Clinical paper

Outcome and risk factors in children after traumatic cardiac arrest and successful resuscitation

Jörn Zwingmann a,⁎, Rolf Lefering b, Jörg Bayer c, Kilian Reising d, Kerstin Kuminack a, Norbert P. Südkamp a, Peter C. Strohm a, TraumaRegister DGU® c

a Department of Orthopedics and Trauma Surgery, Freiburg University Hospital, Freiburg, Germany
b Institute for Research in Operative Medicine (IFOM), University of Witten/Herdecke, Witten, Germany
c Committee on Emergency Medicine, Intensive Care and Trauma Management (Sektion NIS) of the German Trauma Society (DGU®), Cologne, Germany

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A B S T R A C T

Introduction: Prospective collected data of the TraumaRegister DGU® were analyzed to derive survival rates and predictors for non-survival in the children who had suffered traumatic cardiorespiratory arrest. Different time points of resuscitation efforts (only preclinical, in the emergency room (ER) or preclinical + ER) were analyzed in terms of mortality and neurological outcome.

Methods: The database of the TraumaRegister DGU® comprising 122,742 patients from 1993 to 2013 was analyzed. The main focus of this survey was on the paediatric group defined by an age ≤14 years who could be compared to adults. Different statistical analysis (univariate and multivariate analysis, logistic regression) were performed with mortality as the target variable. Differences between the paediatric group and adults were analysed by Fisher’s exact test.

Results: Data after preclinical and/or ER resuscitation from 152 children and 1690 adults were analyzed. A good or moderate outcome (GOS 5 + 4) was found in 19.4% of the children’s group compared to 12.4% of the adults (p = 0.02).

Analysis of the GOS 5 + 4 subgroups after preclinical resuscitation only revealed that these outcomes were achieved by 19.4% of the paediatric group and 13.2% of the adults (p = 0.24), after ER-only resuscitation by 37.0% of the children and 16.9% of the adults (p = 0.046), and after preclinical and ER resuscitation by only 10.9% of the children compared to 2.5% of the adults (p = 0.006). Taking only survivors into account, 84.8% of the children and 62% of the adults had a GOS 4 + 5.

The highest risk for mortality in the logistic regression model was associated with preclinical intubation, followed by GCS 3, blood transfusion and severe head injury with AIS ≥ 3 and ISS.

Conclusions: CPR in children after severe trauma seems to yield a better outcome than in adults, and appears to be more justified than the current guidelines would imply. Resuscitation in the ER is associated with better neurological outcomes compared with resuscitation in a preclinical context or in both the preclinical phase and the ER. Our children’s outcomes seem to be better than those in most of the earlier studies, and the data presented might support algorithms in the future especially for paediatric resuscitation.

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