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Original Research

The Effect of Epinephrine Administration on Return of Spontaneous Circulation and One-Month Mortality with Cardiopulmonary Arrest Patients

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ABSTRACT

Objective: The objective of this study is to determine the effect of epinephrine administration on the return of spontaneous circulation (ROSC) and one-month mortality in patients with cardiopulmonary arrest.

Methods: We conducted this study between August 1, 2016 and May 31, 2017. Importantly, we included the witnessed cases (≥18 years) of in-emergency department cardiopulmonary arrest (IEDCA) and out-of-hospital cardiopulmonary arrest (OHCA) in the study. We divided the patients into two groups: the adrenaline group (Group 1) and the non-adrenaline group (Group 2). Thereafter, we investigated ROSC and one-month mortality in them.

Results: We included 183 patients (50.3% of males and 49.7% of females with a mean age of 64.2±16.8 years) in the study. The percentages of IEDCA and OHCA cases were 25.1% and 74.9%, respectively. Epinephrine was administered to 100 (54.6%) patients (Group 1). Among these patients, 15.9% (n=29) of the patients had shockable rhythms (ventricular fibrillation, pulseless ventricular tachycardia) and 84.1% (n=154) of them had non-shockable rhythms (asystole, pulseless electrical activity) as the initial rhythm. ROSC and one-month mortality rate of these patients were 24% (n=44) and 72.8% (n=36), respectively. The one-month mortality rates of Group 1 (30% of patients had IEDCA and 70% of patients had OHCA) and Group 2 were 43.8% and 56.2%, respectively (p=0.0231). The ROSC and one-month mortality rates of Group 1 and Group 2 cases, whose initial rhythm was a shockable rhythm, were 26.6% and 50% vs. 42.8% and 66.6%, respectively.

Conclusion: In this study, we found no significant difference in terms of obtaining ROSC between the shockable rhythm and ROSC in the IEDCA and OHCA cases (p=0.963 and p=0.141, respectively). The effect of epinephrine administration on patients with IEDCA and OHCA whose ROSC was obtained on one-month mortality was not statistically significant (p>0.05).

Keywords: Cardiac arrest, cardiopulmonary resuscitation, epinephrine, in-emergency department, out-of-hospital

INTRODUCTION

In 2017, the USA's Cardiac Arrest Register to Enhance Survival reported 76,215 out-of-hospital cardiac arrest (OHCA) cases. Most of these cases were either unwitnessed cases (51.1%) or cases whose rhythms were non-shockable rhythm (81.6%) (1). The mortality rate for OHCA cases is approximately 90%, and they mostly occur at home (68.5%), public areas (21%), and care homes (10.5%) (2). Although the incidence and survival rates for

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in-emergency department cardiopulmonary arrest (IEDCA) cases are not clear, like OHCA, it occurs in every 1–6 of 1,000 hospitalized patients whose non-shockable rhythm ratio is high (72.3%), and the discharge rate stands at approximately 15% (3, 4).

The literature shows that the incidence and mortality rate for non-shockable rhythms are higher. In many studies, aside from cardiopulmonary resuscitation (CPR), drugs such as bicarbonate, atropine, calcium chloride, vasopressin, and epinephrine have been used to contribute toward survival. However, no promising results have been achieved, with most of these drugs remaining at the level of 2B recommendation (5, 6). Numerous studies have shown that epinephrine increases the likelihood of coronary artery perfusion and the return of spontaneous circulation (ROSC) in patients with cardiopulmonary arrest (CPA). Additionally, epinephrine reduces hospital discharge and neurological survival rates. Its effects on brain perfusion are still debatable (5-7).

