

Session 2

Chairs: Leonid Roshal; Arthur Cooper; J. Peper

Experience of Anesthesiology Team in Disaster Medicine

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Objective: The aim of this study was to analyze the experience of an anesthesiology team working in disaster sites for use in increasing the efficiency of the provision medical aid.

Methods: During 1999–2006, a mobile, pediatric trauma-surgical team was sent to Turkey, India, Algeria, Pakistan, and Indonesia within 3–5 days after the onset of these disasters. The team provided specialized aid to children in these regions for 7–25 days. Ninety percent of the patients were children aged 2–17 years. The team worked in multi-profile hospitals equipped with necessary tools and personnel.

Results: Of the total treatments provided, 83% were intubation narcoses: 92% inhalation narcoses, and 8% intravenous. The remaining 7% were mask breathing with an oxygen and oxygen-nitrogen mixture—of these, 7% had spinal anesthesia. The range of surgical pathology was the following: (1) 80% were traumatological interventions; (2) 15% were combined (traumato-surgical); and (3) 5% were neurotrauma. Two periods of anesthesiologic needs were identified: (1) 2–10 days after the event; and (2) >10 days after the event.

Conclusions: For disaster medicine, early, specialized trauma-surgical help is a priority. A mobile, pediatric trauma-surgical team must be invited to the disaster site within the first 1–3 days. This period is a critical time to improve the outcomes of the treatments provided. The specificity of anesthesiologic supply is in the following: patients within the first 14 days after the trauma must have anti-shock treatment and general multi-component anesthesia. All extended dressings in children must be conducted under short-time mask anesthesia.

Keywords: anesthesiology; disaster response; pediatrics; supply; timing
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Closing the Gap: An Audit of Medical Management in Severe Pediatric Trauma

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Background: Severe pediatric trauma is uncommon and complex, which places hospitals and emergency personnel at risk of being poorly prepared for such events. A considerable variability in trauma care has been reported.

Methods: An audit of current practices in Flanders, Belgium was performed. The PENTA network prospectively collected detailed data on pediatric trauma patients

in a representative sample of Flemish emergency departments in 2005. A total of 95 cases with an Injury Severity Scale Score of ≥ 13 were withheld for further evaluation. Two trained experts reviewed all cases for audit filters, based on the available literature. Filters only were withheld if there was 100% consensus. A total of 25% of the already studied cases were reviewed again at random by two other experts in order to assess inter-observer variability.

Results: In the 95 cases studied, 129 filters were identified as being 'suboptimal care', and 135 were classified as "definitely inadequate" care. A total of 25% of all identified filters were thought to have a direct impact on the patient. Specific difficulties were observed with cervical spine management (18/82 relevant cases), pCO₂ and global respiratory management (38/95), fluid management (29/95), and analgesia (27/95). The agreement between the two panels was excellent for filters identified, yet only fair for the level of adequacy (suboptimal vs. definitely inadequate).

Conclusions: An audit was performed on medical care of pediatric trauma victims in Flemish emergency departments. Several problem areas were identified. Defining the barriers to "optimal" care and more performance-based teaching might have positive impact on the results.

Keywords: audit; Belgium; emergency department; medical care; pediatric trauma

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Pediatric Trauma Mortality by Type of Designated Hospital in a Mature Integrated Trauma System

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Introduction: The objective of the study is to compare in-hospital mortality for pediatric patients (age < 16 years) treated in four levels of trauma centers: pediatric trauma centers (PTC), regional secondary trauma centers (RSTC), secondary trauma centers (STC), and primary trauma centers (PRTC).

Methods: A retrospective analysis included 10,722 injured children treated between 1998 and 2005 in 59 trauma-designated hospitals. The Quebec Trauma Registry supplied socio-demographics, clinical data, and outcome. Multiple imputation was applied to handle missing physiological data. Logistic regression was used to compare mortality by type of trauma center, adjusting for age, Glasgow Coma Scale, systolic blood pressure, respiratory rhythm, and New Injury Severity Score.

Results: Pediatric trauma centers treated 53.8% of the children. Patients treated at this type of center were more often transferred from another hospital (73%) and were more severely injured. Primary trauma centers treated 4.4%, 16.7%, and 25.1 % of the children respectively. Using a logistic regression model, the risk of mortality was substantially higher for children treated at PRTC (odds ratio = 13.3; $p = 0.0036$), STC (odds ratio = 9.3; $p < 0.0001$), and RSTC (odds ratio = 2.5; $p = 0.012$) as compared with children treated at PTC. Except for RSTC, better outcomes at PTC were also observed among the sub-group of children who were more severely injured and those with traumatic brain injuries.