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Childhood Limb Fracture at Tikur Anbessa Specialized Hospital (TASH), Addis Ababa, Ethiopia

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Background: ***Childhood injury is a major public health problem worldwide. The burden is greatest in low- middle income countries. There is limited data on patterns of childhood fractures in Ethiopia. The aim of this study is to evaluate the pattern of childhood fractures and dislocations presented at Tikur Anbessa Specialized Hospital.***
Methods: ***The data was retrieved retrospectively from the hospital record books and charts of all children aged 0-13 years, presented at Tikur Anbessa Specialized Hospital emergency department with limb fractures or dislocations between September 2011 to September 2012.***
Results: ***A total of 325 cases with limb fractures and /or dislocations were analyzed. The majority were males 254(78.2%). Most common age group involved were 6 -13 years of age. Fall down accident accounts the largest proportion, 236(72.6%) followed by road traffic injury, 57(17.5%). Upper limb fractures were more common than lower limb fractures. The most common fractured bone was humerus followed by radius and ulna. More than ninety percent of cases were closed fracture.***
Conclusion: ***Pediatric limb fractures resulting from fall and road traffic injuries are a major public health problem in our setting. Urgent preventive measures targeting at reducing the occurrence of accidental fall and traffic injury is necessary to reduce the incidence of pediatric limb fractures. Further large scale studies are necessary to know the final outcome of treatment given.***

Keywords: Childhood, Pattern, Limb fractures.

Introduction

Trauma is a major cause for childhood morbidity, mortality and disability worldwide. Injury and violence is a major killer of children throughout the world, where unintentional injuries account for almost 90% of these cases. Many of these are left with some form of disability, often with lifelong consequences. The leading causes of disability being road traffic crashes and falls in children aged 0–14 years. Within all countries, the burden is greatest in low and middle income countries where more than 95% of all injury deaths in children occur in these countries [1,2,3].

In developing countries, children comprise a higher proportion of the total population. Fractures of childhood constitute a major part of public health problem. The incidence and patterns of fractures depend on different factors and understanding mechanism of injuries and their corresponding patterns of fracture can help in assessment of the extent of a patient's injury[1,4]. In Ethiopia, fractures are a common and significant injury in childhood, but the information about the pattern of fractures among children is scarce. The aim of the study is to determine the patterns limb fractures presented to the emergency department of Tikur Anbessa Specialized Hospital and identify contributing factors in order to determine preventive measures.

Patients and Methods

This was a retrospective study conducted at Tikur Anbessa specialized teaching hospital between September 2011 – September 2012. During the study period a total of 325 patients with limb fracture were presented to emergency department age ranging from zero to 13 years. The hospital is the largest tertiary referral and teaching hospital in the country providing elective and emergency Orthopedics services. The investigation was approved by joint ethical Committee of the department of orthopedics and radiology.

The data was retrieved from log book and charts of children aged 13 and below who had attended the emergency department of Hospital during the study period. Log book is a prepared format in which orthopedic residents on duty recorded prospectively the characteristics of all patients and their fracture patterns. Incomplete data of log book and pathological fracture were excluded. Data were collected with regard to the patient's demographic characteristics, pattern, mechanism of injury and anatomical location. Data was analyzed using SPSS version soft ware.

Results

A total of 325 children presenting with limb fractures during the study period were included. There were 254 boys (78.2%) and 71 girls (21.8%), making male to female ratio 3.5:1 (Table 1). The most affected age group was 6-13yrs of age (Figure 1). In all age groups the proportion of males was higher than females. The majority (86.2%) of the patients were from Addis Ababa; only 45(13.8%) came from outside Addis Ababa.

The most common mechanism of injury was a fall, which accounted for 236 (72.6%) followed by road traffic crashes (RTC) in 57(17.5%) of all cases, (Table 2). Table 3 showed that the upper limb fracture was more common comprising (66.2%), whereas lower limb fractures were (33.2%). The commonest single anatomical site of fracture occurred in the humerus which contributed 97(29.8%), followed by Radial bone fracture in 93(28.6%) and ulnar fracture in 67(20.6%) (Table 3). Of the 325 patients with fracture, 313 (96.3%) sustained fractures only while 10 (3.1%) had only dislocations and 2 (0.6%) had both fractures and dislocations. The specific site of fracture incidence showed that supracondylar fracture of humerus being commonest followed by distal radial fracture.

Table 1. Age and Sex Distribution of Patients with Limb Fractures.

