

PERSONAL POINTS OF VIEW

EMERGENCY RESUSCITATION—A CRITICISM OF TEACHING

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In common with many other practitioners I am from time to time, called upon to give instruction in first aid to various bodies in the local community. This subject receives little recognition at medical school and many of us, I feel, owe what training we have in this subject to our experience gained in the armed forces. Usually the basis of whatever instruction is given are the standard first aid manuals published by the St John Ambulance Association and The British Red Cross Society.

Hitherto I have accepted the instructions in these admirable manuals with what amounts to blind faith and have taught accordingly. Fortunately, most practitioners in this country are seldom placed in the position where they are called upon to deal with extensive disasters or accidents. The few that do occur from time to time, apart from road traffic accidents, are more liable to be seen by those practitioners associated with industry, such as mining and engineering. Thus the average general practitioner's practical experience of first aid is likely to be limited.

Recently the First Aid organizations have altered their teaching regarding the problem of emergency resuscitation¹. The manoeuvres of external cardiac massage and expired air resuscitation have now been introduced into their standard manuals and are being widely taught to the lay public interested in first aid. The introduction of these alterations stimulated me into seeking the reasons for the general acceptance of these procedures. More particularly the sight of a factory worker attempting expired air resuscitation and external cardiac massage upon a person dying of a cerebrovascular accident led me to think that insufficient emphasis has been placed on the limitations of these heroic procedures.

Whilst medically both these manoeuvres are valuable resuscitatory measures, I am uneasy about their present prominent position in the first aid syllabus. My limited experience has led me to believe that these methods can be extremely valuable when performed under medical supervision or in the hands of an experienced first aider with sound judgement. On the other hand, in the case of people who only occasionally have to render first aid, I believe that

more harm than good could result from the use of these procedures. From the very nature of the conditions concerned it is difficult to collect figures concerning success or failure where resuscitation has been instituted as a first aid measure. There are frequent reports in the national press of the successful application of the "kiss of life", and to a lesser extent of external cardiac massage, particularly in the emergency resuscitation of infants and young children. One doubts, however, if the failures are of such news value as to warrant publication. At the same time the imagination of the public has been caught by the technique of expired air resuscitation to an extent which was never apparent with the previously accepted Holger-Nielsen and Schafer methods.

External cardiac massage

There is now little doubt that this procedure is widely accepted as being of value for cases of cardiac arrest when under medical supervision, where if necessary, the procedure could be followed up by further measures leading to open cardiac massage if necessary. External cardiac massage, however, has been shown not to be free from hazards, particularly when performed by those unfamiliar with the procedure. Since external cardiac massage was described in 1960 it has been widely accepted and there are many reports of its successful use in clinical emergencies. Editorial comment² has drawn attention to the hazards of this procedure and recommended that it should only be performed after a doctor has confirmed the presence of cardiac arrest. Similarly, in America, Blalock³ suggested that the use of this procedure should be restricted to the medical profession and those under direct medical supervision. Furthermore, this view was upheld at the International Symposium on Emergency Resuscitation in 1961. It would appear that the commonest complications of this procedure is fracture of the ribs although this may be regarded as a trivial happening in the light of the emergency. More serious complications have been recognized, notably lacerations of the liver with haemoperitoneum. Furthermore, emboli, haemopericardium and haemothorax have all been reported.

These features do not appear to have been made clear in the current supplements to the standard first aid manuals published by the St John Ambulance Association and The British Red Cross Society. In fact the only words of caution are, "External cardiac resuscitation is not without its dangers and a first aider should only use this technique if he is sure that the heart is not functioning". There is no mention of this procedure being performed under medical supervision or of the hazards involved. The picture of a frail elderly lady fainting in a hot supermarket only to have her ribs crushed by an over-enthusiastic heavyweight first aider is not too far fetched

and caricatures the risks to which I believe people could be exposed.

It can be argued that it is wrong to withhold knowledge of valuable first aid procedures and that in a domestic emergency, such as husband or wife collapsing with a coronary thrombosis, it is only reasonable to expect the other to perform whatever resuscitatory measures within their power and to criticise this is banal. On the other hand, external cardiac massage has not been used widely for a lengthy period and the views of the International Symposium on Emergency Resuscitation favour, for the moment, instruction of this procedure to ambulance teams and similar people, for use only under medical supervision. This approach may appear to be too cautious but until the use of this resuscitatory procedure under field conditions has been evaluated further, surely some supervision in its use is justified.

