procedure completely neglected by the spellbound on-lookers at the accident scene.

All doctors have a medical training which can be of real assistance to a patient, at least on a first-aid level. The unequipped doctor may of course be embarrassed and frustrated at not being able to help a patient who urgently requires simple medical treatment such as intravenous therapy. A guide to equipment to be carried by every

doctor in the boot of his car has already been published,¹ but as roadside conditions differ² so much from conditions found in hospital, it was considered worthwhile to briefly review certain basic practical procedures applicable to the treatment of patients at the accident scene.

Various aspects have been dealt with previously and for those with a real interest in the subject the book by Snook³ is most comprehensive and details of various techniques involved are well described.

Roadside treatment concerns mainly four aspects of injury; haemorrhage, airway obstruction, pain and fractures. Each of these aspects may be managed on three different levels, depending on knowledge and availability of equipment, namely first aid, ambulance aid and medical aid. Each category assumes in the practitioner a knowledge of the former category and as these three grades reflect the degrees of preparedness in which doctors may find themselves in terms of equipment, I have used this system in the following discussion. Special problems are associated with trapped patients and will not be dealt with in this article.

ARRIVAL AT THE ACCIDENT SCENE

If the accident scene is already under control of the police, the car of the doctor involved should be parked in such a way as not to cause obstruction. However, if one arrives shortly after the accident, the car should be used to protect the accident scene, i.e. the patient and oneself, from further injury. In such circumstances the ignition key should be left in place so that the vehicle may be moved on the arrival of the police. Until then full use should be made of hazard lights, red lights and headlights. The patient should not be moved until examination has shown that it is medically safe to do so. This excludes, of course, reasons such as fire hazards which will be dealt with later.

Mobile Medical Squad, Tygerberg Hospital, Parowvallei, CP

A. G. MAC MAHON, M.MED., *Head*

Date received: 1 July 1976.

Initial Action at Scene

Identify yourself as a doctor as this avoids many a problem when dealing with restless bystanders. Ascertain how many persons are involved and by quick examination establish if any are in a life-threatening situation. Particular attention should be paid to silent patients as they are invariably more seriously injured than those complaining loudly and who are at the least maintaining their airway and their cerebral perfusion. Examining the patient, rapid first-aid measures, such as clearing an airway, may be carried out, but it is a mistake to become involved in more sophisticated procedures on a single patient at this stage while others who may be saved with simpler measures remain unattended.

After the initial survey it may be decided that no further medical treatment is required on the scene. This being so, one should protect the patients from further injury while awaiting the arrival of the ambulance. The only indication for moving a patient by private transport in areas where an adequate ambulance service exists, is gross uncontrollable intra-abdominal haemorrhage which is usually due to liver injury. Unfortunately, no intravenous therapy is sufficient to balance this loss and only a definitive operation can save this patient.

HAEMORRHAGE

Diagnosis

Bleeding sites, rapid pulse and pallor are obvious signs of haemorrhage, but it should be noted that the pulse may be modified in the presence of a head injury and pallor should be observed in the tongue due to peripheral vasoconstriction.

First Aid

When no bandages are available, pressure must be applied to the arterial points of the pulse if possible. In other instances the legs may be elevated provided the patient's injuries permit this manoeuvre.

Ambulance Aid

Pressure bandages must be applied to the site of open haemorrhage and where available, e.g. in ambulances in Cape Town, intravenous therapy may be instituted. Transport should be undertaken in the legs-up position and oxygen should be given to the patient.

Medical Aid

Fluid replacement is the mainstay of treatment in fluid loss and should be initiated as early as possible. If there is doubt as to its necessity it certainly should be used. In determining necessity one should also be guided by the nature of the accident and the position of the patient at the time of impact. It must be borne in mind that a good open intravenous line may be maintained with very little fluid, but can save the life of the patient should he go into shock with vasoconstriction complicating the institution of therapy. In general an electrolyte solution, such as

Ringer's lactate, should be used initially, followed by a plasma expander that does not interfere with blood coagulability or compatibility, such as Haemaccel, which we have used with good results. For this purpose it is recommended that 2 units of each solution should be available. The type of cannula to be used is a matter of personal preference but with transport in mind it is practically mandatory that the indwelling portion should be plastic to avoid tearing of veins.

For the same reason all intravenous lines should be firmly secured and, if necessary, splinted to avoid dislocation en route to hospital. Children present a special problem; besides suitable minicannulas which should be available there is a very real danger of over-transfusion. Therefore, it is advisable that 150-ml fluid containers should be used. Where this is not possible litre bottles should be decanted or monitored personally.

The position for inserting the cannula is quite irrelevant in these circumstances and it is far better to use easily accessible sites such as the antecubital fossa and to immobilise the elbow joint rather than waste time seeking out preferred sites. A further good stand-by site is the external jugular vein in the neck but here it is imperative that only plastic cannulas should be used.

The success of these measures is most rapidly assessed by monitoring the pulse rate and volume as blood pressure measurements are both cumbersome and time-consuming.