The effect of epinephrine on ROSC is undeniable; however, the risk/benefit profile of this drug is still a controversial issue due to the fact that most of the cases that are followed up after having an arrest in the intensive care units are linked with a high or mortality rate or are discharged with sequela. Considering the long-term hospitalization of patients in intensive care after ROSC, the expectations of their relatives, the costs, the need to investigate whether epinephrine actually provides benefits or causes harm are increased. To clarify the uncertainty associated with the use of epinephrine during CPR, this study intends to investigate the effects of this drug on ROSC and one-month mortality rates by comparing epinephrine with placebo in the witnessed OHCA and IEDCA cases.

METHODS

We prospectively conducted this study between August 1, 2016 and May 31, 2017. Importantly, we obtained the Ethics committee approval from Gaziantep University (Date: July 25, 2016 and Decision no: 2016–217). The informed consent was postponed until the resolution of patients' emergency condition, after which consent was obtained from the patients' legal representatives. We included a total of 183 cases (137 OHCA and 46 IEDCA cases) occurring during the shifts of 12 emergency medicine specialists from four hospitals (three from each hospital) and four medical emergency teams in the study. The first CPR on OHCA cases was performed by at least two paramedics working for Turkish emergency medical health services. Ongoing CPR for patients upon arrival and CPR for all the cases experiencing a cardiac arrest in the emergency departments were managed by emergency medical specialists.

Main Points:

- Administration of epinephrine to patients with shockable rhythm decreased the ROSC ratio.
- Administration of epinephrine to patients with non-shockable rhythm increased the chances of ROSC.
- One-month mortality was higher in patients with non-shockable rhythm who were administered with epinephrine.
- Epinephrine administration had no significant effect on either ROSC or one-month mortality in the OHCA and IEDCA.

Inclusion Criteria:

- Patients who were witnessed cases of OHCA and IEDCA and underwent CPR in the emergency departments of the abovementioned four hospitals.
- Only patients with CPA in the emergency departments were included in the study.

Exclusion Criteria:

- ≥18 years old
- Cardiac arrest during pregnancy
- Arrest due to anaphylaxis
- Asthma-induced arrest
- Patients ≥85 years in the terminal period who had an arrest
- For OHCA, cases wherein ≥30 minutes had elapsed between the occurrence of the incident and arrival of the paramedics at the scene were excluded from the study, in addition to unwitnessed cases.

Structure:

The patients were divided into two groups: patients administered with epinephrine (Group 1) and patients without epinephrine administration (Group 2). Each group was then consequently divided into subgroups, namely patients who were in the emergency department and patients who were out of the hospital at the time of arrest.

Medicine Preparation and Administration Techniques:

We informed the individuals who were performing CPR about the study beforehand. We asked them to administer medication every three minutes for each case on an average and continue CPR for a minimum of 45 minutes for patients for whom no ROSC could be achieved. No limitation was imposed on the dose of epinephrine to be administered. The persons who had not previously performed CPR in the hospital or emergency ambulance (nurses or paramedics) were given separate training in advance and were described as third parties. The study coordinators put in black, non-transparent plastic bags with epinephrine (1 mg of epinephrine and 9 cc of normal saline) and without epinephrine (10 cc of saline only) into the boxes along with an equal number of normal saline and delivered them to the third parties. When CPR performers asked for epinephrine, the third parties took the bags out of the boxes at random and administered it to the patients through intravenous push over 5 seconds. Those who performed CPR were unaware as to whether epinephrine was present in the syringes prepared for the patients. The third parties recorded the contents of the bags taken out of the boxes in the previously prepared forms and delivered them to the study coordinators on a weekly basis.

Parameters considered for the study:

- ROSC
- One-month mortality rate
- Where the arrest occurred, that is OHCA or IEDCA?
- Start time of epinephrine and administered doses
- The first detected rhythm (whether shockable or not)

- Start time of chest compression
- The presence of chronic diseases and risk factors
- Lactate, pH, and pCO2 concurrently checked with CPR
- Activation time
- Arrival time of emergency medical intervention teams
- Whether endotracheal intubation (ETI) was performed for brought-in patients

Statistical Analysis

We tested the normality of the distribution of numerical data using the Shapiro–Wilk test. We employed the Student T-test for the comparison of variants that complied with normal distribution. We used the Mann–Whitney U test to compare the variables that did not have a normal distribution in the two groups. We used the Chi-Square test to determine the relationship between categorical variables and used SPSS 22.0 package software for the analyses (IBM SPSS Corp.; Armonk, NY, USA). A p value <0.05 was accepted as statistically significant for this study.

