In Hospital Cardiopulmonary Resuscitation - Analysis of 188 CPRs

Pages with reference to book, From 190 To 193

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Abstract

Of 188 patients with cardiac arrest, who received cardiopulmonary resuscitation ver a period of 13 months, 34 (18%) survived to leave the hospital. Most cardiac arrests (36%) occurred at the age of 60-69 years. Majority of CPRs were performed in the accident and emergency (31%) coronary care unit (28%) and acute medical wards (21%). Most common cause (48%) was myocardial infarction. Poor outcome was associated with initial rhythm of asystole. These figures suggest that the incidence of successful outcome for CPRs in hospital has not changed significantly over the past twenty-five years (JPMA 44:190, 1994).

Introduction

The last few decades have witnessed rapid development of modem resuscitative instruments This has lead to wide spread practice of cardiopulmonary resuscitation (CPR) Unfortunately there is a tendency to resuscitate any candidate regardless of his age underlying disease or ultimate prognosis. This attitude to save human life has decreased the overall success rate and has raised the question, that “how ethical is it to resuscitate terminally ill patients"?

Patients and Methods

A prospective study over a 13 months period was conducted at Stafford District General Hospital, Staffordshire, United Kingdom. A specially designed cardiac arrest from (Table I)

was filled soon after the resuscitation by the team leader. Other necessary information was obtained from the patient\'s record. Cardiac arrest was diagnosed clinically by absent major pulses, loss of consciousness, absent respiration and electrocardiographic evidence when the patient was on a monitor. The cardiac arrest team consisted of a medical registrar (leader), two senior house officers, one each from coronary care unit (CCU) and intensive care unit UCU), one anaesthetist and a medical house officer.

Results

A total of 188 CPRs were performed during a thirteen month period representing an average of 3.6 CPRs per week. There were 115 males (61%) and 73 females (39%). Initially 83 calls (44%) were successful but subsequently 45 died. Thirty-four patients (18%) were able to leave the hospital. Majority of the arrests were in the age group 60-69 years. Most of the calls were from accident and emergency department, coronary care unit and medical wards. Results of CPRs in relation to location are shown in Table II.

Table II. CPRs and the locations of cardiac arrest.

Location	No. of CPRs	% of total calls	Successful CPRs		Discharge	
			No	%	No.	%
A and E	59	31	23	38	10*	16
C.C.U.	54	28	28	51	11	20
Acute medical Ward	41	21	19	46	7	17
Surgical wards	22	11	7	31	3	13
I.C.U	5	3	3	60	1	20
Others	7	4	3	42	2	28
Total	188		83		34	

*These patients were admitted to CCU after successful resuscitation but this was performed in the accident and emergency department.

Least successful CPRs were those where the patient had cardiac arrest outside the hospital and there was undue delay in transportation to the hospital. No calls were received from maternity or gynaecology departments. The survey also revealed that most of the cardiac arrests were on those patients who had coronary heart disease and its complications. Other causes included respiratory failure, massive gastrointestinal haemorrhage, cerebro-vascular accidents and terminally ill patients due to malignant diseases.

Table III. Causes of cardiac arrest.

S.No.	Causes of cardiac arrest	No. of patients	
		No.	%
1.	Acute myocardial infarction	90	48
2.	Respiratory failure	35	19
3.	Non-ischaemic cardiac causes	20	11
4.	Cerebrovascular accidents	15	8
5.	Unknown	12	6
6.	Pulmonary embolus	10	5
7.	Trauma	4	2
8.	Over dose	2	1
	Total	188	

Table III shows the causes of cardiac arrest in this survey. Ventricular fibrillation was the most frequent (67 patients) initial rhythm, followed by asystole (61 patients). Ten patients had ventricular tachycardia and seven were resuscitated successfully (70%). If the initial rhythm was very slow, i.e., severe

bradycardia or other brady-arrhythniias, the success rate was low (Table IV).

Table IV. Initial rhythm and CPR.

