



Original Article

Evaluation of Head on Computed Tomography Among Paediatric Patients Presenting with Trauma

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ABSTRACT

Unintentional falls from heights are one of the leading causes of mortality and permanent brain and bone damage in children. **Objective:** To evaluate the causes, symptoms, and findings of paediatric head trauma using Computed Tomography. **Methods:** It was a descriptive cross-sectional study conducted at Aziz Bhatti Teaching Hospital, Gujrat. The data was collected from October 2022 to December 2022 for the duration of 4 months. A sample size of 120 patients has been calculated via a convenient sampling technique using a mean approach from previous related articles. Patients with falls from height in paediatric age 0-12 were included in the study while children elder than 12 were excluded from the study. The equipment used for the study was CT scan machine-64 helical. The data were entered and analyzed with the help of SPSS version 20.0. **Results:** Out of 120 patients, most of the patients were in the age group of >1-5 years 72(60.0%), 78(65.0%) patients were male while females were 42(35.0%). The most common finding on CT with a history of falls from height is noted to be skull fracture 51(42.5%). 84(70.0%) patients fall from the height of >6 and <15 feet and the most common clinical finding in patients was pain 52(43.3%), followed by bleeding 41(34.2%). **Conclusion:** In conclusion, most of children between the age of 1-5 years experience fall from a height of >6 feet to <15 feet. Skull fracture is the most common diagnosis. CT is an accurate and reliable tool for diagnosing injuries in patients who fall from heights.

INTRODUCTION

Unintentional falls from heights are one of the leading causes of mortality and long-term brain and bone injury in children [1]. Typically, falls from a height refer to falls from heights more than 2 metres [2]. Paediatric trauma is a major contributor to mortality and disability, killing more children than all other disorders combined [3, 4]. Falls account for 30% of all trauma hospitalizations at our children's hospital. This study's objective was to identify wasteful spending and inefficiencies in the treatment of these individuals. Trauma is a secondary cause of more than 45% of fatalities in children in the United States between the ages of 1 and 14 [5]. Traumatic brain injury has

been identified as the leading factor in paediatric trauma deaths in the US [6]. Only 10% of head trauma cases result in serious brain damage [7]. According to Research by sharples et al from the 1990s, 30% of deaths may be prevented if appropriate management could be implemented at an early stage [8]. According to reports, US has a sensitivity range of 55%-92.5%, a negative predictive value of 55%-97%, and a specificity range of 83%-100%. Children under the age of five sustain a large burden of injuries from paediatric unintentional falls [9]. The major objectives of this study were to examine the demographics, injury mechanisms, injury patterns, and

injury severity following falls in young children [10]. The creation of evidence-based treatments for parents, carers, and paediatricians, as well as current safety guidelines, will be guided by these risk and harm profiles in further studies [11, 12]. The purpose of this study is to identify the main reason why children are admitted for trauma surgeries [13]. Contrarily, the injury must be appropriately diagnosed as quickly as possible. important for preventing these deaths [14, 15]. This study will raise awareness among parents and help them to adjust the safety protocols in psychiatry to prevent traffic accidents [16]. The results of the current investigation will highlight the state of all paediatric injuries [17]. This study emphasizes the neglect of parents and higher-ups [18, 19]. This would make it easier to implement efficient preventative strategies for child head injuries [20, 21].

METHODS

It was a descriptive cross-sectional study conducted at Aziz Bhatti Teaching Hospital, Gujrat. The information was compared between different age groups, both sexes, and the manner of trauma, type of injury, and location of the injury. The data were collected from October 2022 to December 2022 for the duration of 4 months the data were collected using a simple random sampling technique. Using a mean approach from prior related articles, a straightforward sampling technique has been used to determine a sample size of 120 cases. Patient with fall from height in paediatric age between 0-12 was included in the study while children elder than 12 were excluded from the study. The equipment used for the study was a CT scan machine-64 helical. The data was entered and analysed with the help of SPSS version 20.0.

RESULTS

Using a mean method from prior related articles, a sample size of 120 patients has been determined using a convenient sampling technique. On 120 patients with both normal and abnormal CT findings, this investigation was done. Using SPSS version 20, the data was entered, computed, and examined. Table 1 shows the age group of patients. The age of patients is categorized into three groups. The first group is between 0-1 year 13 (10.8%), followed by >1-5 years 72 (60.0%), and >5-12 years 35 (29.2%). Out of 120 patients, most of the patients were in the age group of >1-5 years 72 (60.0%).

Age (yrs)	n(%)
0-1 years	13 (10.8%)
>1-5 years	72 (60.0%)
>5-12 years	35 (29.2%)
Total	120 (100.0%)

Table 1: Age group of patients

Figure 1 shows the gender of the patients. Out of 120 patients in the study, more patients were male 78 (65.0%). Females were only 42 (35.0%).