RESULTS

We prospectively conducted this study between August 1, 2016 and May 31, 2017. We included 183 patients with CPA (92 males [50.3%] and 91 females [49.7%]) in the study. The mean age of female patients having arrests (66.69±17.61 years) was higher than male patients (59.58±16.58 years; p=0.005). The mean age of all the patients was 64.2 years (±16.8) (age range: 19–99 years). In total, 46 (25.1%) of the cases were IEDCA and 137 (74.9%) were OHCA. The initial CPR of the three out-of-hospital arrest cases was performed by the relatives of the patients within the specified period of time, whereas the initial CPR of the 134 arrest cases was performed by at least two paramedics working for the emergency ambulance services.

Chronic diseases identified in the medical history of patients with CPA were as follows: diabetes mellitus (DM) (24%, n=44), coronary artery disease (CAD) (21.2%, n=39), hypertension (HT) (16.9%, n=31), chronic obstructive pulmonary disease (6.6%, n=12), obstructive sleep apnea syndrome (3.3%, n=6), cerebrovascular disease (6.6%, n=12), chronic heart failure (9.8%, n=18), and chronic renal failure (3.3%, n=6).

The mean values of arterial blood gas results taken within five minutes of the arrival of patients at the hospital were as follows: pH: 7.03 (±0.17), lactate: 11.2 (±4.7) mg/dL, and PCO_2: 57.6 (±17.65) mm/Hg. ETI was performed on all the IEHCA cases (n=46) during resuscitation. When admitted to the emergency department, 91 of the OHCA cases (66.4%) received ETI, 38 (27.7%) received a bag valve mask, and 6 (4.4%) received a laryngeal mask airway as respiratory support. Meanwhile, two patients (1.7%) received esophageal intubation.

According to the first rhythms detected inside and outside of the hospital, we divided the cases of arrest into two groups: shockable (ventricular fibrillation, pulseless ventricular tachycardia) and non-shockable (pulseless electrical activity [NEA], asystole) rhythms. In both groups, the rate of non-shockable rhythm was higher (76% vs. 24% and 87% vs. 13%; respectively).

In total, 54.6% (n=100) of patients with CPA were randomly administered epinephrine (Group 1), whereas 45.4% (n=83) of the patients were not administered with epinephrine (Group 2). In the IEDCA cases, chest compression was started in the first minute of arrest. The mean initial chest compression and breathing times for OHCA cases were 8.9±4.4 and 9.2±4.4 minutes, respectively. The first ROSC time was 31.8±18.1 minutes for all the patients on an average. ROSC was obtained in 44 patients (24%) during CPR. Of the patients for whom ROSC was obtained, 24 (54.5%) were in Group 1 and 20 (45.5%) were in Group 2. The one-month mortality rate was 72.8% (n=36) in the patients for whom ROSC was obtained. Although the ROSC ratio was higher in male patients (28.3%) than female patients (19.8%), this difference was not statistically significant (p=0.180). One-month mortality was higher among the female patients, but it was not statistically significant (p=0.054).

The mean time interval between reporting of an arrest case in Group 1 and epinephrine administration at the scene was 16.33±9.87 minutes, and the mean administered dose of epinephrine was 6.2±5.7 mg. The mean dose of epinephrine (n=4 mg) for patients for whom ROSC was obtained was less than the average dose of epinephrine (n=7 mg) administered to the patients for whom no ROSC could be obtained. However, the difference was not statistically significant (p=0.140).