Expired air resuscitation

This method of artificial respiration is now generally accepted as the most efficient way of ventilating an unconscious person. The work of Safar⁴ and his colleagues has demonstrated that for sheer mechanical efficiency there is no comparison between the tidal exchange of expired air resuscitation and the older conventional methods such as Schafer's. More recently⁵ a comparison has been made of the efficiency of manual and expired air methods of artificial respiration both in children and in adults. These investigations confirmed the previous findings that expired air resuscitation is more efficient than other methods in all age groups. In order to collect experience and impressions of working with this method of artificial respiration an International Symposium on Emergency Resuscitation was held in Stavanger in 1961. Their report⁶ recommended that expired air resuscitation should be taught as the treatment of choice in an emergency and that it should be taught to first aid workers of all categories and the general public.

The purpose of my comments is not to denigrate this valuable procedure, but rather to suggest tentatively that it has been accepted by the general public a little too readily as the method of choice in all circumstances. In their excellent survey of the subject Proctor and London⁷ have summarized the criticisms that have been levelled against this method. Briefly, they may be listed as follows:

1. The supine position does not allow blood or other liquids to run out of the air passages.
2. The method carries the risk of infection.
3. Aesthetic objections have been raised.
4. Expired air contains 16 per cent oxygen as compared with 20 per cent in the atmosphere.
5. High intermittent positive pressure respiration may cause cardiac embarrassment, particularly to an already depressed circulation.

Experience and plausible argument has done much to overcome these criticisms. I believe, however, that the first criticism is valid, particularly in the circumstances of drowning and that insufficient emphasis is placed during first aid teaching on the hazard that may arise in this situation by the unconsidered application of expired air resuscitation.

Whilst vomiting in an anaesthetized person is an emergency whose gravity is well appreciated, there appears to be a parallel risk of this occurring in the unconscious patient, particularly if fear, associated with a full stomach, coincided with the loss of consciousness. Vomiting has been seen to accompany coal-gas poisoning and can certainly occur in asphyxia from other causes such as drowning. Apart from the risk of impaction of solid matter in the larynx there is also the possibility of laryngeal spasm if only a little fluid enters the larynx. Regurgitation is a phenomenon which may occur whether reflexes are present or not; therefore, due to the risk of aspiration regurgitation is always dangerous. From Ruben's⁸ recent study of cadavers he confirms the idea that most of the water that pours from the mouth of a drowning subject comes from the stomach and not from the lungs. Since regurgitation from the stomach increases the risk of aspiration an effective method of resuscitation, least likely to cause regurgitation should be used. Previously they had demonstrated that gastric inflation is a function of inflation pressure when applied to methods of artificial respiration and that in order to minimize the risk of regurgitation high inflation pressures should not be used. A method of intermittent positive pressure, as is in fact expired air resuscitation, is more likely to give rise to this complication than one of the manual methods such as Schafer or Holgar-Neilsen. In their clear review of this subject, Gordon and others⁵ were well aware of this possibility in children and recommended that during resuscitation a hand should be placed on the child's epigastrium in order to prevent gastric distension. In their studies of live anaesthetized adults they found that gaseous distension of the stomach was not such a prominent feature as in children. Perhaps, however, this situation is not comparable with actual emergency problems where the patient is more likely to have a full stomach than an empty one, and where in drowning further distension of the stomach by water is a distinct possibility. It has been suggested that where regurgitation is slight the obstruction can be overcome as the fully backward tilted position of the head allows a free air passage in front of the regurgitation which lies at the back of the nasopharynx. This would appear to be very reasonable. On the other hand some authorities have suggested that in order to overcome or bypass any obstruction in the airway, greater pressures should be used in expired air resuscitation. In these circumstances, there

would be a greater risk of increasing gastric inflation and initiating further regurgitation of stomach contents.

Summary

Knowledge of first aid is becoming increasingly sought after both in home and in industry. It is suggested that the public have accepted the resuscitatory methods of external cardiac massage and expired air resuscitation as taught by the voluntary aid societies rather too enthusiastically without fully appreciating their hazards and limitations in application. A plea is made that external cardiac massage be performed only under medical supervision or by recognized carefully trained personnel such as ambulance crews. The personal view is expressed that expired air resuscitation is not necessarily the treatment of choice in cases of asphyxia where regurgitation of stomach contents is a prominent feature. The reasons for this point of view are stated and the argument developed.

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POSTGRADUATE REFRESHER EDUCATION— A DIFFERENT APPROACH

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Bleep, bleep, bleep. For two weeks it was liable to, and did call its plaintive note from the pocket of my white coat, regardless of my whereabouts within the hospital. It was a new infernal machine