Case Report

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Survival after Hanging: A Case Report

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Abstract

Accidental hanging in children, although uncommon, has been reported worldwide. We report a case of an eight-year-old girl who was brought to our hospital with an alleged history of hanging with his head trapped in-between the ropes of a cot. She became unconscious and developed seizures secondary to asphyxial injury and survived. Hanging is an important cause of homicidal and suicidal injury in adults but in children, it is usually accidental in nature. This can lead to death because of cerebral asphyxia or ischemia or both as a result of partial or complete hanging. There is paucity of data in Indian literature regarding accidental hanging injuries in children. According to available data from western countries, strangulation ranks fourth among the causes of unintentional injury in children. The unique mode of hanging in this child has prompted us to report this case.

Keywords: Accidental Hanging; Survival; Asphyxia.

Introduction

Since antiquity, hanging has been an important mode of death in human being. Neck acts as a transit passage for air way to the lungs, blood vessels to and from the brain, spinal cord and food pipe. As it is a narrow mobile body part without much bony support, it is most vulnerable for injury. The injury can be accidental, suicidal or homicidal. Judicial hanging is a common practice all over the world. Suicidal hanging is an important cause of death in adults. But in younger children, hanging is usually unintentional and accidental in nature. In western countries, accidental strangulation is common and ranks fourth among the causes of unintentional injury after road accidents, drowning and burns [1, 2]. A study from India reports trauma as a cause of mortality in 8.5 per cent children [3]. We report a case of accidental hanging. The unique mode of hanging by the rope of a cot which is a common household belonging in the poorer section of rural and urban India has prompted us to report this case for creating awareness in the community. We also discuss the successful management of this case which has led to his survival.

Case Report

An 8-year-old female child was brought to the emergency room of our hospital with an alleged history of hanging with her head caught in between the ropes of a cot which was kept upright along the wall. According to the grandmother, who first reached the scene, the girl was playing there with her younger sibling, unattended since half an hour. When the mishap occurred the sibling informed the grandmother, who when rushed to the room, saw that she was off the floor, entangled in the ropes of the cot. She was then taken to a private practitioner in unconscious state and had one generalized tonic-clinic seizures on the way. She was given midazolam injection and loaded with phenytoin injection. She was referred to our facility and within three hours she reached our emergency room.

She was immediately admitted and she was conscious but drowsy. Though her Glasgow Coma Scale score was 15/15 she was interacting less with parents. She had a pulse rate of 108 per minute with good volume, respiratory rate of 24 per minute and blood pressure 100/68 mm Hg. She had peripheral cyanosis and few petechial spots over the face. She had a prominent ligature mark around the neck.

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There was no other injury marks in the body and there was no evidence of sexual abuse either. On examining central nervous system, her pupils were normal size, equal bilaterally and reacting to light. Doll's eye movements were preserved. Tone and reflexes were normal with bilaterally flexor plantar response. Rest of the systemic examination was completely normal. Off oxygen saturation was 98% in room air. She was started on i.v. fluids and neurological monitoring was continuously performed.

On admission, her hemoglobin was 12.5 g/dl, total leukocyte count was 12100/mm^3, serum sodium

136meq/L, blood glucose 106mg/dl, serum ionized calcium 4.2 mg/dl, serum potassium 4.2meq/L. Arterial blood gasses were normal. NCCT was done within one hour and was completely normal without any bony fracture or dislocation of vertebrae. The ENT senior resident on duty was called and thorough examination of the child revealed no abnormality in the airways.

As per the hospital policy, a medico-legal case was filed and the police official-in-charge of the child's residential area was informed. The police came for investigation and ruled out any foul play.

Discussion

Hanging is a form of strangulation caused due to suspension by the neck. Hanging can be classified as either complete or incomplete. When the whole body hangs off the ground and the entire weight of the victim is suspended at the neck, the hanging is said to be complete. Incomplete hanging implies that some part of the body is touching the ground and hence the weight of the victim is not fully supported by the neck. Hence, in our case it was allegedly a complete hanging.

In strangulation and hanging injuries, pathophysiologic theories that account for the observed outcome include the following: 1. Venous obstruction, leading to cerebral stagnation, hypoxia, and unconsciousness, which, in turn, produces loss of muscle tone and ultimately arterial and airway obstruction; 2. Arterial spasm caused by carotid pressure, leading to low cerebral blood flow and collapse; and 3. Vagal collapse caused by pressure to the carotid sinuses and increased parasympathetic tone [4-7].

Most experts agree that regardless of the events occurring in any given hanging or strangulation, death ultimately occurs from cerebral hypoxia and ischemic neuronal death.

Accidental strangulation is a potentially fatal injury in children. In a large case series by Feldman and Simss, 8.6% cases of accidental strangulation were reported to be due to clothing entanglement [8]. In a recent study of 28 cases of pediatric and adolescent strangulation from India, 7% of the cases were accidental [9]. Clothing and personal belongings were found to be the most common ligature materials.

Children sleeping unattended in rocking cradles and suffering asphyxiation has previously been reported [10]. The authors have reported cases of near-hanging by a window blind cord [11] and high chair waist strap [12] in the hope of heightening awareness of these potentially fatal injuries among community practitioners.

The mode of injury in our case was unique and it has not been reported previously. The ropes of a cot kept upright caused this ligature. Here tension applied to neck might have occluded the airway leading to asphyxia. Neck compression may lead to laryngeal edema [13].

Nearly one-third of cases have seizures due to neurological damage as in the case of our patient. Death in these cases is usually due to hypoxic damage to brain and respiratory system [14]. Management of these cases requires intensive monitoring and supportive care, maintenance of airway, circulation and management of seizures and cerebral edema. Bony fractures and laryngeal edema may be associated, which should be anticipated. Prognosis depends on: 1. duration of unconsciousness; 2. presence of seizures; 3. diabetes insipidus or 4. Hyperglycemia at admission [13]. Survivors of strangulation injury may suffer from cognitive disabilities later on due to hypoxic ischemic injury to the hippocampus [15].

Conclusions

Continued awareness of preventive measures for accidental strangulation and hanging in children caused by unusual mechanisms of injury as reported by us is important so as to reduce morbidity and mortality associated with these injuries.

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