The start times of chest compressions in Groups 1 and 2 were 7±3.6 and 6.8±6.4 minutes, respectively. Although the initial administration of epinephrine delayed the start of chest compression, it was not statistically significant (p=0.828).

ROSC was obtained for 44 (24%) patients in both the groups, and the initial rhythm of 10 (34.4%) of these patients was found to be shockable. We found that although the administration of epinephrine in the patients with shockable rhythm decreased the ROSC ratio (26.6% vs. 42.8%), the administration of epinephrine in patients with non-shockable rhythm increased the chance of ROSC (23.5% vs. 20.2%), but that this ratio was not statistically significant (Table 1).

There was no statistically significant relationship between the groups in terms of whether the initial rhythm was shockable or not as well as one-month mortality (p=0.079 and p=0.344, respectively) (Table 2). However, one-month mortality was higher in Group 2 cases whose first rhythm was shockable and Group 1 cases whose initial rhythm was non-shockable according to the table (66.6% vs. 50% and 90% vs. 85.8%, respectively).

When we looked at the effect of administering epinephrine to the patients for whom ROSC was obtained on one-month mortality, epinephrine was found to increase the one-month mortality rate, but this ratio was not statistically significant (Table 3).

The mean age of the patients for whom ROSC was obtained was smaller (p=0.003). While prolonged chest compression did not increase the likelihood of ROSC (p=0.001), early respiratory support (p=0.004) and chest compression (p=0.007) increased

Table 1. Relationship between ROSC in Group 1 and 2 according to the Initial Rhythm

	Group 1		Group 2	
	ROSC		ROSC	
	Yes	None	Yes	None
Shockable Rhythm (N: 15/14)	4 (26.6%)	11 (73.4%)	6 (42.8%)	8 (57.2%)
Non-Shockable Rhythm (N: 85/69)	20 (23.5%)	65 (76.5%)	14 (20.2%)	55 (79.8%)
p	0.795		0.087	

Table 2. The Effect of Epinephrine on One-Month Mortality according to the Initial Rhythm

	Group 1		Group 2	
	One-Month Mortality		One-Month Mortality	
	Survived	Did not survive	Survived	Did not survive
Shockable Rhythm (N: 4/6)	2 (50%)	2 (50%)	2 (33.3%)	4 (66.6%)
Non-Shockable Rhythm (N: 20/14)	2 (10%)	18 (90%)	2 (14.2%)	12 (85.8%)
p	0.079		0.344	

Table 3. Relationship between Group 1 and 2 and ROSC and One-Month Mortality

Patients for whom ROSC was obtained	Group 1	Group 2	Total	p
	24 (54.5%)	20 (45.5%)	44	0.988
One-Month Mortality				
Survived	4 (16.7%)	4 (20%)	8 (18%)	
Did not survive	20 (83.3%)	16 (80%)	36 (82%)	0.776

Table 4. Comparison between ROSC and Variables

Variables	ROSC (n:44)	Ex (n:139)	p
Age	56.27±17.8	65.28±16.79	0.003
Minute When Chest Compression Was Started	5.16±3.89	7.52±5.34	0.007
Duration of Chest Compression (Minutes)	33±19.92	58.29±17.17	0.001
Minute When Respiratory Support Was First Started	5.41±4	7.92±5.32	0.004
pH	7.05±0.16	7.03±0.18	0.733
Lactate (mg/dL)	10.96±4.74	11.34±4.7	0.640
pCO_2 (mm/Hg)	55.87±18.13	58.2±17.53	0.447

the likelihood of ROSC. There was no statistically significant relationship among pH, lactate, and pCO_2 values in the patients for whom ROSC was obtained (Table 4).

There was no statistically significant difference in the IEDCA and OHCA cases between the shockable rhythms and obtaining ROSC (p=0.963 and p=0.141, respectively).

