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Outcome of cardiopulmonary resuscitation in patients with Cardiac arrest

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Abstract
Background: Cardiac arrest is defined as a sudden and sustained loss of consciousness with pulselessness and apnoea or agonal breathing. The present study was conducted to assess the outcome of cardiopulmonary resuscitation.
Materials & Methods: The present study was conducted on 126 patients who had cardiac arrest of both genders. The resuscitation in well‑monitored areas like intensive care units (ICUs), operation theaters (OTs), and cardiac catheterization laboratory (CATH LAB) was managed by the available physician and anesthesiologist in that area. The reason for cardiac arrest was recorded in all patients. The immediate survival after arrest (through arrest), arrest to 24 h, 24 h to discharge or 1 weeks was recorded.
Results: Out of 126 patients, males were 56 and females were 70. The survival time of patients was 24 hours in 55, 24 hours to 48 hours in 15, 2 days to 1 week in 22 and >1 week in 34 patients. The difference was significant ($P< 0.05$). The area of arrest was emergency ward in 35, ICU in 25, diagnostic ward in 14, special ward in 7, general ward in 25 and non ward in 20 cases. The difference was non significant ($P> 0.05$).
Conclusion: Cardiopulmonary resuscitation is an effective method of management of patients having cardiac arrest. In most of the cases, area of arrest was emergency ward, ICU and diagnostic ward.

Keywords: Cardiopulmonary resuscitation, emergency ward, intensive care units

Introduction

Cardiac arrest is defined as a sudden and sustained loss of consciousness with pulselessness and apnoea or agonal breathing. It is a heterogeneous condition in terms of underlying pathology, initial rhythm, time in no flow, and concurrent health issues [1]. The pathophysiology of cardiac arrest is mainly attributed to either cardiac, metabolic, or mechanical causes. Rhythm at initial presentation is the most important prognostic factor, dictates the immediate treatment, and is affected by underlying pathology, time from collapse to rhythm recording, and bystander cardiopulmonary resuscitation (CPR) [2].

Sudden cardiac arrest (SCA) is lethal within minutes if left untreated. Despite advances in emergency medicine, SCA remains a major public health concern with global average survival rates reported to be only 7%. The same study found that in Europe, SCA accounts for approximately 50% of cardiac deaths and 20% of all natural deaths. Designing effective individualized prevention and innovative treatment strategies requires insight into causative factors of SCA and the effect of (first-response) treatment approaches [3].

The early initiation of CPR and defibrillation has been shown to increase survival in cardiac arrest and is well established in treatment algorithms. From a theoretical point of view, several drug therapies are appealing, but supporting clinical data in human studies are less robust [4]. The present study was conducted to assess the outcome of cardiopulmonary resuscitation.

Materials & Methods

The present study was conducted in the department of Anesthesiology. It comprised of 126 patients who had cardiac arrest of both genders. The study was approved from institutional ethical committee Data pertaining to patients such as name, age, gender etc. was recorded in case history Performa.

The resuscitation in well‑monitored areas like Intensive Care Units (ICUs), operation theaters (OTs), and cardiac catheterization laboratory (CATH LAB) was managed by the available physician and anesthesiologist in that area.

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The resuscitation team managed resuscitation in outside critically monitored areas. The resuscitation team consisted of an anesthesiologist, resident doctor, and an ICU trained nurse. The reason for cardiac arrest was recorded in all patients. The immediate survival after arrest (through arrest), arrest to 24 h, 24 h to discharge or 1 weeks was recorded. Results were tabulated and subjected t statistical analysis. P value less than 0.05 was considered significant.

Results

Table I: Distribution of patients

Total- 126		
Gender	Males	Females
Number	56	70

Table I shows that out of 126 patients, males were 56 and females were 70.
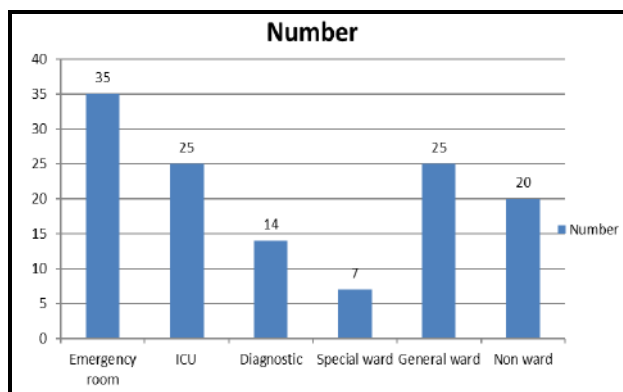
Table II: Outcome of cardiopulmonary resuscitation

