Patterns and Gender Dominance in Paediatric Trauma in a Tertiary Care Centre in Swat.

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ABSTRACT

Objective: To determine patterns of trauma in paediatric population presenting to Orthopaedic Department in a tertiary care hospital of Swat.

Methods: This retrospective study was conducted in department of orthopaedics and traumatology, Saidu Group of Teaching Hospitals (SGTH), Swat from January, 2017 to December, 2017. The medical records of all patients (0-14 years) with trauma admitted in our unit were analysed retrospectively. Demographic details of the included subjects were noted down.

Results: A total of 675 patients were included in our study; 478 males and 197 females. Patients with 6-10 years were 49%, 0-5 years were 26% and 11-14 years, 25%. Supra condylar humerus fracture (26.8%) preceded shaft of femur fracture (23%), followed by radius, ulna fracture (14%), then other injuries like small bone fractures, soft tissue injuries and foreign bodies. Only 2 cases of pelvic and pathological fractures each were noted. Fall injuries surpassed road traffic accidents.

Conclusion: Male boys below ten years were commonest victims of trauma. History of fall resulting in supracondylar fractures were the commonest mode of injury sustained.

Key Words: gender dominance, paediatric trauma, patterns

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INTRODUCTION

Trauma is defined as that type of penetrating or non-penetrating injury which is caused intentionally or unintentionally by external factors which includes a variety of events like road traffic accidents, falling, drowning, poisoning etc.[1] Trauma is among the major causes of mortality, especially in children between 1 to 14 years of age.[2] The major cause of paediatric injuries is fracture, which is about 10-25%. [3-6] In the developing countries about 80% of all deaths occur in children under 18 years of age, annually due to trauma. [7] The risk of fractures is comparatively greater in boys than in girls.[8-10] The resultant disabilities caused by such injuries in children causes adverse effects on the socioeconomic status of the family and country [11].WHO has the estimation of about one million deaths of children per annum due to trauma.[12] Inability to react and recognize danger in time and impaired assessment of risk, are some of the factors due to which children below ten years of age are more prone to accidents. [13] It has been estimated by resources like WHO and United Nations children's fund, that paediatric trauma will be the leading cause of death by 2020. [14]

Certain variables like the socio-economic status, the population related characteristics and the geographical location of a country plays a major role in the difference among the epidemiology, pattern and mode of trauma in the paediatric population from one country to another.[15] It is estimated that there is greater lifetime risk of fracture of 27-64% in boys during childhood. [16-18]

As there are a few studies conducted on the subject of paediatric trauma in such hilly areas of developing countries, in which the ratio of trauma is increasing day by day.

This study will highlight the patterns of paediatric trauma, its aetiology, the anatomical location and the growing rate in children up to 14 years, admitted in

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orthopaedic unit, SGTH, in the year 2017; on the basis of which precautionary measures can be formulated and its implications on the socioeconomic status of the family and the financial burden on the country can be addressed. Secondly, the need for paediatric orthopaedic surgeons can be addressed for the upward trend of trauma in children in such hilly areas of Pakistan, where there is none available, presently. Last but not the least, due to lack of equipments and facilities, the increasing rate of post traumatic disabilities can also be addressed.

METHODS

This is an observational retrospective hospital based study conducted in Orthopaedic Department of Saidu Group of Teaching Hospitals, Swat, Khyber Pakhtunkhwa, Pakistan. All the paediatric patients upto 14 years, admitted in orthopaedic unit via emergency or out-patient department with history of trauma, were included in the study.Approval of the Institutional Review board was taken for conducting the study and publication of the results.Informed consent was taken from the patients included in the study. The medical records(Paper Charts) of all the trauma patients with mentioned age group admitted in the unit from January 1, 2017 to December 31, 2017, were retrospectively analysed. The patients with history of trauma above 14 years of age were excluded from the study. The documented data include age, gender, site of injury, mechanism of injury, pattern and type of fracture. The comparison between age and gender was also taken under consideration in the included subjects. Age was stratified into three groups: 0-5, 6-10, 11-14 and ratio between males and females was also analysed. The site, pattern and type of fracture were categorised according to the mentioned variables. The data was arranged in graphical order via SPSS software, version 17.0 and Microsoft excel.

RESULTS

Medical records of 675 patients were reviewed. (table 1) Majority of our patients were males, about 71%. The remaining 29% were female patients A total of 176 (26%) patients were reported in 0-5 years of age, in which there were 110 males and 66 females. The upward trend was shown in subjects of 6- 10 years, in which there were 328 (49%) patients, 224 males and 104 females. In the age group of 11-14 years, 171 (25%) patients were found, 140 males and 31 females (fig 2). According to the patterns of injuries, supracondylar humerus fracture was on the top accounted for about 27%. , followed by shaft of femur fracture, about 23%, then radius, ulna fracture about 13.9%. Other injuries including, soft tissue injuries, foreign bodies, small bone fractures, accounted for about 11% followed by tibia, fibula fracture, about 10%, then lateral condyle humerus, humerus shaft , medial condyle humerus in the descending order. There were only 2 fractures reported in pathological fractures, 3 inter trochanteric, 4 olecranon and 9 (1.3%) neck of femur fractures.