Table 5. The Effect of Epinephrine Administration on One-Month Mortality in IEDCA and OHCA Patients for Whom ROSC Was Obtained

Patients for Whom ROSC Was Obtained	One-Month Mortality				
	Survived		Did not survive		Total
	Group 1 N (%)	Group 2 N (%)	Group 1 N (%)	Group 2 N (%)	ROSC
IEDCA	1 (25%)	3 (75%)	6 (30%)	7 (43.8%)	17
OHCA	3 (75%)	1 (25%)	14 (70%)	9 (56.2%)	27
p	0.158		0.231		

Table 6. Comparison of Group 1 and 2 and Categorical Variables in Terms of One-Month Mortality

Categorical Variables	One-Month Mortality		
	Survived	Did not survive	p
Age			
Group 1	4 (48.5±19.5)	20 (61.3±15.7)	0.388
Group 2	4 (54.5±12.6)	16 (52.3±20.4)	0.963
Minute When Chest Compression Was Started			
Group 1	4 (5.2±2.9)	20 (5.9±3.9)	0.627
Group 2	4 (2±2)	16 (4.9±4.1)	0.249
Minute When Chest Compression Ended (Minutes)			
Group 1	4 (33±16)	20 (35.5±19.2)	1.000
Group 2	4 (20.2±12.2)	16 (33±23.1)	0.249
Minute When Respiratory Support Was Started			
Group 1	4 (5.2±2.9)	20 (6.4±4.1)	0.477
Group 2	4 (2.5±3)	16 (4.9±4.1)	0.335
pH			
Group 1	4 (7.11±0.08)	20 (7.04±0.15)	0.431
Group 2	4 (7.15±0.14)	16 (7.0±0.18)	0.122
Lactate			
Group 1	4 (8±4.7)	20 (11.8±3.5)	0.210
Group 2	4 (7.9±4.3)	16 (11.3±5.8)	0.290
pCO_2			
Group 1	4 (67.8±10.4)	20 (57.6±17.59)	0.210
Group 2	4 (40±1.7)	16 (54.6±20.4)	0.099

The mean chest compression time of eight patients who survived for a month after ROSC was 26.6±14.8 minutes, whereas it was 34.1±20.7 minutes in 36 patients who died within a month. It was established that prolonging chest compressions did not contribute to one-month mortality (p=0.360).

The effect of epinephrine administration on one-month mortality in patients with IEDCA and OHCA for whom ROSC was obtained was not statistically significant (p≥0.05) (Table 5).

No statistically significant result was detected in the comparison of age, duration of chest compression and respiratory support, pH, lactate, pCO_2, and one-month mortality between Groups 1 and 2 (p≥0.05) (Table 6).

DISCUSSION

The Turkish Statistical Institute stated that circulatory system diseases were the most common cause of death in 2017, contributing to 39.7% of deaths. This rate was 36% in Gaziantep, where this study was conducted, and most of the patients were in the

age group of 75–84 years (50.3% of patients were females, 49.7% of patients were males) (8). The average life expectancy according to the Turkish Statistical Institute's data for 2016 was 78 years (75.3 vs. 80.7 years; male vs. female) (9). In a randomized study where epinephrine was administered, Perkins et al. (10) found that the mean age of male and female patients in the OHCA cases was similar (69.7 and 69.8 years, respectively), but the rate of arrest was approximately twice as high in males (65% and 35%, respectively). In a study on patients with arrest, Koscik et al. (11) found that the mean age of OHCA cases was 68.8±17 years (62% of male patients). In another study on patients who had suffered from OHCA, the mean age of the cases was found to be 65 years, and most (73%) of them were male patients (12). Meanwhile, in Turkey, according to a study conducted by Oğuztürk et al. (13) that examined IEDCA cases, the mean age was 63.4 years (58.6% of them were males. The results of our study show that most of the patients were male, and the mean age was consistent with the literature; however, it was below the average life expectancy found by the Turkish Statistical Institute.