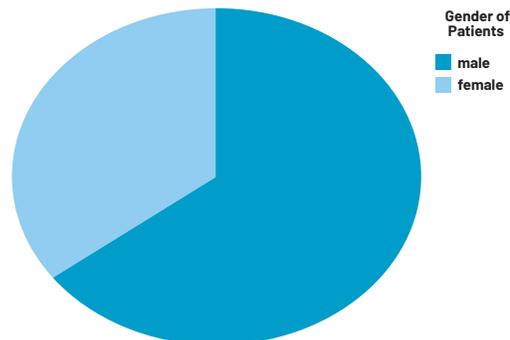


Figure 1: Gender of the patients

Table 2 shows the CT findings of patients. The most common finding on CT in patients with the history of fall from height is noted to be skull fracture 51 (42.5%), followed by N 33 (27.5%), CSF circulation 21 (17.5%), cystic lesions 13 (10.8%), and IVH 2 (1.7%).

CT findings	n(%)
skull fracture	51 (42.5%)
CSF circulation	21 (17.5%)
IVH	2 (1.7%)
cystic lesions	13 (10.8%)
N	33 (27.5%)
Total	120 (100.0%)

Table 2: CT findings of study participants

Table 3 shows the height from where patients fall. Out of 120 patients, 84 (70.0%) patients fall from the height of >6 and <15 feet, followed by <6 feet 18 (15.0%), and >15 feet 18 (15.0%).

Fall Height	n(%)
<6 feet	18 (15.0%)
>6 and < 15 feet	84 (70.0%)
>15 feet	18 (15.0%)
Total	120 (100.0%)

Table 3: Fall height of patients

Figure 2 shows the clinical findings in the patients. The most common clinical finding in patients was pain 52 (43.3%), followed by bleeding 41 (34.2%), facial nerve injury 9 (7.5%), battle's sign 8 (6.7%), CSF leak 7 (5.8%), and hearing loss 3 (2.5%).

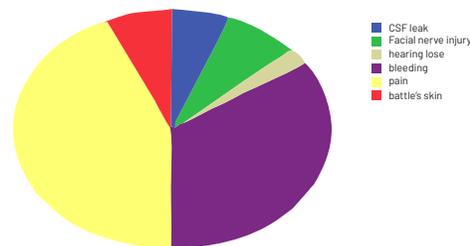


Figure 2: Clinical findings in the patients

DISCUSSION

This study was conducted on 120 patients with normal and abnormal CT findings. A study was done by Hung in 2020 in which head trauma in children was evaluated [22]. The study concluded that abusive head trauma can be the cause of death in children. The study revealed that most of the patients with head trauma were under the age of 2 years. The causes of abusive head trauma can be shaking, or crushing through some external force on head [23]. The study conducted that abusive head trauma can be the cause of death in children. The study revealed that most of the patients with head trauma were under the age of 2 years. The causes of abusive head trauma can be shaking, or crushing through some external force on head [24]. In 2012 a study was done by Cgabok et al. In order to determine the causes of head trauma in patients, the study's goal was to survey paediatric patients who had been admitted to hospital wards in Iran [25]. This study was retrospective study in which all patients below the age of 18 were included having head injuries. The emergency ward patients were included in the study and study was conducted in more than 1 year. A sample size of 668 patients was included in the study with the mean age of 10.4 years. The study conducted that the common cause of head trauma was fall from heights and road traffic accidents. The study also revealed that males are more frequent to cause head injuries than females. The ratio of boy to girl head injury was 3:1. The current study also concluded that more commonly males are noted to have head trauma due to fall from height while females have low chance to diagnose with head trauma. Another study was done by Joyce T et al. 2018 in which fall from height were determined with height length [26]. It was conducted that short falls are in the range of 1-4 feet that do not cause severe head injuries. Another research examined kids who died after falling 5 to 6 feet and discovered that the majority of them had some indication of maltreatment. Unless the height is great, falls from 10 feet or above seldom result in death. The frequency of fractures and injuries increases with height. The United States Consumer Product Safety Commission looked at 75,000 instances and discovered that 18 children died from fall-related injuries. The current study also concluded the height of fall. Out of 120 patients, 84 (70.0%) patients fall from the height of >6 and <15 feet, followed by <6 feet 18 (15.0%), and >15 feet 18 (15.0%).

CONCLUSIONS

In conclusion, most of the children between the age of 1-5 years experience fall from a height of > 6 feet to < 15 feet. The most frequent diagnosis in them is a skull fracture, and their most common complaint is discomfort. CT is an accurate and reliable tool for diagnosing injuries in patients

who fall from heights.

Conflicts of Interest

The authors declare no conflict of interest

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