What makes the difference in children with unexpected good outcome 6 months after cardiac arrest?

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Abstract

·Purpose of the study. To analyse the peculiarities of patients with unexpected good overall outcome at 6 months in emergency department and out-of-hospital paediatric cardiac arrest (OHCA).

·Materials and methods. Prospective multicentre study of paediatric cardiac arrest in emergency department and OHCA in children under 18 years old. We selected patients with at least one of the following criteria: asystole as first rhythm, blood pH <7, blood lactate ≥12 mmol/l or death probability >80% according to PELOD scale at 24 first hours. We also collected Paediatric Overall Performance Category (POPC) at 6 months. T-test, Fisher´s exact test and Chi-square test.

·Results. 181/229 cardiac arrests had at least one criterium of bad prognosis, 166 were followed 6 months and 15.7% had good overall outcome (POPC 1 or 2). In patients with bad prognosis and POPC 1 or 2 at 6 months we found:

- lower proportion of trauma as cause of cardiac arrest (4% vs 22,1%, p=0.037) and orotracheal intubation during cardiac arrest (87.1 vs 69.2%, p=0.021),

- higher proportion of witnessed cardiac arrests (21.4% vs 8.1%, p= 0.016), shockable rhythms as first rhythm (38.5% vs 13.5%, p=0.017) and treatment with hypothermia (36.4% vs 10.5%, p<0.001). When we studied only patients with sustained ROSC, those who were treated with hypothermia had higher proportion of POPC 1 or 2 at 6 months, next to statistical significance (42.9% vs 23%, p=0.055).

There was not any significative difference in age, gender, time until basic or advanced life support.

·Conclusions. Some patients with criterium of bad prognosis achieved good overall outcome at 6 months, mainly those who had witnessed cardiac arrests and shockable rhythms. Traumatic cardiac arrest is still a challenge. While orotracheal intubations could not always be the first line of airway management, hypothermia seems to be useful to improve the overall outcome.