AIRWAY OBSTRUCTION

Diagnosis

The most common cause of airway obstruction is poor positioning of the head of an unconscious patient coupled with other simple factors such as dislodged dentures. These causes can rapidly and effectively be corrected by first-aid measures. Respiratory difficulties arise from the stove in or flail chest. When the injury is bilateral, gross diagnosis is not difficult, but in lesser degrees it can be extremely difficult. Paradoxical breathing, as well as cyanosis, is difficult to detect in poor light. The likelihood of such an injury must be inferred from the nature of the accident and in the conscious patient, pain on inspiration is significant and must not be ignored. On examination, fractured ribs may be palpated and should always be looked for. In all such chest injuries one should be alert to upper abdominal injury and, of course, probably the most unwelcome chest complication outside a hospital, the traumatic pneumothorax. This condition presents considerable problems both in diagnosis and treatment. It should be suspected in all steering-wheel injuries, all patients with fractured ribs and patients with increasing dyspnoea in spite of a clear airway. While being manually ventilated this is experienced as increasing resistance to the inspiratory effort.

First Aid

The head should be extended, the jaw brought forward and the mouth cleared of foreign objects, dentures, blood clots and the tongue. In the case of unconscious patients

the head should be tilted to the side and, if associated with a spinal injury, the whole body should be turned and supported.

Ambulance Aid

An oral disposable airway may be inserted and efficient aspiration of blood and mucus may be carried out by means of portable suction apparatus and Yankauer suction heads. If required, manual ventilation may be carried out with a bag and mask. The bag in turn should be connected to a portable oxygen apparatus particularly in the case of head injuries. In the latter case, whether ventilation is used or not, oxygen should be given at the earliest opportunity.

Medical Aid

Provided that the proceedings described above are correctly carried out, further treatment at the accident scene is seldom necessary for airway obstruction. Should it be necessary to intubate the patient this is most easily done with the oral direct vision technique but the operator must be conversant with the procedures, failing which it is more prudent to continue ventilation with oral airway and bag. In general, we use cuffed tubes and do not carry tubes larger than 7.5 Blue Line. Larger sizes lead to unnecessary difficulties in less than ideal conditions. Having ascertained by auscultation that the tube is not down the right main bronchus, it must be firmly strapped for transport of the patient. The placement of such an endotracheal tube protects the unconscious patient against aspiration and at any stage one may offer effective positive pressure ventilation by mouth if no other means are available. As with intravenous therapy, babies and infants must not be forgotten in one's selection of endotracheal tubes and an oral mucus aspirator should be available for them.

Traumatic pneumothorax which is easily managed in hospital is difficult to treat with confidence at the roadside. Once the diagnosis is made, however, and the patient continues to deteriorate in spite of an otherwise intact airway, action may be necessary. But, in carrying out any drainage procedure the operator should for obvious reasons be prepared to assist ventilation should this be required. The time-honoured emergency drainage of a tension pneumothorax with a reversed fluid administration set under water still has merit as a trial method, but must be condemned as a definite treatment even at the roadside. The needle can become blocked, the lung can be penetrated on expansion and if the patient is being ventilated even manually the system is unable to cope with the airflow through the bronchopleural fistula, thus aggravating the condition further. Therefore, we prefer a disposable trocar, and a cannula used in conjunction with a Heimlich valve. The latter obviates the use of water and all its attendant difficulties and is ideal for transport of the patient. Although we have not yet experienced valve blockage, we usually carry a second valve. This system has proved satisfactory in practice but, as with endotracheal intubation, one should be familiar with the technique. A simple large bore needle, repeatedly inserted, can be used to relieve a tension pneumothorax, but this should be preceded by an

absolutely positive diagnosis and precautions regarding ventilation should be taken in the event of the precipitation of a pneumothorax which has not previously existed. Fortunately traumatic pneumothorax seldom requires roadside treatment and the chances of a passing doctor having to deal with such a situation is practically zero.

PAIN

The management of pain at accidents is extremely important and although circumstances differ, we generally keep away from any drugs affecting respiration, blood pressure or later evaluation of the patient, such as pethidine or morphine. However, if a patient has, for instance, been severely burnt and has no other injury, morphine is not contra-indicated.

First Aid

The patient should be made as comfortable as possible and fractures should be immobilised. Nothing should be given orally; most certainly not alcohol.

Ambulance Aid

Many ambulances have Entonox gas as part of their equipment. In common with others⁴ we have found this gas to be safe and effective. It is offered to the patient and is self-administered when there are no contra-indications such as previous alcohol intake. It has the additional advantage of consisting of 50% oxygen.

Medical Aid

Intravenous administration of pentazocine (Sosegon) has been found very useful, but almost invariably 60 mg (2 ampoules) are required in adults. Used in conjunction with Entonox, 30 mg (1 ampoule) will suffice. Valoron drops are of particular value in children, but have also been used most successfully in adults without the addition of other drugs. It has not been found necessary to use other analgesics in treating the average accident victim, but the trapped patient sometimes presents a more difficult problem.

