

Paediatric Out-of-Hospital-cardiac arrests and Emergency Department-cardiac arrests: factors associated with survival to discharge and improved neurological outcome.

INTRODUCTION. Mortality of paediatric Cardiac Arrests (CA) remains high despite efforts towards its reduction, and survivors may have profound neurological impairments. We don't know enough about factors associated with better outcomes (survival to discharge and neurological outcome). Asystole has been described as a predictor of worse outcome; however we don't know the neurological outcomes of survivors whose first rhythm was asystole. Paediatric Logistic Organ Dysfunction (PELOD) score in 24 first hours might be useful to predict outcome and be useful for physicians to inform parents).

PARTICIPANTS AND METHODS. We are conducting an international prospective study (60 hospitals of 4 countries) using Utstein style with paediatric OHCA (Out-of-Hospital Cardiac Arrest and EDCA (Emergency Department Cardiac Arrest) in patients admitted to Emergency Departments. Factors associated with survival to discharge and neurological outcome to discharge were analyzed (paediatric overall performance category –POPC–) from 1st Jun 2014 to 31st March 2015. To analyze categorical variables we used Pearson Chi-Square or Fisher's Exact test. For quantitative variables we used Student test and Mann-Whitney U test.

RESULTS. We have analyzed 41 consecutive paediatric CA, 3/41 with unknown rhythm, 7/41 were still at hospital, 87.8% of them were OHCA, and the rest of them were EDCA. The median age of the sample was 6.4 years (interquartile range 1.2-12.0). 48% of the patients were male.

We found association between survival to discharge and:

- first rhythm different to asystole, $p=0.01$. 15.0% (3/20) of patients whose first rhythm was asystole survived to discharge vs 63.6% with different known rhythm (7/11),
- lower PELOD score in first 24 hours ($p=0.033$).

We found association between $POPC \geq 4$ to discharge and:

- first rhythm different to asystole, $p=0.01$. 15.0% (3/20) of patients whose first rhythm was asystole had $POPC \geq 4$ vs 63.6% with different known rhythm (7/11),
- lower PELOD score in first 24 hours ($p=0.034$).

2 children whose first rhythm was asystole survived to discharge, both with POPC 3 at that moment.

CONCLUSIONS.

In our paediatric OHCA and EDCA study, patients whose first CA-rhythm was different to asystole survived to discharge and had better neurological outcome (nevertheless some patients whose first rhythm was asystole survived to discharge with POPC 3). We need a larger tracing and to know more about other variables that may be associated with good outcome despite asystole as first rhythm.

PELOD in first 24 hours seems to be a good predictor of survival to discharge and a good neurological outcome to discharge.