Study of Fractures in Paediatric Age

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Abstract

Fractures and dislocations in a growing child is a concern to parents and hospitals alike because any mismanagement leaves a lifelong disability. There is limited data on epidemiology of fractures in children. Our study is based on a retrospective collection of data of paediatric patients who presented with fractures to the orthopaedic outpatient services, as well as patients admitted for inpatient treatment. Patients under 13 years of age who presented with fractures were included in the study. 60 % of fracture cases were of Road Traffic Accidents. 25 % were of because of fall. 10 % were of Pathological Fractures and 05 % were Birth Injuries fractures. 40 % cases were of Femoral Shaft fracture, 22 % Distal Radius, 20 % Tibia/Fibula, 6 % Shaft of Humerus and 06 % Spine injury fractures. 04 % Multiple fractures. Paediatric trauma prevention strategies directed at parents, children as well as other road users would help to reduce the burden of such fractures especially in the developing countries

Key words: Fractures, Paediatric Children

Introduction

Fractures and dislocations in pediatric age group is a stressful event for the family and the child. Moreover, the resultant morbidity and mortality creates an enormous socio-economic burden on the country [1]. It has been estimated that the lifetime risk of a fracture during childhood is between 27-64%, more in boys than girls [2-5]. In USA, trauma is the leading cause of death after the first year of life, accounting for 50% of mortality [6]. Nearly thirty percent of children sustain at least one fracture before the age of 17 and 9% of all injuries come to the attention of health services [7]. Road traffic accidents (RTA) are a major cause of pediatric trauma [8-10]. A review of RTA in the Gulf countries revealed, that Saudi Arabia had the highest incidence of pedestrian accidents [11].Paediatric injuries comprise a large subset of emergency and orthopaedic outpatient presentations. The high number of paediatric injuries and fractures can be attributed to the enthusiasm typically seen in paediatric patients as they discover and experience new things while remaining unaware of the consequences. Bone properties of patients in this age group will also influence the incidence and pattern of

fracture. Paediatric fractures constitute approximately 25% of all paediatric age group injuries [12]. The majority of fractures in paediatric patients are not life-threatening and are treatable [13]. Although there are many systemic and metabolic diseases that can cause or contribute to the fractures, the majority of these fractures are secondary to trauma [14].The aim of our study is to look at the incidence of fractures in paediatric patients, the prevalence of the different types of fractures.

Material and Methods

Our study is based on a retrospective collection of data of 100 paediatric patients who presented with fractures to the orthopaedic outpatient services, as well as patients admitted for inpatient treatment. Patients under 13 years of age who presented with fractures were included in the study. The epidemiological data was collected from the hospital and departmental medical records. All X-rays were reviewed to ensure that non-fracture or soft-tissue injuries were excluded. The data was collected on Microsoft Excel sheets and analysed.

Results

Table 1: Cause of Fractures in Children

Causes	**Number of children n=100**	**Percentage**
Road Traffic Accidents	60	60 %
Fall	25	25 %
Pathological Fractures	10	10 %
Birth Injuries	05	05 %

60 % of fracture cases were of Road Traffic Accidents. 25 % were of because of fall. 10 % were of Pathological Fractures and 05 % were Birth Injuries fractures.

Table 2: Sites of Injury of Fractures

Site of Fractures	**Number of children n=100**	**Percentage**
Clavicle	02	02 %
Spine	06	06 %
Tibia/Fibula	20	20 %
Shaft of Humerus	06	06 %
Distal Radius	22	22 %
Femoral Shaft	40	40 %
Multiple fractures	04	04 %

Table 3: Types of Surgical Treatments given

Surgical Treatments	Number of children n=100	Percentage
Plate and Screws	15	15 %
External Fixator	12	12 %
Elastic Nails	08	08 %
Hip Spica	10	10 %
Closed Reduction	30	30 %
Amputation	04	04 %
K Wires	21	21 %

Table 2 shows 40 % cases were of Femoral Shaft fracture, 22 % Distal Radius, 20 % Tibia/Fibula, 6 % Shaft of Humerus and 06 % Spine injury fractures. 04 % Multiple fractures. Table 3 shows 30 % cases were treated by Closed Reduction, 10 % by Hip Spica, 15 % by Plate and Screws, 12 % by External Fixator, 21 % by K Wires , 08 % by Elastic Nails.

Discussion

With an injury rate so high one might expect to find a large number of other papers on this topic, yet the number of reports in the literature is extremely small. There are quite a few papers detailing the distribution of children's fractures at individual centres, but these do not define the population at risk and so cannot accurately estimate incidence rates. To accurately estimate the incidence of fractures in a population it is necessary to collect data from all the treatment centres where members of the population might seek attention after an accident. A study of fractures in children from Nottingham, England during the first six months of 1981 reported an estimated fracture rate of 16/1000 children per year up to the age of 12 years. [15] Fractures in children where non accidental injury was suspected were excluded, and the yearly rate was estimated by doubling the rate for the six months of the study. A population based study of fractures in children aged 0–12 years in Rogaland County in Norway between 1992 and 1995 has recently been published. The paper reported an annual incidence of 12.8 fractures/1000 children but gives limited details of fracture site as the main emphasis of the paper is on associated activity restriction. The fracture rate for children aged 0–12 years in this study was 33.9/1000. Our study shows 40 % cases were of Femoral Shaft fracture, 22 % Distal Radius, 20 % Tibia/Fibula, 6 % Shaft of Humerus and 06 % Spine injury fractures. 04 % Multiple fractures. 60 % of fracture cases were of Road Traffic Accidents. 25 % were of because of fall. 10 % were of Pathological Fractures and 05 % were Birth Injuries

fractures.30 % cases were treated by Closed Reduction, 10 % by Hip Spica, 15 % by Plate and Screws, 12 % by External Fixator, 21 % by K Wires, 08 % by Elastic Nails. Many variables can affect the incidence, including the size of the paediatric population and the social emphasis on encouraging physical activity. [16]The distribution of fractures between the upper and lower limbs has a certain pattern depending on the age. Early in life, children's activities utilise upper limbs rather than lower limbs, but as they start walking and running, the incidence of lower limb fractures increases.

Conclusion

Fractures in children are common findings in paediatric trauma and frequently involve unaccompanied children. These injuries often lead to lifelong complications. Paediatric trauma prevention strategies directed at parents, children as well as other road users would help to reduce the burden of such fractures especially in the developing countries where the burden of other childhood diseases obscures trauma care.

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