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Research Article

The success rate of CPR and its related factors in the emergency department of Ardabil Imam Khomeini hospital, 2013

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ABSTRACT

Background: Cardiopulmonary resuscitation (CPR) is a set of essential actions to rescue patients with cardiopulmonary arrest. The aim of this study was to assess results of CPR and related factors.
Methods: In this descriptive cross sectional study, 217 patients with cardiopulmonary arrest were studied. Success criteria of the CPR were spontaneous breathing and movement of the heart and lungs and confirmation it by supervisor and CPR team.
Results: From all patients, 139 (64.1%) patients were male and 78 (35.9%) were female. The mean age was 62 years and the most frequent age range was 60-75 (34.6%). Twenty-nine percent of CPRs were successful. There was a significant relation between CPR success rate with time duration of CPR and used drugs.
Conclusion: The results showed that the success rate of CPR in the emergency department was 29%, which was similar to other studies in the country and world.

Keywords: Cardiopulmonary resuscitation, Cardiopulmonary arrest, Sudden death

INTRODUCTION

Cardiopulmonary resuscitation is one of the greatest achievements in the history of medicine and quick intervention to prevent death or postponing sudden cardiac arrest in someone.

CPR includes an organized action which was made in patients with cardiopulmonary arrest. CPR an attempt to keep the circulatory and respiratory systems artificially, so that enough oxygen to keep vital organs supplied and physiological activity of spontaneous circulation return to normal status.[1] CPR plays an important role in the prevent 25% of deaths, especially in out-of-hospital deaths.

Cardiopulmonary resuscitation by the supervisor before arrival the resuscitation team is associated with increased survival rate.[2]

Even in countries with advanced emergency services in the majority of cardiac arrest, witnesses have not doing any activity to perform CPR or if done usually its quality is low.[3]

Criteria for successful cardiopulmonary resuscitation show signs of life, such as self-conscious and breathing by the patient which several factors such as underlying disease, time to onset of cardiac arrest resuscitation, the availability of qualified staff, equipment needed this and other issues are involved.[4]

One of the most common medical and nursing interventions in the emergency department of a hospital was CPR which is performed by members of the CPR team. The restoration like any other urgent medical intervention has side effects too.

Study of complications during resuscitation procedure allows the restoration to observe the principles of correct technique and after the restoration phase, monitored patients for the possible complications arising from the early diagnosis and appropriate treatment.

The aim of this study was to measure the success of cardiopulmonary resuscitation and related factors at Ardabil Imam Khomeini hospital.

METHODS

This was a retrospective descriptive cross-sectional study has been done on 217 patients who had cardiopulmonary arrest and undergone CPR.

The necessary information includes age, year, sex, underlying disease leading to cardiopulmonary arrest, time during between patient referred to start CPR, CPR team, time of CPR, used drugs, equipment used and result of CPR has been gathered.

Criteria for successful CPR, return of spontaneous breathing and movement of the heart and lungs, and confirm this by one person was responsible for the CPR and recording vital signs by supervisor. Collected data analyzed by descriptive and analytical statistical methods in SPSS.19.

RESULTS

139 (64.1%) were male and rest of them were female. The most of patients was in 60-75 age groups (34.6%) and the mean age of patients in totally, success CPR and non-success CPR groups were 62 ± 19.2, 57.1 ± 21.6 and 64 ± 17.8 respectively.

From all CPRs, 63(29%) were success and 154 (71%) non-success and there wasn't significant relationship between age and CPR success (Table 1).

Table 1: Success rate of CPR by age groups.

CPR result / Age groups	Success CPR		Non-success CPR		Total	P value
	n	%	n	%		
<30 year	10	45.4	12	54.6	22	0.254
30-45 year	8	40	12	60	20	
45-60 year	12	29.3	29	70.7	41	
60-75 year	18	24	57	76	75	
>75 year	15	25.4	44	74.6	59	
Total	63	29	154	71	217	

Table 2: Success rate of CPR by used drugs in CPR time.