Survival time	Number	P value
24 hours	55	
24 hours- 48 hours	15	0.01
2 days- 1 week	22	
>1 week	34	

Table II shows that survival time of patients was 24 hours in 55, 24 hours to 48 hours in 15, 2 days to 1 week in 22 and >1 week in 34 patients. The difference was significant ($P < 0.05$).

Table III: Area of arrest

Area	Number	P value
Emergency room	35	
ICU	25	
Diagnostic	14	0.61
Special ward	7	
General ward	25	
Non ward	20	

Table III, Graph I shows that area of arrest was emergency ward in 35, ICU in 25, diagnostic ward in 14, special ward in 7, general ward in 25 and non ward in 20 cases. The difference was non significant ($P > 0.05$).

Graph I: Area of arrest

Discussion

In recent years, various large observational SCA cohorts have been established around the world and international research collaborations have emerged. In addition to collecting data from Emergency Medical Services and hospitals, some registries contain additional data from general practitioners and pharmacists as well as socio-economic data initially gathered for administrative purposes. It is also increasingly common in critical illness research to establish biobanks with DNA specimens [5].

Cardiac arrest has multifactorial etiology and the outcome depends on timely and correct interventions. The pathophysiology of cardiac arrest of primary cardiac cause has been described by Weisfeldt and Becker as a time-sensitive three-phase model [6]. The first 4–5 min constitute the electrical phase and with immediate defibrillation, survival is 50%. However, recurrent or shock-resistant ventricular fibrillation occurs in 10– 25% of all OHCA and anti-arrhythmic drugs are often administered when defibrillation fails. Anti-arrhythmics possibly reduce the likelihood of arrhythmia being maintained or recurring after the return of spontaneous circulation (ROSC). The effects of anti-arrhythmic drugs on the defibrillation threshold are, however, inconsistent and most anti-arrhythmics also have pro-arrhythmic effects.[7] The present study was conducted to assess the outcome of cardiopulmonary resuscitation.

In present study, out of 126 patients, males were 56 and females were 70. Survival time of patients was 24 hours in 55, 24 hours to 48 hours in 15, 2 days to 1 week in 22 and >1 week in 34 patients.

Joshi *et al.* [8] conducted a study to investigate the circumstances, incidence and outcome of cardiopulmonary resuscitation (CPR) at a tertiary hospital in India, in relation to various factors, including extensive basic life support and advanced cardiac life support training programme for all nurses and doctors. The main outcome measures were; (following CPR) return of spontaneous circulation, survival for 24 h, survival from 24 h to 6 weeks or discharge, alive at 1‑ year. For survivors, an assessment was made about their cerebral performance and overall performance and accordingly graded. All these data were tabulated. Totally 419 arrests were reported in the hospital, out of which 413 were in‑ hospital arrests. Out of this 260 patients were considered for resuscitation, we had about 27 survivors at the end of 1‑ year follow‑ up (10.38%).

We found that area of arrest was emergency ward in 35, ICU in 25, diagnostic ward in 14, special ward in 7, general ward in 25 and non ward in 20 cases. Rajaram *et al.* [9] investigated the alarms of prehospital medical resources and the doctors' responses in situations of potential cardiac arrests. A three-month prospective data collection was undertaken from three emergency medical communication centres, covering a population of 816,000 residents. From all emergency medical events, a sub-group of patients who received resuscitation, or who were later pronounced dead at site, was selected for further analysis. 5,105 medical emergencies involving 5,180 patients were included, of which 193 met the inclusion criteria. The GP on call was alarmed in 59%, and an anesthesiologist in 43% of the cases. When alarmed, a GP attended in 84% and an anesthesiologist in 87% of the cases. Among the patients who died, the GP on call was alarmed most frequently.

Conclusion

Cardiopulmonary resuscitation is an effective method of management of patients having cardiac arrest. In most of the cases, area of arrest was emergency ward, ICU and diagnostic ward.

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