Resuscitation status of the elderly

ABSTRACT—Resuscitation of patients in hospital following cardiopulmonary arrest is a standard procedure. Such intervention is not always appropriate, and this article examines some of the issues involved in making the decision not to resuscitate, with particular reference to elderly patients. The effectiveness and possible adverse effects of cardiopulmonary resuscitation (CPR) in the elderly are considered, along with ethical aspects of the problem such as how to discuss the pros and cons with the patient and relatives.

When external cardiac massage was introduced over 30 years ago it was designed ' . . .to resuscitate the victims of acute insult, whether it be from drowning, electrical shock, untoward effects of drugs, anaesthetic accident, heart block, acute myocardial infarction, or surgery' [1]. Since then, CPR has become commonplace, and the importance of adequate training in its techniques has rightly been emphasised [2]. However, it has been realised that careful consideration must be given to a patient's suitability for such intervention to avoid subjecting a dying patient to undignified and futile efforts to prolong life; hence the written or verbal 'do not resuscitate' orders which have come into common practice.

Effectiveness of CPR in the elderly

Studies of in-hospital CPR have shown variable success rates. A recent study from the USA retrospectively looked at the outcomes of CPR carried out on 503 patients aged 70 or over [3]. Initial survival was 22%, but survival to discharge from hospital was only 3.8%. The poorest outcomes were in unwitnessed cardiac arrests, patients in whom the initial rhythm was asystole, and in those who underwent a prolonged attempt at CPR. Patients who were previously functionally or mentally impaired tended to have a poorer outcome, but this was not statistically significant.

Two studies from the UK [4,5] of elderly patients showed survival rates to discharge from hospital of around 15%. The Cardiff study showed that age had no influence on outcome, a finding confirmed in other studies [6,7]. However, in a recent study from Ireland [8] the overall success rate to discharge was 9%, but with a much poorer rate in the over-70s of 3.4%. This was despite there being no difference in severity of illness between the two groups, and an equivalent effort at resuscitation having been made for all ages.

Ideally one would wish to resuscitate only patients who had a good chance of surviving the episode. Predictive factors of a poor outcome include pneumonia, hypotension, renal failure, cancer, and a previous house-bound lifestyle [7]. However, a study from St Thomas's Hospital in London, looking at all age groups, found only pre-admission activity level to be a predictor of a successful outcome [6].

Is it possible to have some sort of index of likelihood of success of CPR? A group in the USA devised a 'pre-arrest morbidity index' [9]. This used factors such as uraemia, hypotension, and a previous home-bound lifestyle to arrive at a score which was significantly correlated with outcome of CPR. However, when O'Keefe *et al* [8] used the score they did not find the correlation so high.

Are there any adverse sequelae after CPR?

Most patients who survive the initial resuscitation attempt either do fairly well or die within a few days. O'Keefe's study [8] showed that, of the initial survivors who subsequently died, almost three-quarters were dead within three days. An impaired level of consciousness 24 hours after the resuscitation strongly predicted death before discharge. Significant neurological disability among survivors does not seem to be common [4,6,8].

Bedell [7] showed that 93% of those surviving to hospital discharge were mentally intact, but over 25% became housebound, having previously not been so. Many of the survivors were depressed at the time of discharge, but had improved when they were reassessed six months later. The Cardiff study found that, at three months, 13 of 16 patients discharged following CPR were alive and living in the community, though with greater social dependency than before admission [4].

What are the ethical principles on which we should base our decision not to resuscitate?

The guiding principle should perhaps be that suggested by Baskett: 'Resuscitation should be attempted only in patients who have a very high chance of successful revival for a comfortable and contented existence' [10]. Another author [11] has suggested that the following should be considered:

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1. patient's medical and cognitive state;
2. the risks and benefits of the intervention;
3. the views of the patient, family, and physician.

This implies that the patient and family should always be involved in the decision. Other authors have argued that if the resuscitation attempt is likely to be unsuccessful the decision then rests with the physician [12,13]. Where criteria such as poor quality of life are invoked, this may require input from the patient or family.

In the UK there is no legal code regarding resuscitation status. However, guidelines have been suggested by the government's Chief Medical Officer, recommending that the decision should be made by the consultant in charge of the patient and should be clearly understood by the junior staff and regularly reviewed on ward rounds [14]. The situation is different in the USA where in certain states, such as New York, there is legislation requiring written consent from the patient or relatives before issuing a 'do not resuscitate' order [15].

