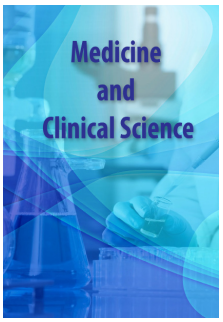
Medicine & Clinical Science

Case Report



Survival after 43 minutes of cardiopulmonary resuscitation: A case report

Ramzi Nakhle[1], Mahmoud EL-Hussein[1*], Ghaith Zaatari[2], Mariana Helou[1]

[1]*Emergency Medicine Department, Lebanese American University Medical Center, Beirut, Lebanon*

[2]*Postdoctoral Research Associate, University of Miami Miller School of Medicine, Florida, USA.*

Correspondence

Mahmoud EL-Hussein

Emergency Medicine Department, Lebanese American University Medical Center, Beirut, Lebanon

- Received Date: 30 Aug 2020
- Accepted Date: 11 Sep 2020
- Publication Date: 04 Mar 2021

Abstract

Out-of-Hospital Cardiac Arrests (OHCAs) is a major challenge for every emergency physician. Despite the new guidelines and regular updates, OHCAs still have a low survival rate. However, many prolonged resuscitations were reported to have good outcome. A 37-year-old unconscious man was brought to our Emergency Department (ED), and cardiopulmonary resuscitation (CPR) was initiated as per the American Heart Association (AHA)/Advanced Cardiopulmonary Life Support (ACLS) guidelines. Patient returned to spontaneous circulation (ROSC) after 43 minutes. He had a long stay in the Intensive Care Unit (ICU) and encountered several complications. Patient left the hospital at day 54 with minimal neurologic sequel. Many factors were proven to be associated with the survival rate of OHCAs; the duration of resuscitation, the rhythm on arrival, the patient's age, the initiation time of Basic Life Support (BLS) all play a major role.

Background

Poor outcomes are usually reported post OHCAs. Data reported concerning survival and hospital discharge varies between countries. For example, OHCAs survival and hospital discharge is 0.3% in Detroit, USA, and 20% in Slovenia [1]. In general, the survival rate is 23.8% at time of hospital admission and decreases to 7.6% at hospital discharge [1]. Guidelines are being updated every 5 years to improve survival outcome in cardiac arrest patients and criteria to terminate resuscitation are constantly developed [2,3]. However, good recovery after prolonged resuscitation have been documented and reported [4-8]. We report a case of a young male presenting with cardiac arrest for which he underwent resuscitation for 43 minutes, and was discharged on day 54 from the hospital, with a fairly good neurologic outcome.

Case Presentation

A 37-year-old male was brought to the ED at exactly 17:15, by his coworkers. No Emergency Medical Services (EMS) were called, no BLS was initiated. The patient was at work, located 5 minutes away from the hospital when he collapsed. The patient's colleagues reported that he complained of severe headache and neck pain few minutes before the incident. He was directly transported to the ED. The patient past medical history consisted of hypertension and dyslipidemia. As he was unconscious, not responsive and had no pulse, Code Blue was called, and CPR was immediately initiated in accordance with the AHA/ ACLS guidelines. After 3 cycles, his rhythm changed to Ventricular Fibrillation (V-Fib). He received a total of 7 defibrillations. At 17:45, 30 mins later, the patient's rhythm changed to Pulseless Electrical Activity (PEA). CPR was continued, with a total of 14 mg of epinephrine given. At 17:58, 43 mins later, pulses were detected. Patient was in ROSC. First EKG done showed a mild inferolateral ST elevation. The patient was loaded immediately with ASA, Ticagrelor, Enoxaparin and was transferred to the Cardiac Cath lab for angiography and angioplasty. A moderate plaque on the LAD artery was observed. The patient was admitted to the ICU afterwards. An initial transthoracic echocardiography showed septo-apical dyskinesia with infero-lateral hypokinesia, and an impaired left ventricular systolic function with an ejection fraction of 40%. His long ICU stay was complicated by several infections, seizures and acute kidney injury, requiring 6 dialysis sessions. Tracheostomy was done and a PEG was inserted. The patient was discharged home after 54 days of in-hospital stay. He was conscious, cooperative but not adequately oriented. He was able to move his 4 limbs, and able to walk despite an unsteady gait. He left home with a PEG in place, and adequate family education.

Discussion

Cases with prolonged resuscitation have been discussed thoroughly in the literature. There are no set guidelines for when to stop resuscitation after a cardiac arrest. Some

Citation: Nakhle R, EL-Hussein M, Zaatari G, Helou M. Survival after 43 minutes of cardiopulmonary resuscitation: A case report. Med Clin Sci. 2021;3(1):1-2.

references recommend the termination of resuscitation if asystole remained more than 20 minutes with no reversible cause [2,3]. Also, if there is no ROSC seen within the first 30 min of CPR, chances of survival are very low [9]. The duration of cardiac resuscitation is a major predictor of survival after cardiac arrest [10-13]. However, many other factors are involved. Also, Good outcomes have been reported in the literature after prolonged resuscitation [5]. Cooper and Cade found an association between the duration of the cardiac arrest, the type of arrhythmia, if BLS was initiated within 3 minutes, age younger than 70-year-old and the immediate survival [13]. Survival was higher when the cardiac arrest happened in daytime (7h-15h), when it was witnessed, when CPR is started immediately, when the rhythm is shockable, when the patient is young, when no intubation is required, and/or the patient had ROSC on the field [1,10-12,20]. Age and sex as independent factors were not linked to survival in some of the reported studies [1,10].

