Pediatric Trauma Admissions in a Nigerian ICU
B Osinaike, S Amanor-Boadu

Citation

Abstract

Purpose: To identify common mechanisms of injury, highlight indications for admissions, evaluate the outcome and identify risk factors associated with poor outcome in paediatric patients admitted to the intensive care unit (ICU) of UCH, Ibadan.

Methods: Children aged 16 years and less admitted to a general ICU over a 5-year period were reviewed.

Results: Fifty-six patients were admitted over the study period. The age group between 1 and 5 years constituted the single majority of 32.1%, followed by 5 to 10 years age group with 30.4%. Predominant mechanisms of injury were pedestrian motor vehicle accident (MVA) (33.9%) and inhalation burn (35.7%). Most of the patients were admitted following head injury (57.1%) and inhalation burn (33.9%). Linear regression revealed that no age group was associated with poor outcome, however endotracheal intubation (p=0.001), passenger MVA (p=0.012) and length of stay less than 7 days (p=0.024) were associated with poor outcome. Mortality rate was 46%.

Conclusions: Road traffic accident and burn were the commonest causes of paediatric trauma in this review. This indicates a window of opportunity for better preventive measures. This will go a long way in reducing the unwarranted morbidity and mortality in this group of patients.

INTRODUCTION

Trauma in childhood is a common problem worldwide and is a leading cause of death among children in the developed world. However in Africa, the true incidence is not known but injuries have been estimated to account for 13% of childhood disease burden and nearly 1 million deaths occur per year in developing countries, including Africa. Due to increasing urbanization, the incidence of traumatic injuries in children is on the increase, hence there is need to design programmes targeted at children at risk of injury to prevent and control childhood injuries.

This study was undertaken to characterize the patterns of injury among children admitted to the Intensive Care Unit (ICU) of University College Hospital, Ibadan over a five-year period (1999-2003) and also to evaluate the ICU course and identify risk factors associated with poor outcome.

MATERIALS AND METHODS

Institutional approval was obtained to conduct this retrospective study. Case notes and ICU charts of patients aged 16 years and less admitted into the ICU following severe trauma between January 1999 and December 2003 were reviewed. (Patients with surface burns are not included in this review).

Data was classified into four groups for ease of analysis: Biodata, mechanism of injury, ICU course and outcome.

Analysis was done with SPSS version 10 and P-value < 0.05 is taken as significant.

RESULTS

Of the 1484 patients admitted over the study period, trauma accounted for 20.2% and paediatric patients admitted following severe trauma accounted for 18.6% of all trauma admissions. The mean age of the children was 6.97± 4.4 years, with male making up 60.7%. About 43% of the children were less than 5 years as shown in Table 1. About 55.3% (31) and 37.7% (20) of the paediatric patients were admitted following motor vehicle accidents (MVA) and inhalation burn respectively (Table 2). More patients (41.2% and 40%) in the school age groups i.e 5-10 and above
10 years were victims of pedestrian motor vehicle accidents, while the under fives were 25% (Table 3). Table 4 shows that severe head injury (57.1%) and inhalation burn (33.9%) were the commonest indications for ICU admissions. The mean ICU length of stay was 4.54 ± 2.78 days and important interventions provided in the ICU included endotracheal intubation for airway protection in 43% (24) of patients and respiratory support in 7% (4) of patients. No significant difference was observed in the different age groups with regards to poor outcome (Table 5). Linear regression analysis revealed that endotracheal intubation, length of stay less than 7 days and passenger MVA were associated with poor outcome (Table 6). In terms of overall outcome, 30 patients (54%) survived and 26(46%) did not survive.

**DISCUSSION**

Characterizing the patterns of injury childhood injury is important in planning programmes targeted at preventing childhood injuries. Though a review like this is not new, incidence of different types of injury varies by region, hence the need for a study like this in this part of the world.

This study has been able to show that 1 in every 5 patients admitted to our ICU is a trauma patient and also 1 in every 5 trauma patients admitted to our ICU is a child, whose age is 5 years or less and must have sustained severe head or inhalation injury which followed a motor vehicle accident or burn. We observed that more of the patients above five years were victims of pedestrian MVA compared to the under fives. This is not unexpected since children above five years will be more ambulant and hence being more prone. Unlike in Europe and America where fall from height and penetrating injuries are common causes of severe paediatric injuries, the epidemiological pattern in our environment is quite different with MVA and burn being responsible for most paediatric trauma admissions. We have also demonstrated that patients who were intubated for any reason had a poor outcome, this may indicate that this group of patient had more serious underlying condition. The overall mortality in our series was 46%, this is higher than 1.5-14.4% reported for mortality from severe injuries to children reported by other authors. The high mortality
may not be unconnected to absent or poorly rendered prehospital care in this part of the globe and also poor funding of the health system generally which is hampering effective provision of service in the ICU. However Van As et al, in their review of prognostic indicators in children presenting to a trauma unit observed that mortality following severe paediatric injury was related to certain prognostic factors like the very young i.e. less than 2 years with mortality of 47% and 68% in children presenting with initial mean arterial pressure of less than 50mmHg. Also, children presenting with burn had a mortality of 90% and 24% following motor vehicle accidents. They also reported that all patients requiring CPR and ionotropic support died.

We were not able to demonstrate any age bias for poor outcome but motor vehicle accident and burn had case fatality rate of 50% and 65% respectively.

CONCLUSION

In agreement with most studies and especially in view of increased industrialization and urbanization, MVA and burns are leading causes of paediatric trauma necessitating ICU care in our review. Endotracheal intubation, length of stay less than 7 days and passenger MVA predicted a poor outcome.

Finally, in view of the limited and scarce resources in the developing world and since leading causes of severe paediatric trauma are mostly preventable, efforts should be directed more at injury prevention programmes.

CORRESPONDENCE TO

Dr B.B. Osinaike, Dept. Of Anaesthesia, University College Hospital, Pmb 5116, Ibadan, Nigeria.
drosinaike@yahoo.co.uk Contact phone 234-33303675.

References

Author Information
Babatunde Osinaike, FMCA
Intensive Care Unit, University College Hospital

Simbo Amanor-Boadu, FWCA, FMCA
Intensive Care Unit, University College Hospital