Age Groups	Sex		Total	Percent
	Female	Male		
<2 years	7	16	23	7.1
2-5 years	16	48	64	19.7
6-13 years	48	190	238	73.2
Total	**71**	**254**	**325**	**100**

Table 2. Most Common Causes of Fracture and Dislocations

Mechanism of injury	Frequency	Percent
RTC	57	17.5
Fall	236	72.6
Others	32	9.8
Total	**325**	**100**

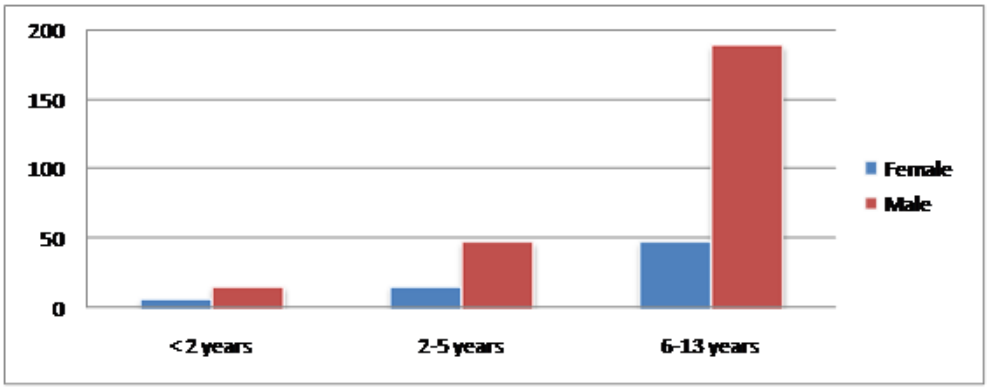

Figure 1. Pattern of Fracture According to Age-group and Gender

Table 3. Distribution of Fractures Sites.

Site of fracture	Frequency	Percentage
Humerus	97	29.8
Radius	93	28.6
Ulna	67	20.6
Radioulnar	55	16.9
Femur	54	16.6
Tibia	46	14.2
Fibula	27	8.3
Tibiofibular	27	8.3
Short bones	14	4.3
Only Joint(dislocation)	10	3.1
Bone and Joint	4	1.2
Patella	2	0.6

The majority (90.2%) of fractures were closed 293; open fracture accounted for only 32(9.8%) of cases. Physeal fracture of the distal end of the radius was the single most common physeal injury. In the lower limb femoral fracture were the commonest followed by tibial fracture.

Discussion

In the this study, it was found that falls accident accounted for a majority of fractures followed by road traffic accidents, which is in agreement with many studies [5-8]. However, other studies have accounted road traffic accidents to be the major cause of pediatric fractures[9-11]. Deakin et al [12] reported that falls accounted for the majority of upper limb fractures, while, sports related injuries to be responsible for the majority of lower limbs fractures. The differences in the etiology can be attributed to socio-cultural differences in different countries, where the studies were conducted.

Male children accounted for the majority of patients with fracture in our study in all age groups which is similar to other studies [6-8,10,13-18]. This could possibly be explained by the fact that male children are more active and adventurous. Upper limb was more frequently involved. This is in

line with other studies [8,15,18]. More than ninety percent of cases were closed fracture. There were 32 (9.8%) patients with open fractures which were caused mainly by road traffic injury.

The most affected age groups were 6-13 years which indicates the increasing risk of fracture with age. Comparable findings were observed in many other studies [7,13,17,19]. In our series, the most common site of fracture was observed in the humerus predominantly supracondylar. Similar finding was observed in others previous studies [7,18]. This is contrasted with other studies in the literature, where forearm fracture specifically distal radius were the most common fractures [6,14-17,20]. Physeal fracture of the distal end of the radius was the single most common physeal injury in our cases which is in accordance with other studies [4,8,13,15].

This study contributes to the understanding of childhood limb fracture pattern at Tikur Anbessa Specialized Hospital which is, the only government tertiary hospital in Addis, which provides pediatric most of orthopedic care. The drawback of this study is that it is not including, other private hospitals and government hospitals where emergency services is given.

Conclusion

The burden of fractures among children in Ethiopia is a significant source of morbidity. The injuries are preventable and paediatric trauma prevention strategies directed at parents, schools and children with changes in lifestyle are an imperative in order to reduce the burden of limb fracture in childhood. A further large scale study is now recommended.

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