

CASE REPORT

Diagnosis of Hanging in an Alleged Case of Ligature Strangulation: A Case Report

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Abstract:

Hanging is one of the commonest method among the painless suicidal deaths. In few instances, false allegations are made by next of kin and they claim that the ligature mark over the neck of deceased is due to strangulation or postmortem hanging rather than ante-mortem hanging. Vice versa cases are also likely in an attempt to concealment of the crime. In such cases, complete post-mortem examination and incident scene visit are very helpful to differentiate between the two. In the case being reported, the authors report a case of young adult female individual in which ligature strangulation was alleged by the parents and investigating officer but which was diagnosed as a hanging after autopsy. Authors also report the important external as well as internal findings in a case of hanging and discuss the unusual complications lead to death after hanging.

Keywords: Asphyxia; Hanging; Ligature strangulation; Autopsy.

Introduction:

Hanging is a form of ligature strangulation in which the force applied to the neck is derived from the gravitational drag of the weight of the body or part of the body.¹ There are two forms of hanging- judicial and non-judicial.² The hanging mark almost never completely encircles the neck unless a slipknot is used. In literature, it is mentioned that death occurs within few minutes of hanging.³ There are number of mechanisms by which hanging may cause death, which may act independently or in concert. In hanging, death is usually due to asphyxia or cerebral anoxia or vagal inhibition.⁴ In delayed hangings, respiratory and neurological complications such as pulmonary or neurogenic edema develop as a result of post-obstructive pulmonary distress, aspiration pneumonitis etc. can arise as fatal complications of hanging.⁵

Case report:

A 19-year-old girl was referred to tertiary health care center with an alleged history of ligature strangulation. This case was labelled as a medicolegal case. On examination, she was unconscious, pulse rate was 130/min, blood pressure was 96/60 mm of Hg, oxygen saturation at room air was 97 percent and she had tachypnea. All the investigation reports were normal. During hospital stay, she remained unconscious and was on intermittent positive pressure ventilator support. On 5th day of admission, physician diagnosed bilateral basal crept. Later, she suddenly become breathlessness and declared dead with diagnosis of hypotension with pulmonary oedema. Body was shifted to mortuary for autopsy.

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On history taken from the parents, the girl was alone at home at the time of incident. They were informed telephonically by the neighbor that; his daughter was lying on ground in unconscious state at home. She was referred to tertiary care hospital after giving first aid at local government hospital. The parents alleged that the girl was strangulated by the neighbor with chunni (a broad and soft cloth piece). Investigating officer also stated that the alleged ligating material i.e. chunni was recovered from the scene of incident. Police officer was unable to decide the case whether it was a case of hanging or ligature strangulation during his inquest; as the body was found in lying down condition and there was no eye witness at the scene.

Autopsy findings: The dead body was of average built. The face and eyes were congested. An interrupted reddish brown ligature mark in form of pressure abrasion was present on the left side of neck, situated above the level of thyroid cartilage in midline (Fig.1). It was deficient on the right side and nape of neck. It was situated 2 cm below the angle of mandible. On dissection, underlying sub-cutaneous tissues were white, glistening and showed marginal ecchymosis. The laryngotracheal structures were congested. Lumen of trachea was found occluded by mucus plug (Fig. 2). Intima of right common carotid showed multiple transverse tears (Fig.3). Epicardium showed multiple pin point punctate hemorrhagic spots (Fig. 4). Lungs were congested with sub pleural hemorrhages; on dissection, frothy secretions were oozed out (Fig. 5). After complete autopsy, cause of death was opined as pulmonary edema consequent to hanging.

The recovered ligature material was brought for the examination. It was in form of silk fabric and was strong enough to bear the weight of average built individual. It was smudged with brownish dust like stains at places. In crime scene report of this case mentioned that, loss of dust over the fan (alleged point of suspension) and a chair was present in the same room.

Discussion:

Hanging is a common mode of suicide, particularly in young



Figure 1. Showing a reddish brown ligature mark in form of pressure abrasion.



Figure 2. Showing congestion of respiratory tract mucosa and macroaspiration.



Figure 3. Showing subtotal transverse tear of carotid intima.

adults all over the world.⁶ The term “near hanging” refers to a patient who survives a hanging injury long enough to reach the hospital. Most of the patient develops respiratory and neurological complication immediately after the rescue. Pulmonary edema is the commonest complication which usually occurs immediately following their rescue from acute airway obstruction or suicidal hanging.⁷

Debbarma S and Deka SJ conducted study on 8 cases in which delayed death in hanging were included. In six cases, histopathology of lungs and brain showed pulmonary edema and hypoxic injury whereas two cases reported pneumonia in lungs and congestion of brain.⁸

Nithin et al. reported that, development of pulmonary edema played a major role as one of the causes of death in cases of

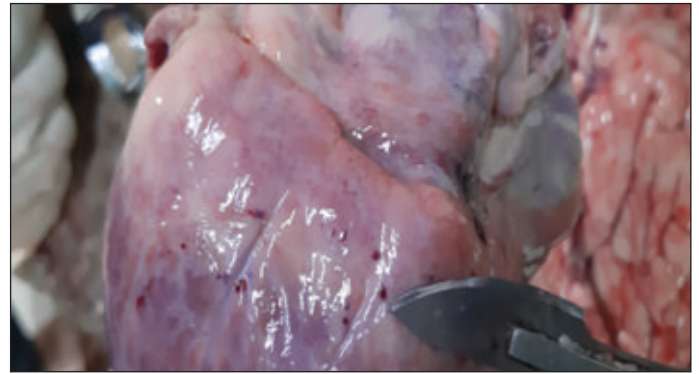


Figure 4: Showing multiple petechial hemorrhages on epicardium.



Figure 5. Showing subpleural haemorrhages.

hanging.⁹ In cases of hanging and ligature strangulation, external findings scarcely provide any definite diagnosis and there is still a high need for autopsies. The development of the ligature mark is depend on many factors, including the ligature material (its width, softness, smoothness), the amount of force exerted on the neck, the duration of suspension, whether dropped or not, any material such as clothing, hairs interposed between the ligature and the skin. A broad soft ligature, such as a soft towel, may cause minimal mark or leave no mark at all.¹⁰ Apart from the appearances of the hanging mark, there are some other features are also important. In hanging, evidence of dried marks of dribbling of saliva is suggestive of antemortem hanging but its absence alone will not suggest that the body was suspended after death. Petechial hemorrhage in deaths due to hanging are the exception rather than rule.¹¹

In present case at primafacie, investing officer and parents mistaken this case as a case of ligature strangulation without any direct support, however, authors concluded it as a case of suicidal hanging. Ligature mark was present over left side of neck and above to the level of thyroid cartilage, which was supposed to developed due to by soft and broad ligating material i.e. chunni. Autopsy findings of neck and the survival period of 5 days after attempted hanging and incident scene visit report mentioned that disturbance of dust on the fan which is also indicative towards hanging.

Authors emphasized that the forensic assessment of hanging cases should always be based on a criminological and forensic evaluation of all the circumstances of the offence as well as on the post-mortem findings.

Conclusion:

Meticulous autopsy, examination of ligating material and circumstances of death are of utmost importance in differentiating the cases of hanging from ligature strangulation and manner of hanging.

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