

Pattern of bone fractures occurring in the paediatric population of tertiary care hospital

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Abstract

Background: In paediatric age group, Fractures are a main reason of emergency presentation and they have fine prognosis because of auto-correction of insufficient fracture reduction by bone remodeling. The present study is done to determine the pattern of bone fractures occurring in the paediatric population of tertiary care hospital. **Methods:** a cross sectional study was conducted at a tertiary care hospital from December 2019 and November 2020. children between the age of 2 to 14 years were included in the study. demographic data, mechanism of injury, fracture patterns and treatment details were collected in the form of questionnaires in the prescribed proforma. data were analysed using SPSS version 12. **Results:** out of 123 paediatric patients 87 (70.5%) were males and 36 (29.5%) were females. The mean age of patients was 8.5 ± 2.3 years. The most vulnerable group was between 6 to 10 years. The main cause of injury was fall from height. Forearm fracture was the most common fractures. 89.5% (110 cases) were managed conservatively and 10.5% (13 cases) were managed operatively **Conclusion:** it is concluded that the common mechanism of fracture was fall. It is believed that in order to reduce the incidence of paediatric fractures, health care professionals are supposed to give community based education on prevention strategies.

Key words: paediatric fracture, supracondylar fracture, fall, Road traffic accident (RTA)

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INTRODUCTION

In paediatric age group, Fractures are a main reason of emergency presentation and constitute 9% cause of healthcare contribution in children. The cause of these fracture differ from accidental falls. The mechanisms of these injuries differ from accidental falls which occurred in the course of fun activities to road traffic accidents. Non-operative management is the mainstay of treatment of paediatric fractures, with reported good outcomes owing to

the active remodelling potential of children's periosteum which speeds up the fracture healing process.^{3,4} Less frequently, Some paediatric fractures require surgical intervention namely; open fractures, lateral condyle fractures of humerus, displaced supracondylar humeral fractures, femoral fractures in school aged children and the presence of associated injuries like head trauma or vascular lesion.^{2,5} It is essential to study the pattern of children's fractures as it leads to developing preventive strategies. The purpose of studying the etiology of injuries, and the circumstances and settings in which they occur is to identify risky behaviors or an unsafe environment which can be corrected by specific preventive measures. The present study was conducted to find out the causes, patterns and treatment of bone fractures among the paediatric population at tertiary care hospital.

METHODS

This was a cross-sectional study conducted in the Department of Orthopedics, SVS Medical college, MahbubNagar, Telangana between January 2020 to

August 2020. Approval for this study was taken from the Institutional Ethics Committee and written informed consent was obtained from all participants and/or their parents or legal guardians. A total 123 patients were included for this study. The inclusion criteria were children from 2 years of age up to 14 years of age. Exclusion criteria were those patients who are not willing to participate and who were first treated in another health care. In the prescribed proforma, data regarding the characteristics of all patients and their fracture patterns was collected. A detailed examination was done and the details of the trauma were recorded with regards to time, place, mode of injury, type of injury, site of trauma, place of trauma, and plan of treatment. From the data collected, demographic data, mechanism of injury, fracture characteristics and type of treatment were analyzed. Data were analysed by using SPSS, version 18.0. categorical variables were represented as percentages and continuous data were represented as Mean±SD.

RESULTS

Demographic characteristics and clinical presentation: A total of 123 children were included in this study. There were 87 (70.5%) males and 36(29.5%) females. The mean age of children was 8.5 ± 2.3 Years. The most vulnerable group was between 6 to 10 years.table-1

Table 1: distribution of patients according to age

Age in years	Frequency (123)	Percentage (%)
2-5 years	31	25
6-10 years	68	55
11-14 years	24	20

The most common mechanisms of injury were Falls, RTA and others

falls in 77 cases (53.1%) follow by rta 26 (17.9%) road traffic accidents, and 6 (4.1%) others as depicted in Table 2.

Table 2: distribution of patients according to the mechanism of injury

Mechanism of injury	Frequency (n=123)	Percentage (%)
falls	68	55.2
Road traffic accidents	52	42.3
others	3	2.5

With regards to fracture location, the forearm was the most involved with 55 (45%) cases followed by 37 (25.5%) humeral and 23 (16%) femoral fractures (Table 3).

Table 3: distribution of patients according to the fracture site

Fracture site	Frequency (n=123)	Percentage (%)
Forearm	55	45
Humerus	34	28
Clavicle	07	5
Femur	15	12
Leg	12	10

Therapeutic patterns : With respect to the treatment of the 123 fractures; 110 (89.5%) were managed conservatively

and the remaining 13 (10.5%) were managed operatively. The most surgically reduced fractures were supracondylar humeral fractures.

DISCUSSION

Fractures have a remarkable physical, psychosocial and financial strain on both the kids and their parents. Of all paediatric injuries, 10-25% is constituted by Fractures and cause significant morbidity.^{6,7} In our study, fracture distribution, mechanism of injuries, fracture site and treatment were studied among the paediatric population. In this study predominance of males over females was observed. Janmohammadi *et al.* reported that incidence of fracture was more in males.⁸ Valerio g etal. In their study also reported the same.⁹ male being more active and indulge in more physical activities are more prone to trauma. In our study it was observed that 80% of paediatric fractures were upper limb fractures which was reported by previous epidemiological study also.¹⁰ in our study it was found that fore arm bones were the most commonly fractured bones. Sharat Agarwal.¹¹ in his study reported the same. Valerio *et al.*⁹ in their study reported that distal radius was the most commonly fractured bone followed by a radial shaft. In Our study it was found that the commonest form of injury for fracture was fall. Chen *et al.*¹² in their study reported the same.

CONCLUSIONS

Our study provided valuable epidemiological data about pediatric fractures. Parents need to be sensitized on preventive etiologies so as to be more vigilant leading to effective fracture prevention.

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