Do patients want to be involved in the decision?

A study from the UK [16] questioned elderly hospitalised patients about their knowledge of CPR and found that almost half were unaware of the procedure, but after it had been explained to them most felt that selective CPR in the elderly was appropriate. Over half felt that the leading role in the decision-making should be taken by medical and nursing staff, though one-third felt that the patient should take the leading role. Eighty per cent of the patients felt that elderly patients should be encouraged to express their views on the subject on admission to hospital.

The situation is somewhat different in the USA. A study of patients and family attitudes showed that almost two-thirds of patients wished the decision to be shared between medical staff and the family, and only 10% felt the doctor alone should make the decision [17]. Well over half the patients had already discussed resuscitation with medical or nursing staff. In another American study [18] more than half of 171 patients who had died with a 'do not resuscitate' order in their notes had previously discussed the decision with members of the hospital staff.

This contrasts again with UK studies. Only three of 627 patients who died without a resuscitation attempt had documented evidence that this had been discussed with the patient or relative [6]. A recent study of 'do not resuscitate' orders in a district general hospital [19] showed that of 88 patients deemed unsuitable for resuscitation, the prognosis had been discussed with relatives in only 32 cases. No mention is made as to whether the patient was also consulted. A similar situation seems to occur elsewhere in Europe. A study from Sweden showed that discussion with patients or relatives about resuscitation status was rare [20].

However, it is important to present a realistic appraisal of the likelihood of success, as it has been shown that patients tend to overestimate the efficacy of the procedure [21]. Also, it is important that the discussion is undertaken in such a way as not to cause undue anxiety to the patient. Schade [22] reports cases where a discussion of resuscitation status provoked quite severe psychological reactions in patients with terminal malignancy.

Are 'Do not resuscitate' orders well documented and understood by staff?

The recent survey from Liverpool [19] showed that only 27% of the 88 patients deemed unsuitable for resuscitation had orders written in their notes, and even fewer than this occurred on the geriatric wards. Conversely, orders were present in the notes of two patients thought suitable for resuscitation. Of the patients who had an order written in the medical notes, only 38.5% had this included in the nursing notes. Presumably an inappropriate arrest call would have been put out on a number of patients. In another study [23] a review of inpatient case notes found a number of patients in whom resuscitation would have been quite inappropriate but where there was no documented resuscitation order. In addition, elderly patients under general physicians' care were less likely to have a 'do not resuscitate' order than those managed by geriatricians, but this may simply reflect that the latter deal with a different range of illnesses.

Some geriatric units pursue a policy of not resuscitating patients unless there is a specific order to do so. Others operate informal policies, and a high concordance of opinion between doctors and nurses has been reported [24]. However, there is a risk that inexperienced nurses may feel obliged to call the arrest team if there is no documentation of the decision.

Possible future developments

Doubts have been raised about the advisability of hospitals having mobile cardiac arrest teams. A more sensible option might be to have an 'advisory defibrillator' on each ward, which nursing and medical staff are well trained in using, with the aim of defibrillating witnessed ventricular fibrillation (VF) within 30 seconds, irrespective of the age of the patient. Patients with non-VF arrest or refractory VF after three defibrillation attempts would be allowed to '. . die with dignity' [25]. This would not detract from the importance of careful selection of patients who should be resuscitated, but would make the decision more positive.

Conclusion

Age *per se* is no contraindication to performing CPR, but it seems likely that in the elderly the chance of success is less, because they may be less able to withstand

hypoxia and the stress of cardiopulmonary arrest. The decision to resuscitate must be taken after weighing up the likelihood of success and the probable subsequent quality of life. Doctors are more likely to designate patients with malignancy as 'not for resuscitation' than those with advanced heart failure, despite the prognosis being similar [26]. Therefore doctors in training should be made aware of factors likely to influence outcome, such as hypotension, pneumonia, and previous functional ability, in order to make a suitably informed decision. The initial decision should be made by the most senior member of the admitting team, and it should be reviewed and agreed on subsequent rounds by the consultant in charge. The subject may need to be discussed with patients and relatives, but there is no statutory obligation to do so, and in some cases it would be inappropriate. Documentation of the decision, or a clear understanding by doctors and nurses of the patient's resuscitation status, is essential if unnecessary procedures are to be avoided.

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