According to mechanism of injuries, patients with history of fall were 382 (56.5%), which included fall, either during playing or from height. Second most usual cause of injuries was road traffic accidents, which accounted for about 258 patients (38%). These included injuries due to motor vehicle collisions and pedestrian automobile impact. These injuries were followed by crush injuries, about 4.4%, then fire arm and trivial injuries, in which only 2 patients were recorded each. In addition, only 1 patient was noted in blast injuries.

Fig. 1: Medical record of the patients reviewed.

S.No	Injuries / Fracture	Count			Percentage		
		Male	Female	Total	Male	Female	Total
1	Supracondylar Humerus	126	56	182	69%	31%	100%
2	Radius / Ulna	77	14	91	85%	15%	100%
3	Humerus Shaft	21	3	24	88%	13%	100%
4	Medial Condyle Humerus	10	3	13	77%	23%	100%
5	Lateral Condyle Humerus	22	3	25	88%	12%	100%
6	Elbow Dislocation	6	4	10	60%	40%	100%
7	Olecranon	4	0	4	100%	0%	100%
8	Shaft of Femur	93	65	158	59%	41%	100%
9	Neck of Femur	8	1	9	89%	11%	100%
10	Intertrochanteric	3	0	3	100%	0%	100%
11	Tibia / Fibula	51	21	72	71%	29%	100%
12	Hip Dislocation	2	0	2	100%	0%	100%
13	Pelvis	0	2	2	0%	100%	100%
14	Pathological	2	0	2	100%	0%	100%
15	Others	53	25	78	68%	32%	100%
	Grand Total	478	197	675	71%	29%	100%

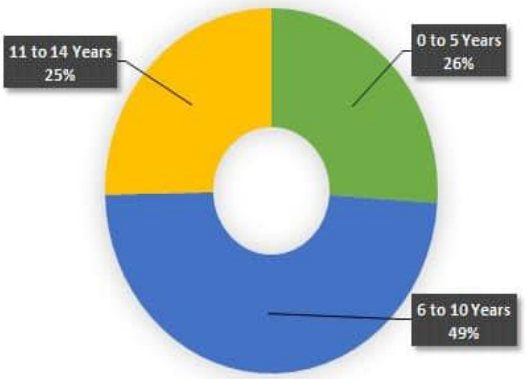

Fig. 2: Stratified age groups

DISCUSSION

In this study, we found boys comparatively more injured than girls, similar to the results found in studies conducted by Valerio[19] and Gupta.[20] The same results were shown in a study conducted in Western Iran. [21]This is most probably because of certain reasons as boys are more active, more mischievous and more participating in hard core games. The most commonly affected age group was found to be 6-10 years. These findings were consistent with previous studies, which reported the same results [22]. While in studies 10-14 years age group was reported to be on the top for sustaining injuries. The reason was discussed for the upward trend in these years, as the pubertal growth spurt corresponded with the same age group; in which there is bone expansion and insufficient mineralization which leads to decrease in bone mineral density. [23]

One study on seasonal variations in orthopaedic trauma patients, found supracondylar humerus fracture to be the most common in paediatric age group.[24] These results coincide with our study. In contradiction to these findings, one study has reported radius, ulna to be the leading site of fracture.[25] Our study shows the shaft of femur to be second most common site of fracture. Our study revealed that fall related injuries were the most common causes of trauma among the paediatric age group, followed by road traffic accidents, same as reported by other studies.[22,23] Similarly, studies done in Africa and Nepal[14], showed the same results. Under 5 years of age, fall injuries were mostly accidental, as fall from bed, chair, table or while playing. Above 5 years patients included fall from tree, stairs, roof, slip on floor and sports injuries. Road traffic accidents were among the second most common mode of injuries as in previous studies.

In a nutshell, this hospital based study shows significantly raised number of boys sustaining injuries as compared to girls. Number of shaft of femur fractures is preceded by the number of supra condylar humerus fractures. This study also explained pathological and pelvic fractures, and hip dislocation being the minimum in paediatric patients. Fall injuries were among the leading causes of paediatric trauma followed by road traffic accidents.

Further large scale well designed studies are recommended on the topic to support policy formulation for the prevention and treatment of paediatric trauma.

CONCLUSION

Male boys below ten years were the commonest victims of trauma. History of fall resulting in supracondylar fractures were the commonest mode of injury sustained.

This study made it clear that, childhood injuries are more prevalent in Swat because of certain reasons like it is mostly hilly area, its low socioeconomic status, overcrowded population, ignorance and poor condition of roads. Hence, we conclude that majority of paediatric trauma can be prevented. More supervision is needed to children during playing and identification of risk factors to incorporate successful prevention strategies. This issue also needs attention of the higher authorities, as there are lack of equipments and non availability of paediatric orthopaedic surgeons in Swat. Because of such reasons, simple trauma leads to hazardous post traumatic disabilities.

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Authorship and contribution Declaration

Shumaila Gul, Conception and design of the study
Dilawar Khan, Final approval of the version for publication
Sajid Akhtar, Drafted the manuscript
Bahadar Ali Khan, Revised the manuscript critically for important intellectual content
Shahid Ali, interpreted the data
Saeedullah, Collected the data