MALAWI MED JOURNAL;17(1): 5-6
June 2005

Epidemiology of paediatric trauma admissions at Queen Elizabeth Central Hospital, Blantyre

TM Ng'ambi, ES Borgstein
Department of Surgery, College of Medicine

Abstract

We conducted an audit of paediatric trauma admissions to QECH, Blantyre, in September 2003. There were 107 trauma cases representing 8.8% of all paediatric admissions and mean age was 6 years. The commonest cause of trauma was falls (42.9%) followed by burns (31.8%) and road traffic accidents (14.9%). Of the road traffic accidents, only one case was a passenger, the rest were pedestrians hit by moving vehicles. Fracture of limbs was the commonest injury sustained (44.9%) and burns the second commonest injury (31.8%). Most (52.6%) children were brought into hospital within 24 hours of injury while 26.3% came in between 24 hours and 48 hours and 21.1% after 48 hours or more. Death occurred in 7.5% of cases. The mean number of days in hospital was 8.9 days.

Introduction

Trauma is a major health and social problem [1] and accounts for 10% of global mortality. In Africa injury is the third commonest cause of mortality [2]. Leading causes of trauma differ within subgroups of the population according to age, sex, race, geographical location and other considerations [3].

Paediatric trauma is a common phenomenon though the leading causes of childhood mortality and morbidity in developing countries remain infection, infestations and malnutrition. These factors have therefore compelled countries to concentrate on measures to reduce the very high mortality due to these disorders [4]. This means that information on paediatric trauma is scarce. Trauma often results in severe deformity, disability, and even long term adverse psychological reactions in the affected children and their parents.

There is paucity of data on the epidemiology of paediatric trauma in Malawi. Such information is necessary for assessing the impact of trauma on child health and for setting priorities to improve paediatric care. The few reports available on trauma in Malawi do not include studies specially done in paediatrics. Paediatric trauma due to burns, falls and road traffic accidents is often encountered at QECH. The main objective of this study was to describe the epidemiology and outcome of paediatric trauma at QECH.

Methods

QECH is a referral and teaching hospital in the southern region of Malawi to which several primary and secondary health institutions refer patients. The paediatric unit has a capacity of 300 beds. Children were admitted through the children's Accident and Emergency department. All cases (age 0 to14) with a primary diagnosis of trauma were recruited into the study. Personal details and information pertaining to the trauma were recorded in a trauma registry. Cases were followed until death or discharge to evaluate outcome.

Results

From 1st to 30th September, 2003, total of 1234 admissions were admitted to the children's ward of which 107 were trauma cases, representing 8.8% of all paediatric admissions. The male to female ratio was 1.8 to 1. The mean age was 6.06 ± 4.2 years. (range 5 days to 12 years).

The commonest cause of trauma was falls (42.9%) followed by burns (31.8%). Road traffic accidents accounted for 14.9%. "Hit by objects" (5.6%) and assault accounted for 3.7%. Of the falls, 30.4% were from a height (50 to 150 cm) and 69.6% were on level ground. Of the road traffic accidents, only one case was a passenger, the rest were pedestrians hit by moving vehicles. Objects that caused trauma included a house wall falling on a child, log of wood, stones etc. Assault was mainly by peers but one case was assaulted by an uncle for stealing. 94.1% of the trauma cases were unintentional.

Fracture of limbs was the commonest injury sustained (44.9%) and was most commonly due to falls. The most frequent fracture site was the upper limb; either arm or forearm (62.5%). Burns were the second commonest injury (31.8%). The causes of burns included clothes catching fire while warming, scalds from hot water or food from a pot on fire, lamp explosion in the home and open fires. Hot water was the commonest cause (44.1%). 20 cases (58.5%) were superficial partial thickness, 26.45% were deep partial and 14.7% were full thickness. Other injuries were cuts (10.3%); soft tissue injury (4.7%); head injury (3.7%); fracture dislocations (2.8%) and abdominal injury 0.9% (this was a splenic rupture in a patient who died within 30 minutes of admission). All cases of head injury were minor without coma. Figure 1 shows the site where trauma occurred, the commonest being at home. One case occurred in hospital and this was birth trauma where fracture humerus was sustained.

Most (52.6%) children were brought into hospital within 24 hours of injury while 26.3% came in between 24 hours and 48 hours and 21.1% after 48 hours or more. It was observed that the more the severe the injury, the earlier the presentation to hospital.

Death occurred in 7.5% of all paediatric trauma admissions with 75% of deaths occurring in the burn cases and 25% in road traffic accidents. 1.9% absconded (these were burn cases). 90.6% were discharged. The mean number of days in hospital was 8.9 ± 6.12 days. Burns had the highest mean number of days in hospital (Table 2).

Sixteen (15%) of trauma admissions required surgery: included superficial skin graft 25% (n=4); suturing 25% (n=4); manipulation under anaesthesia 43.9% (n=7) and debridement 6.3% (n=1).

Discussion

The results of this study provide valuable insight into the epidemiology of paediatric trauma at QECH. Simmons in 1985 reported that in Lilongwe in Malawi 9.7% of all paediatric admissions were related to accidents; 27% to burns and scalds and 32% were fractures usually due to falls [5].

A wide spectrum of causes and types of trauma affect our children. The majority of patients in this study had falls, burns and RTA as the major causes of trauma. Fractures, burns and cuts were the commonest injuries sustained.