In their study on comorbidity and survival in the OHCA cases, Hirlekar et al. found that heart failure (29%), myocardial infarction (24%), and diabetes (23%) were the most common chronic diseases. In the same study, patients with cardiac and respiratory failure and renal dysfunction who had an in-hospital arrest were found to have the lowest rate of survival (14, 15). A separate study examining the characteristics of patients in whom CPA occurred during the interventional radiological procedures found that most patients had diabetes, HT, and renal failure (16). Meanwhile, in our study, the most common chronic diseases in CPA cases were DM, CAD, and HT. According to these results, CPA is more likely to occur in the patients with comorbidities.

A study evaluating blood gas analysis in OHCA cases reported that patients for whom ROSC was obtained had high pH and low lactate and pCO_2 levels, and that patients with a pCO_2 level less than 75 mm Hg were 3.3 times more likely to have successful ROSC (17). Another study found a strong correlation between lactate along with pH parameters and patient mortality within the first five days (18). Dadeh et al. (19) found no significant relationship between the initial lactate levels and ROSC with neurological survival in the non-traumatic OHCA cases. In our study, we found no statistically significant relationship among pH, lactate, and pCO2 values in the patients for whom ROSC was obtained. We think that this result is due to the extended resuscitation attempts in the cases for whom ROSC was obtained in accordance with the literature guidelines. Therefore, we cannot regard it as a predictive value in terms of ROSC and one-month mortality.

In a study of patients with OHCA, 74.1% were administered with ETI, 24.2% were administered with supraglottic airway (SGA) devices, and the rest of them received both airway techniques. Additionally, the chest compression fraction with supraglottic devices was found to be higher as compared to the other methods (20). Another study conducted in Finland showed that the rate of ETI use was 67.3% in patients with OHCA, whereas the rate of supraglottic device use was 30.2% (21). A different study examining OHCA and airway methods found that 52.3% of the patients received pre-hospital ETI and 15% of them were administered with a pre-hospital SGA device. According to the results of this study, the comparison of ETI and SGA revealed that patients receiving ETI had higher rates of discharge with ROSC, survival, and good neurological outcomes (22). In our study, ETI was applied to all the IEDCA and most of the OHCA cases (66.4%). The comparison of the type of respiratory device used and ROSC found no statistically significant difference between them (p=0.419). Therefore, especially in the cases where pre-hospital airway interventions may interrupt chest compressions, priority should be given to effective chest compressions, and ventilation options that can be performed without interrupting chest compressions should be chosen.

A retrospective study examined the effect of epinephrine on neurological survival in about 200,000 witnessed OHCA cases whose initial rhythm was non-shockable rhythm. It was shown that epinephrine may increase the neurological survival in the cases where the epinephrine administration time is ≤19 minutes for patients brought to the hospital in ≥11 minutes (23). In a similar study, Hansen et al. (24) found that in the cases with an epinephrine administration time of less than 10 minutes, each minute's delay compromised survival and a positive neurological outcome. Many other similar studies have emphasized the importance of early epinephrine administration (25-27). In this study, the epinephrine administration time in the OHCA cases was longer than the time recommended in the literature (16.33±9.87 minutes). As the time for reaching the patient was within the acceptable limits, we attributed this delay to the difficulty of accessing the collapsed vascular structures outside of the hospital. We believe that such situations can be overcome by providing training and opportunities to the paramedics that promote alternative methods, such as intraosseous access. In epinephrine-administered OHCA cases, the low ROSC and one-month survival rates may have been due to the inability to administer epinephrine at an early stage in this study.