FRACTURES

Diagnosis

The diagnosis of fractures is usually not difficult, but one must not forget the unseen fractures, i.e. particularly spinal and pelvic fractures, and evaluation of how the injuries may have occurred by looking at the car, can be extremely useful. Although a fracture may not be obvious at first sight, one should pay attention to the patient's complaints of pain. It is our policy rather to overdiagnose fractures, particularly as there is no point in exposing the patient merely to confirm a suspected fracture. This is especially important in cold or wet weather.

First Aid

Fractures must be immobilised and this may be achieved with remarkably simple methods and materials. Folded

newspapers make effective cervical collars and folded in the length can be used for long-bone fractures. Fractures of the arm should not be subject to hard and fast rules but should be immobilised in such a way that the radial pulse is palpable and the patient is comfortable. Lower limb fractures are easily splinted by tying both legs together even if there are bilateral fractures. Safety belts, cut from the car, may be used for this purpose if nothing else is available. These primitive methods will reduce but not eliminate pain, and will ensure a measure of immobilisation. In spinal injuries the most critical phase is the movement of the patient and this should be held to a minimum. One should, if possible, await the arrival of the ambulance. When being moved, there should be a sufficient number of helpers co-ordinated to avoid flexion movements of the patient. When it is necessary to move the patient's head in a cervical injury the body should be moved as a whole.

Ambulance Aid

At this stage more formal splints become available, but when the patient is already adequately splinted these should be left *in situ* to avoid further movement. Ambulances carry a variety of splints including padded Kramer wire and pneumatic splints, but there are still ambulances carrying wooden or hardboard splints and these must be well padded over bony prominences if used. Traction is the only effective immobilisation for the fractured femur and may be rapidly applied using the Tauranga Thomas rescue⁵ splint. Should limbs have to be straightened before immobilisation it should be carefully explained to the patient beforehand. Generally we use Entonox before carrying out any procedures.

Medical Aid

Treatment does not usually exceed that already described in terms of immobilisation but attention should be given to procedures such as institution of intravenous therapy

in all fractures of femur, and pelvis, and supervision of the administration of oxygen. The practitioner's main role is to exclude the unseen and less obvious fractures of the spine.

EQUIPMENT

When considering equipment for use at an accident one should ensure that it is carried in a durable weatherproof box which can be replaced at little cost. Apart from the recommended items one should never be without a powerful torch and a few batteries. It is not reasonable to expect ambulances to carry sophisticated medical equipment which is only used intermittently, but I feel the system followed in Cape Town where the ambulance is basically well equipped and carries intravenous equipment for a doctor's use, is a reasonable approach. It should be emphasised that equipment mentioned in this article does not represent the sort of equipment carried in specialised mobile units but is quite within the scale of practising doctors with the limits I have mentioned.

On the legal aspect we fortunately are not as yet subjected to the problems experienced elsewhere, but I feel that a patient is the responsibility of the attending practitioner until the hospital is reached. In most cases one may be satisfied with the condition of the patient but it is occasionally necessary to accompany the patient to hospital. This situation differs from mobile accident units where the latter course is more often the rule, since these doctors are usually involved in more serious cases.

It was my aim in this article to encourage doctors to be of more assistance at the roadside and to demonstrate that while there is no such person as a doctor 'without anything', it is infinitely more satisfactory to be equipped to deal with the situation in hand.

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AGKISTRODON HALYS BITE TREATED WITH SPECIFIC ANTIVENIN

Agkistrodon halys (Pallas) is widely distributed in China and is a common occupational hazard to rural people in the summer and in the autumn. The paper reports the use of *A. halys* antivenom in 530 patients bitten in Kiangsu and Chekiang provinces from May 1971 to October 1972. Five to 20 ml antivenom was injected intravenously, and sometimes intramuscularly or subcutaneously. The incidence of various clinical signs and the time they disappeared after antivenom are listed in a table. Five hundred and twenty-four patients (98,9%) were cured and 6 (1,1%) died, 4 from respiratory failure and 2 from renal failure (antivenom being started late). Patients were in hospital for an average of 3,5 days. Twelve patients had serum sickness. In previous years the mortality from *A. halys* bites before the antivenom became available was 2,6 - 5%.

Chin. med. J., **2**, 59 (1976).

CLINICAL ASPECTS OF PRIMARY CARCINOMA OF THE LIVER

Primary cancer of the liver has been noted as an important problem in clinical oncology because of its rather high incidence, difficulty of early diagnosis and poor prognosis. The tumour is often associated with liver cirrhosis and the disease occurs mainly in aged males. For diagnosis, palpation of the enlarged, nodose liver, laboratory findings, laparoscopy, scintigraphy and hepatic artery angiography are still important and valuable methods but they are insufficient for detection of primary hepatic carcinoma in its early stages. Alpha-feto-protein is very interesting in the detection and the study of primary hepatic cell carcinoma. The most frequently applied treatment is chemotherapy, and surgical intervention is possible only in rare cases since the tumour is usually recognised too late. However, remarkable remissions are sometimes observed.

Tokai J. exp. clin. Med., **1**, 79 (1976).