CPR result / Used drugs	Success CPR		Non-success CPR		Total	P value
	n	%	n	%		
Atropine	4	66.7	2	33.3	6	0.001
Adrenalin	1	33.3	2	66.7	3	
Dopamine	7	100	0	0	7	
Atropine, lidocaeine	2	100	0	0	2	
Atropine, adrenalin	4	9.5	38	90.5	42	
Atropine, Dopamine	2	50	2	50	4	
Atropine, adrenalin, vial bicarbonate	2	20	8	80	10	
Atropine, adrenalin, dopamine	9	19.1	38	80.9	47	
Atropine, adrenalin, dopamine, lidocaeine	9	100	0	0	9	
Atropine, adrenalin, dopamine, vial bicarbonate	12	18.2	54	81.8	66	
Atropine, adrenalin, dopamine, vial bicarbonate, lidocaeine	11	52.3	10	47.6	21	
Total	63	29	154	71	217	

Table 3: Success rate of CPR by distance from referral time to CPR.

CPR result / Time (minute)	Success CPR		Non-success CPR		Total	P value
	n	%	n	%		
<5	44	28.4	111	71.6	155	0.468
5-30	9	36	16	64	25	
30-60	5	41.7	7	58.3	12	
>60	5	20	20	80	25	
Total	63	29	154	71	217	

Table 4: Success rate of CPR by time of CPR done.

CPR result / Time (minute)	Success CPR		Non-success CPR		Total	P value
	n	%	n	%		
< 15	11	78.6	3	21.4	14	0.001
15-30	35	28	90	72	125	
30-45	14	23.3	46	76.7	60	
>45	3	16.7	15	83.3	18	
Total	63	29	154	71	217	

Most of cases in Success or non-success CPR were male (68.3% vs. 62.3%) but not statistically significant.

ECT device had been used in 63% of all patients which 38.1% were in success group and 61.9% in non-success group but the difference not statistically significant.

From all used drugs in CPR, Atropine with 207 cases (95.4%) was the most prevalent used drugs (Table 2). Most of drugs had been used were atropine, adrenalin, dopamine, vial bicarbonate were included in 30.4% of patients which 18.2% in success and 81.8% in non-success groups. There was a significant relationship between CPR success rate and type of used drugs (P = 0.001).

71.4% of all patients need for CPR in lower 5 minute. There wasn't a significant relationship between CPR success rate and distance from referral time to CPR done (Table 3).

Of all non-success CPR, in 60.4% the time duration of CPR done was lower than 30 minute (Table 4) and there was significant relation between CPR success rate and time of CPR done (P = 0.001).

DISCUSSION

64.1% of patients were male and rests of them were female. In most of studies the gender pattern was similar with our study results.[4-8] In this study the frequency of male was more than female but not statistically significant relation between sex and CPR result.

The mean age of patients in this study was 61.99 ± 19.2 which was similar to age pattern in other studies[2-3,6,15,16,18] and the mean age of patients in success group was lower than non-success group but similar to other studies there was not statistically significant relation between CPR success rate and age.[5,17]

In this study there was a significant relation between CPR success rate and time of CPR doing (P = 0.001). From 154 nonsuccesses CPR, in 93 cases (60.4%) this time was lower than 30 minute which wasn't similar to other medical resources because they report this rate about 30-40 minute provided that the duration of resuscitation, the patient's vital signs did not appear.[7-9]

We can say that doing and continue to resuscitation related to the characteristics and specific circumstances of each patient and we cannot define a specified time and scale for all cases and patients. Perhaps due to the standard life expectancy of such patients is very helpful.

Generally what seems more important is totally rate of CPR success rate about 29% which was similar to other country studies and in some studies it was more[1-6,17] but in compare to other studies in developed countries the CPR success rate was more than Iran.[16-18]

The difference in the rate of successful CPR in Iran and developed countries may be due to the fact that many patients receive the BLS actions before entering the hospital which ultimately increases the success rate and reduce complications such as Neurological complications in patients.[19]

CONCLUSION

According to CPR success rate about 29% in this study, it seems longer perform of CPR and proper use of drugs are among the most important factors in increasing the efficiency of in-hospital resuscitation. Also, to raising the success rate of resuscitation, nurses and medicine update knowledge about resuscitation, to enhance the experience and skills of CPR team by regular training for decreasing nonsuccess CPRs in future is necessary.

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