Fisk et al. (28) noted in their study that increasing the dose of epinephrine in OHCA cases did not had a significant impact on patient discharge and neurological outcomes. In a systematic review study, Lin et al. (29) mentioned that the advantage of epinephrine administered in a standard dose over placebo and high doses of epinephrine in patients with OHCA was still not clear, be it in terms of hospital discharge or good neurological survival, and that more studies were needed to determine the optimal dose. There are also studies suggesting that high-dose epinephrine is harmful and should not be administered (30). In this study, we found that increasing the dose of epinephrine did not contribute to the success of ROSC. Despite the large number of clinical studies, it is not clear within which regimen it should be administered to generate a positive impact on survival and good neurological outcomes.

A review study of the effects of epinephrine on cardiac arrest cases found that epinephrine contributed to ROSC but did not help with survival or good neurological outcomes (30). According to many other studies, epinephrine contributes to ROSC but delivers no benefits to survival and neurological re-

covery (31-34). On the contrary, some studies have shown that epinephrine decreases mortality, especially in patients with non-shockable rhythm (35, 36). The results of the PARAMEDIC 2 study showed that the ROSC and one-month survival rates of the patients in the epinephrine group were higher as compared to the placebo group. However, it was reported that this result may lead to more negative results (10). In this study, not administering epinephrine to patients with shockable rhythm and administering epinephrine to patients with non-shockable rhythm further increased the one-month mortality. While this situation can be explained by the small number of cases and the fact that most of the cases had non-shockable first rhythm, it may also have been caused by the delay in the administration of epinephrine.

An analysis of OHCA cases in Japan between 2007 and 2010 showed that the rate of ROSC was higher when epinephrine was administered to those whose first rhythm was non-shockable (18.5% vs. 5.7%) as well as in those with shockable first rhythm who were not administered epinephrine (28.1% vs. 21.6%, respectively). According to the same study, the one-month survival rate was found to be higher in the cases with shockable and non-shockable first rhythm who were not administered epinephrine (28.8% vs. 16.5% and 4.2% vs. 3.9%, respectively) (37). Another study conducted in Japan reported that the survival rates were higher in patients with shockable and non-shockable rhythms who were administered adrenaline (5.4% vs. 4.7%) (34). A study that analyzed OHCA cases showed that the ROSC and one-month survival rates of patients with shockable first rhythm who were not administered epinephrine were higher as compared to the patients administered with epinephrine (27.7% vs. 22.8% and 27% vs. 15.4%, respectively) (38). In this study, the results indicate that administering epinephrine to patients with shockable rhythm decreased the ROSC ratio, whereas withholding it increased the one-month mortality rates. On the contrary, administering epinephrine to patients with non-shockable rhythm increased the chances of ROSC, whereas the one-month mortality rate was higher in the patients with shockable rhythm who were administered with epinephrine.

CONCLUSION

According to the results of our study, ROSC was obtained for 44 (24%) patients, whereas a one-month survival was achieved for eight patients (1.4%). Although the administration of epinephrine to patients with shockable rhythm decreased the ROSC ratio, the administration of epinephrine to patients with non-shockable rhythm increased the chances of ROSC. There was no statistically significant relationship between the groups whether the first rhythm was shockable or not as well as one-month mortality, but one-month mortality was higher in patients with non-shockable rhythm who were administered with epinephrine. In conclusion, epinephrine administration had no significant effect on either ROSC or one-month mortality in the OHCA and IEDCA cases. A large number of placebo-controlled, prospective, randomized, and double-blind studies should be performed to demonstrate the efficacy of epinephrine, especially due to the small number of in-hospital arrest cases.

Study Limitations

The fact that staff providing emergency health care for pre-hospital OHCA cases administered adrenaline later than the time recommended in the guidelines may have limited the effects of the adrenaline. One of the most important reasons for this action is not having alternative vascular access (such as intraosseous insertion). The inequality in the distribution of in-hospital and out-of-hospital arrest cases was another factor served as the limitation of this study because of the insufficient number of cases.

Ethics Committee Approval: Ethics committee approval was received for this study from the ethics committee of Gaziantep University (Date: 25/07/2016; No:2016-217).

Informed Consent: Written informed consent was obtained from patients who participated in this study.

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