Falls were the most common cause of trauma. The majority of falls were minor injuries occurring on level ground. Burns were responsible for even more injuries than RTA and accounted for more deaths, and a longer hospital stay. The findings from this study are similar to a study done at Red Cross Children's Hospital in South Africa (ref) where falls were the most common cause followed by burns and RTA. However, in the same study, transport related injuries although constituting only 12.8 % of all trauma, accounted for most of the multiple injuries requiring intensive care and most of the in-hospital mortality from trauma [6]. In our study there were no injuries requiring intensive care and burns accounted for most of in hospital deaths. In Kwazulu Natal (ref) it was found that there was a high proportion of paediatric admissions due to trauma with motor vehicle accidents (25%); burns (22%); falls (15%) as the leading causes of paediatric morbidity. In South Africa, trauma is the leading cause of death among children >5 years of age [7]. These reports support our contention that injuries are a significant public health threat to African children.

Mortality from injuries to children in Africa is higher in the very young, and varies from 1.5% to 14.4% [8]. In this study mortality was 7.5%. However, reports on long term disability and quality of life are not usually available, making it difficult to assess the true morbidity attributable to childhood trauma. The short comings of hospital based reports are obvious; less seriously injured children may not come to hospital; many severely injured die before reaching hospital. This may explain why we did not see many seriously injured children especially due to RTAs.

It has been shown that most accidents occur in the home (51%). All cases of burns occurred in the home; with the greatest incidence in those aged 1 to 4 years.

This is the age at which the child is within the home environment and as most of the cooking is done at ground levels it is not surprising that most burn injuries took place while the child was playing in and around the cooking area. Archibong, 1997; reported a similar trend in childhood burns in South Eastern Nigeria. (ref)

The mean number of days in hospital for cuts and soft tissue injury which were mostly minor injuries was 2.5 ± 0.5. This was due to the fact that if children were sutured in theatre, they were admitted to recover from their anaesthesia. Another contributing factor was that those presenting at night were being admitted basically for shelter and observation.

Seasonal variation has been noted in the patterns of the causes of trauma elsewhere. In Gambia; Royal Victoria Hospital, (ref) it was shown that burns were most common during the cool months of the year. The peak incidence of head injuries coincided with mango harvest when children climbed trees to collect fruit. A second peak was noted in the cool months of the year when children climbed trees to collect firewood. Therefore we recommend that a further bigger study should be done at QECH to explore these seasonal variations.

Conclusion

Results provide a valuable insight into the epidemiology of paediatric trauma at QECH with falls, burns, and road traffic accidents being major causes. Fractures, burns and cuts were the commonest type of injuries. Most accidents occurred in the home. There is need for devising trauma prevention strategies which should include primary prevention, acute care of the injured and rehabilitation. These strategies could be incorporated into the already existing Maternal and Child Health Programme.

References

1. Trunky DD, Halcroft JW. Trauma; General Survey and Synopsis of Management of Specific Injuries; In Hardy's Textbook of Surgery, 2nd Edition. J. B. Lippicot Company, Philadelphia USA
2. Owor G, Kobusingye OC. Trauma registries as a tool for improved clinical assessment of trauma patients in an urban African hospital. E Cent Afr J Surg; 6: 58-63
3. James LM. Paediatric Trauma/Child Abuse in the Trauma Manual; Peitzman et al Eds, 1998. Lippicot-Raven Publishers, Philadelphia, USA
4. Archibong AE, Antia UE, Udosen J. Childhood burns in South Eastern Nigeria. E Afr Med J 1997; 74; 382-384
5. Simmons D. Accidents in Malawi. Arch Dis Child 1985, 60-74
6. Bickler SW, Sanno-Daunda B. Epidemiology of paediatric surgical admissions to a government referral hospital in the Gambia. Bull WHO 2000; 78: 1330-1336.
7. Sidney C. et al. Paediatric Trauma in South Africa. Paediatric Trauma: Proceedings of the Third National Conference; 1989: 204-223.
8. Directorate. Report on Paediatric Trauma and Accident for DC 43 for 2000/2001. Epidemiology Unit Directorate. Institutional Support Department, South Africa.
9. Nwomeh BC, Ameh EA. Paediatric trauma in Africa. Afr J Trauma 2003; 1: 7-13

Figure 1. Percentage distribution of places where accidents occurred

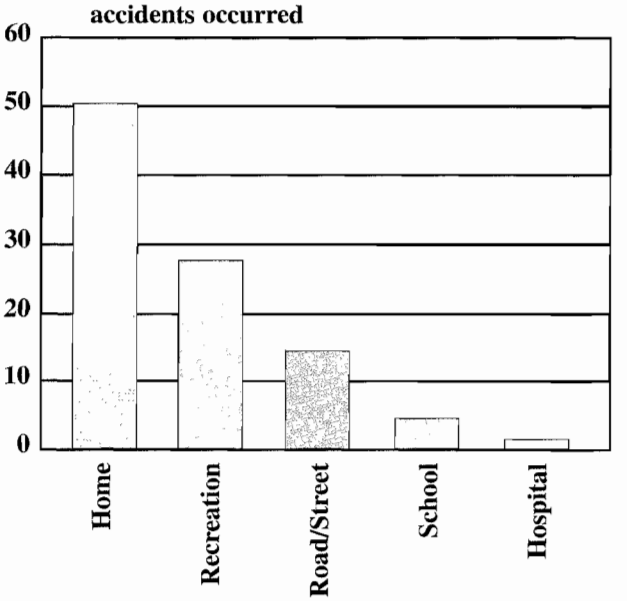

Table 1: Mean number of days in hopsital per type of injury

Burns	17.5 ± 15.0 days
Fractures	4.7 ± 2.7 days
Cuts	2.5 ± 0.5 days
Soft tissue injury	2.5 ± 0.5 days
Head injury	2.0 days