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INVESTIGATING PEDIATRIC THERMAL BURN CASE THROUGH A MEDICOLEGAL LENS: A CASE REPORT

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ABSTRACT Thermal injuries in young children involving the buttocks, perineum, and lower limbs raise suspicion of child abuse. Determining the manner of death and ruling out homicide in a fatal case of burn remains a challenge for forensic expert. In the present article, the medicolegal evaluation in a case of burn injury involving a four years old child is discussed. Young children sustaining serious injuries from burn is abl social concern. Such young lives need to be protected from such incidents whether accidental or purposeful. Differences in injury patterns on the basis of their distribution and their characteristics are important to determine the manner of death in such cases.

KEYWORDS : Accident; fatal; thermal injury

INTRODUCTION

Thermal injuries from hot liquid is very common cause that may cause serious injuries to children. Children are curious and keep on exploring their surroundings and often attracted with steam from hot water. [1, 2] that make them highly prone to develop superficial to deep thermal injuries over body parts. This may be accidental or homicidal.

Thermal injuries in children are preventable but neglection, lack of attention of parents or guardians may cause serious mishap and death of children. Accidental scalds are a common form of thermal injuries that usually occur in home-settings. [1 – 5] Children under five years of age are ten times more susceptible to thermal injuries than children above five years. [4] Sometimes, it is very difficult to differentiate whether the injuries inflicted on the body are because of an accident or a homicidal act. Thus, it is very mandatory to rule out all possibilities before reaching the conclusion. The present case is a case of four year-old child allegedly got spillage of milk all over the body. The history was provided by the family members on the basis of circumstances. This case report further discusses the pattern and the nature of such injuries.

Case Report

Case History

A four years old male child was brought to emergency of snmc agra with the alleged history of burn by spillage of boiled milk 5 days back. They brought it late after taking treatment from local quaks and home remedies.

Looking at the grave nature of the injury the health assistant at the health post referred her to a larger center with a burn care unit as the rural health post had a limited facility. As per the hospital records, the child was restless and crying in agitation when presented to the emergency department (ED). He was afebrile, his body temperature was 98.5 Fahrenheit (F), pulse 126 beats per minute, respiration 22 per minute, and oxygen saturation was 95% at room air. A quick general survey done estimates 80-85% burn nvolving the front and back of the chest, both upper limbs, and back of both thighs involving buttocks. There were burn noted around the head-neck region and front of the abdomen and front of both the thighs. Under ketamine anesthesia, the wounds were thoroughly cleaned with normal saline, 1% silver sulfadiazine cream was applied evenly and dressing was done. The child was given tetanus immunization. An intravenous line (IV) was secured and the Ringer's lactate solution was started. Prophylactic broad-spectrum antibiotics (IV) and pain medication was started. Despite treatment upon arrival, He succumbed to the complications on the second day of admission. A police inquest was done, and the body was then subjected to a post-mortem examination.

Autopsy

External examination revealed superficial to deep scald injuries present over the body involving about 90% of the total body surface area (Figure 1). Reddish, healthy granulation tissue was also observed over the body at places. Hairs present over the scalp and other body parts did not show any sign of singeing. No other injury was noted over the body. Upon internal examination, organs were grossly congested. Otherwise, no remarkable finding was observed. The cause of death was opined as complications of burn injuries sustained involving about 90% of the total body surface area

Fig 1: showing burn injuries

DISCUSSION

Mostly the cases of bones reported from the low social economic group of people all over the world[7]. Burn is a public health issue with preventable high case mortality [8]. Children are more curious to explore their surrounding making them more prone to suffer such type of injuries. So it must be assure that they are not left alone while they are playing in home to avoid serious incidents. Burn injuries even on a smaller area of the body may also cause sufficient damage to the skin of young children.

Almost 70% of all thermal injuries in younger children mostly occur at home[9]. Shah *et al.*, reported that the children of 13-24 months of age are at greatest risk of such injuries[8]. As kids of this age group are solely depend on the mothers contributing more risk of getting injured by spillage of hot liquid or other material present in the household[9].

Prabakaran[10] conducted the study that revealed a slightly higher proportion of females (53%) compared to males (47%) in the study population with the similar trend where the female to male ratio was more was also observed in the studies conducted by Shah *et al.*, (1.22:1), Rimmer *et al.*, (1.08:1), Yeoh *et al.*, and Agbenorku *et al.*[8],[11],[12],[13]

Adult females are more predominant than males because of open fire cooking, unsafe cookstoves, and loose clothing[7] as per world health organization data. This is opposite to the usual injury pattern sustained by the victims, where rates of injuries are higher in males than females.[7] Children too are prone to thermal injuries While improper adult supervision is considered a major risk factor for childhood thermal injury, child maltreatment too should not be overlooked.

Medicolegal examination of such victims is a challange in forensic practice[14]. In cases of scalds in children, there is suspicion if the injuries were accidental or intentional in nature. Thermal injuries in children involving buttocks and lower limbs pointed towards the abuse[15].

In order to predict accidental and no accidental burn injuries, Russo et al[16] laid down the criteria to determine the child Abuse

1. if the history is inconsistent with the physical findings when there is a delay in seeking medical attention following injury, when there are multiple blunt force injuries with different stages of healing, and when there is localized burn involving the buttocks, genitalia, or perineum.[15] [16]
2. Suspicion of abuse arises if child is brought by someone other than care taker or guardian
3. The circumstances of injury should also correlate the autopsy findings[13]

Mostly death occur in first week of thermal injury in case of children [17]

In the present case, the victim died in the hospital a week after sustaining injury. The cause of death in fatal cases is usually due to complications of thermal injuries, most common complications are septicemia, hypovolemic shock, neurogenic shock, and multiple organ failure[18]. In such cases, timely management is important, especially the response from the first responder in the form of providing first aid at the site of the incident itself.

In the present case, first aid was not provided at home or initial health center, and there was a delay in treatment due to orthodox practices of the family.Campaigns for awareness through radio, television, and in the form of pamphlets, brochures, and street plays should be done on regular basis in rural areas. It would make the general public aware of preventing unintentional injuries in younger children.

CONCLUSION

Most thermal injuries are preventable; educating the guardians and care takers may help to reduce further thermal injury related complications and mortalities. This case reflects the orthodox mentality of the peoples and primitive and wrong way of treating burn injuries and scars.

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