

An Unfortunate Infant: A Case Report



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Abstract

The importance of a medico-legal case doesn't end by the conclusion of the autopsy examination. Medico-legal cases are unique and there are some important 'take home messages' to be taken from each case into the society for the benefit of the common man. Careful observations and inquisitive thinking can bring forth interesting as well as educative lessons. These lessons should be imbibed in the most effective manner not only by the doctors, police officers and judiciary but also by the society as a whole. We hereby present a case report of an infant who died due to injuries sustained to her head in the most unfortunate manner. We have presented the various medico-legal aspects and extenuating circumstances that are surrounding this case in adjunction with the existing literature. Thereby in this case scenario some light has been thrown upon those 'hard truths' that are commonly overlooked, in order to bring out the grey areas and moot points that can be involved in similar situations.

Key words

Black Eye, Head Injury, Extradural Haemorrhage, Fall from height, Infant, Subarachnoid Haemorrhage

Introduction

*"A surgical operation is attended with pain, and is for the benefit of the individual,
An autopsy is free from pain, and is for the benefit of humanity."*

– Paul H Broussard (19th Century French Medicolegal Expert)

This is the story behind each medico-legal autopsy and it has always stood the test of time. The very fact that no two cases are alike itself makes it the need of the hour to understand the differences from text-book classical description during investigation. Individuals belonging to extremes of age groups are those who are usually succumbing to death following sustenance of injuries, especially if the major injury or the cluster of injuries is located at any vital organ or part of the human body.

Trauma is the leading cause of both morbidity and mortality in children and young adults. Among the different causes for trauma, falls and the subsequent vertical deceleration injuries are considered as the most common.¹ The risk of accidental falls from heights is common for all age groups, but the younger children are more prone to fall due to reduced cognitive ability for hazard awareness and insufficient development of neural mechanisms and sensory systems.² According to a western data, about 25 to 34

percent of all paediatric trauma admissions consists of falls^{3,4} and 6 percent⁵ of paediatric deaths are due to trauma following falls. A ten year period study was done in India (South Delhi)⁶ consisting of 174 deaths (of both infants and children) due to accidental falls from height. These cases represented 22.56 percent of all deaths due to fall from height. The highest rate of deaths were in toddlers (39.65 percent) and this was closely followed by 26.43 percent of deaths that was seen in pre-school children as well as school-going children and the least death rate was seen in infants (7.47 percent). The most common cause of death was head injury (84.48 percent). In the same paper when the major fall sites were presented in the decreasing order of frequency, balcony falls ranked second highest with 24.13 percent.

Salient Features of the Case

Body of an eight month old female infant was brought for autopsy examination at the Autopsy Centre in Department of Forensic Medicine & Toxicology at Amrita School of Medicine in Kochi. The baby was being looked after by her father at their residence. The family of the baby was residing on the first floor portion of an apartment. Her father was feeding the child with infant feeds. When he was engaged in preparing second serving of the feed; the baby crawled out from the room, on to the veranda and fell down through the gap (15 cms) of the balcony railings on to the corner of a concrete slab (visible portion of the septic tank) on the floor beneath (12 feet fall). The head of the baby had come in contact with the floor first. The baby was on treatment but later succumbed to injuries and was declared dead by the treating doctor.

During autopsy it was seen that the entire underneath portion of the scalp was markedly congested and haemorrhagic (scalp haematoma). There was no external injury on the scalp. Even though the skull was intact, there was thick extradural haemorrhage all over the brain (**Fig. 1**). Brain (350 grams) was softened and showed diffuse subarachnoid haemorrhage. There was black eye on the right side due to seepage of blood from the underneath portion of the scalp. Other than the injuries sustained to head, the body of the baby was normal. These injuries sustained to the head was given as opinion as to the cause of death. The manner of the death was given as consistent (accidental) with the history of the case (as said above). No element of foul play was seen during the inquest and subsequently in further investigation of the case.