Conclusion

Despite the low survival rate, cases of successful resuscitation after prolonged cardiac arrest have been reported. Our patient had a witnessed cardiac arrest with rapid transfer to our hospital. Although CPR wasn't initiated by bystanders or EMS, CPR was performed at the ED for 43 minutes. This patient went into ROSC at minute 43 and was discharged home after a long ICU stay with fair neurologic outcome. This case sheds a light on how important it is to continue CPR, especially in young patients.

Conflict of interests

The authors declare no conflict of interests.

References

1. Sasson C, Rogers MA, Dahl J, Kellermann AL. Predictors of survival from out-of-hospital cardiac arrest: a systematic review and meta-analysis. Circ Cardiovasc Qual Outcomes 2010;3(1):63-81.
2. Baskett PJ, Steen PA, Bossaert L; European Resuscitation Council. European Resuscitation Council guidelines for resuscitation 2005. Section 8. The ethics of resuscitation and end-of-life decisions. Resuscitation 2005;67 Suppl 1:S171-80.
3. Kellermann AL, Hackman BB, Somes G. Predicting the outcome of unsuccessful prehospital advanced cardiac life support. JAMA 1993;270(12):1433-6.
4. Bercker S, Poloczek S. A case of prolonged life support. Resuscitation 2006;68(3):434-5.
5. Cooper S, Macnaughton P. Prolonged resuscitation: a case report. Resuscitation 2001;50(3):349-51.
6. Gabrielli A, Layon AJ, Cole P, Holbert R, Modell JH. Prolonged cardiopulmonary resuscitation with preservation of cerebral function in an elderly patient with asystole after electroconvulsive therapy. J Clin Anesth 2002;14(3):234-40.
7. Nusbaum DM, Bassett ST, Gregoric ID, Kar B. A case of survival after cardiac arrest and 3½ Hours of Resuscitation. Texas Heart Institute Journal, 2014'41(2), 222- 226.
8. Moon SH, Kim JW, Byun JH, et al. Case of a cardiac arrest patient who survived after extracorporeal cardiopulmonary resuscitation and 1.5 hours of resuscitation: A case report. Medicine (Baltimore). 2017;96(47).
9. American Heart Association in association with ILCOR. Part 2: Ethical Aspects of CPR and ECC. Resuscitation, 2000;46:17–27.
10. Brindley PG, Markland DM, Mayers I, Kutsogiannis DJ. Predictors of survival following in- hospital adult cardiopulmonary resuscitation. CMAJ 2002;167(4):343-8.
11. Cooper S, Janghorbani M, Cooper G. A decade of in-hospital resuscitation: outcomes and prediction of survival? Resuscitation 2006;68(2):231-7.
12. Khan NU, Razzak JA, Ahmed H, et al. Cardiopulmonary resuscitation: outcome and its predictors among hospitalized adult patients in Pakistan. Int J Emerg Med 2008;1(1):27-34.
13. Cooper S, Cade J. Predicting survival, in-hospital cardiac arrests: resuscitation survival variables and training effectiveness. Resuscitation. 1997 Aug 1;35(1):17-22.
14. Larsen MP, Eisenberg MS, Cummins RO, Hallstrom AP. Predicting survival from out of hospital cardiac arrest: a graphic model. Ann Emerg Med 1993;22(11):1652–8.
15. Tunstall-Pedoe H, Bailey L, Chamberlain DA, Marsden AK, Ward ME, Zideman DA. Survey of 3765 cardiopulmonary resuscitations in British hospitals (the BRESUS study): methods and overall results. Br Med J 1992;304:1347–51.
16. George AL, Folk BP, Crecelius PL, Campbell WB. Pre-arrest morbidity and other correlates of survival after in-hospital cardiopulmonary arrest. Am J Med 1989;87:28–34.
17. Bowker L, Stewart K. Predicting unsuccessful cardiopulmonary resuscitation (CPR): a comparison of three morbidity scores. Resuscitation 1999;40:89–95.
18. O'Keeffe S, Ebell MH. Prediction of failure to survive following in-hospital cardiopulmonary resuscitation: comparison of two predictive instruments. Resuscitation 1994;28:21–5.
19. Gwinnutt C, Columb M, Harris R. Outcome after cardiac arrest in adults in UK hospitals: effect of the 1997 guidelines. Resuscitation 2000;47:125–35.
20. Cohn AC, Wilson WM, Yan B, et al. Analysis of clinical outcomes following in-hospital adult cardiac arrest. Intern Med J 2004;34(7):398-402.