



PATTERN OF INJURIES ASSOCIATED WITH FALL FROM HEIGHT IN CHILDREN: A CASE SERIES ANALYSIS

Forensic Medicine

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ABSTRACT

Based on the autopsies conducted at the Mortuary of Maulana Azad Medical College, New Delhi on cases of alleged history of accidental falls resulting in deaths of children under 5 years old, pattern of injuries has been documented. There were 6 deaths in total: 4 males (66.66%) and 2 females (33.33%). The highest rate of falls was observed in toddlers (66.66%), followed by 16.5% each in preschool children and school-going children. Head and face were the most commonly injured body regions while the skull was the most commonly fractured bone. The most common cause of death was head injury. Major fall sites, indescending order of frequency were rooftops (50%), balconies (33.33%), and stairs (12.67%). The height of falls was more than 10 feet in 5 cases which is significant enough to cause fatal injuries. These findings highlight the vulnerability of young children to fatal injuries from falls from heights, with rooftops and balconies being particularly dangerous locations.

KEYWORDS

Fall from height, injury pattern, medico-legal issues.

INTRODUCTION

Falls in childhood are indeed a significant concern. They account for a major portion of emergency room visits and admissions to trauma units in pediatric setting. The majority of these incidents involve preschool children and typically occur from stairs, floors, balconies, beds, and tables.

Falls are a leading cause of injury among children. They can result in serious morbidity and accidental death. There is a significant correlation between the severity of the injury and factors such as the height of the fall, the landing surface, and the speed at the point of impact. Preventing falls is more advantageous than treating injuries after they occur. Implementing safety measures can reduce the incidence of falls and the severity of injuries when they do happen.

CASE SERIES

CASE 1: A 18-months-old female child with an alleged history of fall from stairs at her residence (about 10 feet).

On Autopsy: Linear fracture over right-side of the skull, extending from frontal bone, temporal bone and occipital bone (Figure 1A).

Subarachnoid hemorrhage present over left frontal lobe and right frontal, parietal, temporal lobe and cerebellum (Figure 1B).

Figure 1A



Figure 1B



CASE 2: A 2 years old male child with an alleged history of fall from Balcony at his residence (about 20 feet).

On Autopsy: Diastatic fracture involving coronal suture (Figure 2A) and subarachnoid hemorrhage over both cerebral hemispheres and cerebellum (Figure 2B).

Figure 2A



Figure 2B



CASE 3: A 2-year-old male child with an alleged history of fall from Balcony at his residence (about 20 feet).

On autopsy: Diastatic fracture involving coronal suture present (Figure 3A). Diffuse subdural and subarachnoid hemorrhage over both cerebral hemispheres and cerebellum (Figure 3B).

Figure 3A



Figure 3B



CASE 4: A 3-year-old female child with an alleged history of fall from 2nd floor at her residence (about 20 feet). On autopsy: Diastatic fracture involving coronal & sagittal suture (Figure 4A). Diffuse left side subdural hemorrhage and subarachnoid hemorrhage over both cerebral hemispheres and cerebellum (Figure 4B).

Figure 4A

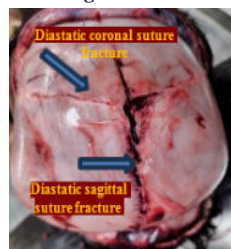
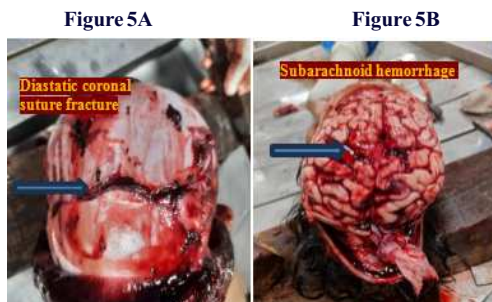


Figure 4B



CASE 5: A 3-year-old male child with an alleged history of fall from 3rd floor at his residence (about 30 feet).

On autopsy: Diastatic fracture involving coronal suture (Figure 5A). Subarachnoid hemorrhage present over both parietal and occipital lobes and cerebellum (Figure 5B).



CASE 6: A 4-year-old male with an alleged history of fall from 4th floor at his residence (about 40 feet).

On Autopsy : Linear fracture of skull vault involving frontal bone, depressed comminuted fracture of occipital bone (Figure 6A) and posterior transverse transsphenoidal basilar skull fracture (Figure 6B). Diffuse subarachnoid hemorrhage present over both cerebral hemispheres and cerebellum (Figure 6C).

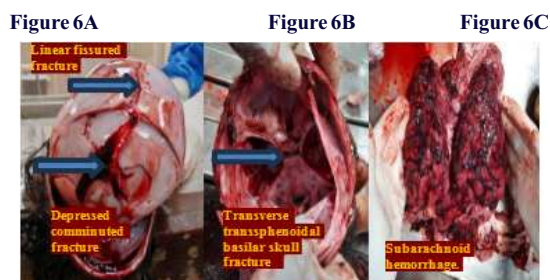


Table 1: summary CASE 1 to CASE 6

Age	Sex	Setting	Height	Head injuries (skull fracture)	Extracranial injuries	Time of survival
18 months	Female	stairs	30 feet	Wear fracture, subarachnoid hemorrhage	None	8 hours
2 years	Male	Balcony	20 feet	coronal diastatic fracture, subarachnoid hemorrhage	Abrasion over face	4 & half hours
2 years	Male	Balcony	20 feet	coronal diastatic fracture, subarachnoid & subarachnoid hemorrhage	Laceration over head	4 hours
3 years	Female	2nd floor	20 feet	coronal & sagittal diastatic fracture, subarachnoid & subarachnoid hemorrhage	Gravid abrasion over head and face	10 hours
3 years	Male	3rd floor	30 feet	coronal diastatic fracture, subarachnoid hemorrhage	Gravid abrasion over head	21 days/operated
4 years	Male	4th floor	40 feet	Linear fissured fracture, comminuted fracture & basal skull fracture with subarachnoid hemorrhage	Abrasion over face	12 hours

DISCUSSION

Children are at higher risk of sustaining injuries in cases of fall from height especially in under 5 years age group with most of them sustaining injuries at home during summer. In the majority of cases, head trauma is the leading cause of death with history of fall of 10 feet or more (Table1). Diastatic fracture involving the sutures is the most common fracture because of non-fusion of sutures in the specified age group. Over all, head injury was most frequent reason for hospital admission.

CONCLUSIONS

Fall from height carries a significant morbidity and mortality especially in the pediatric age group with under 5 year age group being most vulnerable.

Fall from balcony, floors and stairs are important causes of morbidity and mortality in children.

Most children were hospitalized with alleged history of fall from balcony/floor than from stairs.

Parental education with respect to manner of injury and essential preventive measures to prevent such incidence is a must to downsize the burden on healthcare system with regards to cases of fall from height.

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