Rhythm	No. of CPR	Successful		
		No.	%	
1.	Ventricular fibrillation	67	39	58
2.	Asystole	61	13	1
3.	Bradycardia	27	8	29
4.	Ventricular tachycardia	10	7	70
5.	Other rhythms	23	16	69
	Total	188	83	

Midnight arrest calls were often found to be a waste of time and effort. Patients were mostly found dead and the team was called by the nurses to seek coverparticularly onthe surgical floor. Defibrillation was the most effective and useful way of resuscitation and the most commonly used drug was lignocaine for tachyarrhythmia.

It was noted that in places where cardiac arrest was uncommon, only cardiac arrest trays were sufficient. In acute cardiac units, emergency, ICU and acute medical wards, all the resuscitation equipment was required. The duration of resuscitation ranged from 20-40 minutes. “When to stop resuscitation” was a problem faced by most junior doctors.

Discussion

Introduction of closed cardiac massage[1] and external alternating current defibrillator[2] have revolutionized the methods of cardiopulmonary resuscitation. Studies done to survey in- hospital cardiac arrests showed a much lower percentage of adult patients to leave the hospital after resuscitation than the paediatric age group[3,4]. The high success rate in this study was due to well trained and skilled medical personnel being present on the spot in the coronary care and acute medical wards. The patients who arrest in intensive care unit are resuscitated successfully initially but due to the underlying pathology, the ultimate outcome was grim. Some institutions have a “no CPR” policy in intensive care unit. Though it is not generally advocated but the data in different studies do suggest that cardiac arrest is an event which sometimes delays the decision to stop aggressive management of patients who are terminally ill. However, if the medical status of the patient is not known, it is best to proceed. In other studies the outcome of CPR in cancer patients has proved disappointing and has been suggested to be a waste of time and effort[5,6]. The “do not-resuscitate” policy due to advanced disease should be individual based and cancer patients as a whole should not be excluded from CPR. CPR in the elderly has rarely been effective[7], especially in those who are out-of-hospital, un witnessed or associated with asystole and electro-mechanical dissociation. The study also confirms that prognosis was more favourable when the mode of arrest was ventricular fibrillation rather than asystole[8-11] (Table V).

Table V. Summary of resuscitation studies in hospital .

Authors	Years	Ref. No.	Place	No. of CPRs	Initially success-full CPRs	Left hospital
Sykes, Orr	1966	5	London	184	31.0	13.0
Stock	1966	6	Melbourne	59	42.0	13.5
Johnson, Tanser	1967	7	Montreal	552	31.7	14.9
Wildsmith et al.	1972	8	Edinburgh	536	33.0	11.9
Lemire, Johnson	1972	9	Montreal	1204	-	19.1
Messert, Quaglieri	1976	10	Wisconsin	183	22.0	14.2
Peatfield	1977	11	London	1063	32.5	8.7
Wernberg, Thomassen	1979	12	Denmark	1172	-	6.1
Tweed et al.	1980	14	Winnipeg	2091	41.0	12.5
Hershey, Fisher	1982	14	Cleveland	88	60.0	14.0
Woog, Torzillo	1984	15	Sydney	174	44.0	16.0
Iqbal, F.	1988		Stafford	188	4.0	18.0

This does not apply to patients developing cardiac arrest out of the hospital, as delay in transportation changes the rhythm to asystole. American Heart Association (AMA) recommends pre-cardial thump for patients on ECG monitoring[12]. This may prove successful in a few cases The guidelines for advanced support have been revised in 1989 by the Resuscitation Council of UK[13]. Sweden, Denmark, Norway and Finland have similar recommendations. Evaluation of the cost- effectiveness of CPR has brought about a 'no' CPR policy in selected eases thus avoiding inappropriate short term prolongation of life. Continued education in CPR techniques of the nursing and medical staff would give an improved outcome. Some studies show that family members of cardiac patients could learn CPR successfully[14]. The selection of patients for CPR should be against precise criteria so that the desired outcome is obtained. A vegatative existence should be more agonising. Due to limited resources organized cardiac arrest teams are scarce in hospitals in Pakistan. A well trained team along with the necessary equipment will give good results in the resuscitation efforts.

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