

Incidence and outcome analysis of pediatric in-hospital resuscitation in a tertiary children's hospital

Braun M.¹, Grabner S.², Jaeger G.², Kahlert C.³

Ostschweizer Kinderspital St. Gallen, Switzerland

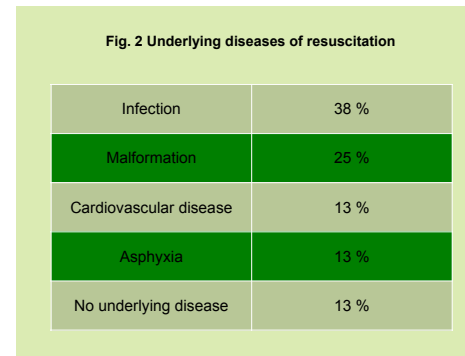
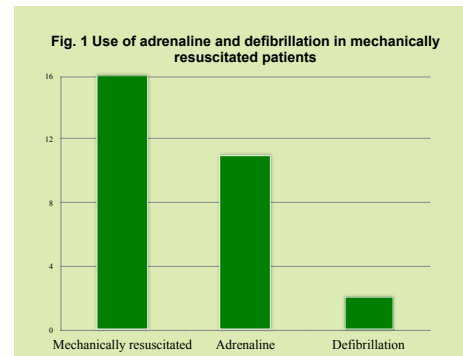
¹Pediatrics, ²Pediatric intensive care, Neonatology, ³Pediatric infectious diseases

Background

In-hospital resuscitations are rare and feared events in pediatric care. Our goal was to determine the frequency and outcomes of these critical events at our hospital in order to identify interventions to improve outcomes. Ostschweizer Kinderspital is a tertiary hospital with approximately 4500 inpatient stays per year.

Methods

All children resuscitated in Ostschweizer Kinderspital between 01/2022 and 12/2023 were included. Cases were identified using CHOP code 99.63 (external chest compressions). Patient characteristics including underlying diseases, treatment and outcome were collected from the electronic medical records.



Results

A total of 16 patients were included in the study, 31% (5/16) of whom were female. The mean age was 1.95 years, ranging from an age of 1 day to 9.67 years. 11 days (0 - 50 days) was the mean number of days from entry of hospital to day of resuscitation. All patients were mechanically resuscitated, 69% (11/16) were administered adrenaline and 13% (2/16) underwent defibrillation (see Fig. 1). The most common underlying diseases were infection (6), malformation (4), cardiovascular disease (2) and asphyxia (2). Only 13% (2/16) had no risk factor (see Fig. 2). One of these patients was a polytrauma patient after a car accident and the other patient had arrhythmia due to hyperpotassemia, most probably drug-induced. 6 infants were preterm born, half of those extremely preterm (< 28 weeks) and the other half very preterm born (28 - <32 weeks). 81% (13/16) of resuscitations occurred in intensive care unit. 31% (5/16) of patients' initial rhythm was asystole, 50% (8/16) bradycardia, 17% (2/16) tachyarrhythmia and 0.1% (1/16) unknown. The maximum duration of CPR in the survivor's group was 8 minutes with a mean of 2.7 minutes. 50% (8/16) of the children died. The other half of the children left hospital after a median of 45 days (range 0 - 118). At a median follow-up of 64 days, 3 patients had fully recovered.

Discussion

Our results show that the prognosis for in-hospital resuscitation remains poor, which is consistent with the current literature. Survival was strongly associated with duration of CPR. A big part of the study group included extremely/very preterms with infections or malformations as an underlying disease. As these patients are very vulnerable group of patients in general, it is difficult to comment on interventions to improve outcomes. The other patients were a very heterogeneous group regarding age and underlying disease, therefore it is needed to investigate each case individually. Concerning one case of RSV associated respiratory failure, an early reintubation could have potentially prevented the need for resuscitation. Another case of anaesthesia associated complications highlights the importance to keep narcosis as short as possible. In summary, no obvious general interventions to improve outcomes were identified in our retrospective analysis, keeping in mind the small number of patients. This highlights the need for further prospective research.

Literature:
Al-Eyadhy A, Almazayad M, Hasan G, AlKhudhayri N, AlSaeed AF, Habib M, Alhaboob AAN, AlAyed M, AlSehibani Y, Alschime F, Alabdulhadi M, Temsah MH. Outcomes of Cardiopulmonary Resuscitation in the Pediatric Intensive Care of a Tertiary Center. J Pediatr Intensive Care. 2021 Jul 30;12(4):303-311. doi: 10.1055/s-0041-1733855. PMID: 37970137; PMCID: PMC10631842.

Annual congress pädiatrie schweiz / pédiatrie suisse, 6. - 7. June 2024, Luzern, Switzerland