EDITORIAL

This is the first issue of a journal aimed entirely at those involved in emergency care. These will include specialists in accident and emergency medicine, general medicine, cardiology, general surgery and intensive care. It has close links with the Emergency Medicine Research Society which had its first meeting in York in September 1983. This Society aims to provide a forum where people involved in all aspects of emergency medicine can meet and discuss clinical problems and research. The meetings of the Research Society are not only for the presentation of formal scientific papers but also, and in fact, more particularly for the discussion of research in progress. Ideas can be freely discussed and criticized to the benefit of all.

It is highly relevant that this first issue contains a paper on the management of in-hospital cardiac arrest. It is not unfair to say that far too often when a cardiac arrest occurs in a hospital it provides yet another example of patients when they are most ill being treated by doctors with the least experience, acting without formal guidelines. In any emergency situation, any treatment policy is usually better than no treatment policy. The time for an up-to-date cardiac arrest management policy based on modern developments is long overdue. The Edinburgh team shows us what can be achieved when senior doctors are present and apply a standard policy to the treatment of cardiac arrest.

Perhaps cardiac arrest should be thought of as a descriptive term for a group of circumstances each with a separate treatment priority and outcome but with the common denominator of sudden loss of cardiac output. A witnessed cardiac arrest has a better prognosis than an unwitnessed one (Eisenberg, 1981). Furthermore, when an arrest is witnessed in-hospital then ventilation is usually established quickly. Ventilation is a very effective way of combating acidosis. It appears, at least from animal work on cardiac arrest that it may take up to 18 minutes before the metabolic acidosis is sufficient to neutralize the respiratory alkalosis of hyperventilation (Sanders *et al.*, 1983). This work by Sanders *et al.* was recently presented at the University Association for Emergency Medicine in Boston, USA. It indicates that sodium bicarbonate may not be required so early in the management of cardiac arrest if ventilation is commenced immediately. If cardiac output is quickly restored then it may not be required at all.

When an arrest is witnessed outside of hospital then help may not be available immediately. People in the street may be reticent to go to the aid of a collapsed patient for fear of not knowing what to do. This can be overcome if the public are educated in how to deal with a collapsed patient. The experience of workers in Seattle has shown that your survival from out-of-hospital cardiac arrest depends upon help of some kind reaching you within four minutes and definitive help within eight minutes (Cobb & Hallstrom, 1982). The initial help you need is for someone to summon an ambulance and to maintain your cerebral circulation with CPR. The definitive help you need is restoration of your cardiac output. This can most often be achieved by defibrillation. CPR is only a stop-gap measure. If there is true cardiac arrest then chest compression is probably only providing a cerebral circulation. The heart valves remain open during cardiac arrest and adequate coronary artery diastolic filling is therefore not possible (Neimann *et al.*, 1982). If a

normal rhythm has not been restored after eight minutes (at normal body temperature) then irreversible cardiac damage may have occurred.

The prognosis for ventricular fibrillation is much better than for asystole. Furthermore, the former is more common as a cause of sudden cardiac arrest than the latter (Eisenberg *et al.*, 1981). Ventricular fibrillation can be converted to sinus rhythm by the use of a defibrillator. However, this must occur within about eight minutes of the event. A 'good Samaritan' can maintain cerebral circulation with CPR but the ambulance when it arrives may still have to take the patient to a defibrillator. The patient is very unlikely to reach it in time. It is of paramount importance, therefore, that we establish schemes whereby ambulances responding to emergency calls are equipped with defibrillators. It has been shown that it is only necessary to train the ambulance crew in the use of the defibrillator and not necessary to make them into Paramedics. Eisenberg describes a 10 year programme in the use of the defibrillator which quadrupled the success rate for out-of-hospital cardiac arrest (Eisenberg *et al.*, 1980).

Cardiac arrest from a primarily cardiac cause may require different treatment from an arrest secondary to hypoxia. At the International Conference on Cardiopulmonary Resuscitation, Muersing (1983) has suggested that it is wasting valuable time to clear the airway or ventilate the patient with expired air when the patient is seen to have collapsed. The patient has obviously not drowned, choked or inhaled fumes. Therefore, it is most likely the only treatable condition he has, if cardiac arrest is confirmed, is cardiac in origin. The Dutch CPR programme recommends that resuscitation under these circumstances commences with chest compression. However, it has been shown that whatever you do is of secondary importance to the fact that you do something, and in particular you quickly phone for the ambulance (Cobb & Hallstrom, 1982). If the patient is in ventricular fibrillation and the ambulance carries a defibrillator then the patient has a reasonable chance of survival.

The American Heart Association (1980) preaches that all resuscitation commences with: A—clearing the airway; B—breathing into the patient's mouth; C—chest compression. ABC is easy for people to remember. Simply clearing the airway may be all that is required and certainly in near-drowning victims, breathing into their lungs may stimulate respiration. However, people may be reluctant to perform mouth to mouth on a stranger in the street and the Dutch experience must tell us that rather than do nothing they should ignore the mouth to mouth and concentrate on the more aesthetically acceptable chest massage.

There is a revolution in the teaching of CPR. This can only be good. Many patients will benefit from simply clearing the airway and in some, the brain may be kept alive a little longer. However, lives will only be saved in any great numbers when defibrillation occurs within a few minutes of cardiac arrest. This can only be achieved by equipping ambulances with defibrillators and training ambulance men in their use.

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