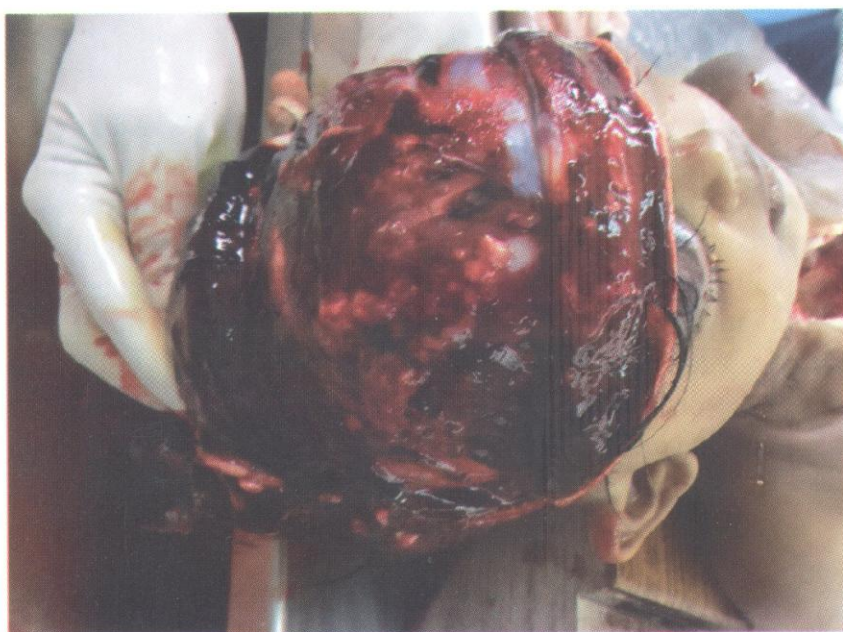


Figure 1: Reflected scalp demonstrating the diffuse massive haemorrhage

Discussion

A similar case reported in 2009 was that of an 18 months old toddler who fell through a gap of 10 cms in balcony railings at a hotel in the presence of his parents and siblings.⁷ In fall from heights, the distance of the fall and the surface on which the body lands determine the severity of the injuries sustained. According to the data published in one of the studies,⁶ the lowest height of fall was that of a six month infant from a bed and the greatest was that of fall from rooftop of a four-storey building. When the low height falls were compared with high height falls, the incidence of intracranial injuries was higher in those paediatric populations where the height of fall was less than 15 feet, and vice versa for height of fall more than 15 feet.⁸ The higher incidence of head injuries for falls from low heights can be because of the lack of time available to protect oneself by extending upper limbs. Moreover in children because of the greater head weight in relation to the rest of their body, it causes them to topple head first. In falls from greater distances the individual can correct their body orientation to avoid landing on the head. Another publication supports the fact that infants were significantly more likely to be admitted for low height fall when compared to toddlers and again the high height falls were more common in toddlers.⁹ Similar to these published literature sources, the case report herewith discussed also is that of an infant who sustained severe head injuries in spite of a low height fall of 12 feet.

Skull fractures are seen to be more common in pre-school children than in infants according to another source of published literature.¹⁰ This is because the skull of infants is not rigid as the sutures have not got fused and are pliable to blunt impact forces. The 8 month infant in the case report also did not have any skull fracture lines during autopsy examination.

One of the points which require clarity in such instances of head injuries is regarding the manner of causation. Caution has to be exercised to differentiate accidental head injuries from non-accidental (child abuse) ones. The commonest manifestation of traumatic brain injury in abused children is Subdural haemorrhage (SDH).^{11, 12, 13} Further when a study was done evaluating data (of 2 years) of children who had been hospitalised both for accidental and non-accidental head injuries, it was found that children with accidental head injuries were more likely to have scalp haematomas.¹⁴ The case report presented in here had scalp haematoma with absence of SDH supporting the opinion as to the manner of death being accidental.

Conclusion

Mostly fall from heights in infants and children cause a significant morbidity and result in a huge drainage on the judiciary as well as health-care systems. Small infants rarely sustain serious injuries from accidental falls and these should not bring forth false suspicions of child abuse. In the absence of clear signs of abuse, we authors felt that it is inappropriate to jump to the conclusion that such instances will be non-accidental (child abuse). As quoted in a study, the peak in the fall rates occurs in babies between 6 and 11 months of age.¹⁵ This can be related to the onset of independent mobility and crawling of the infants. To reduce the occurrence of injuries caused by fall from height, strategies should be taken which includes parents' education about the mechanism of falls, awareness campaigns, increased parental supervision during playing activities and relevant policy measures regarding home designs.

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