



## **DELAYED DEATH IN HANGING- A CASE REPORT**

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### **ABSTRACT**

Hanging is form of asphyxia which is caused by suspension of the body by a ligature which encircles the neck, the constricting force being the weight of the body. The term 'Near hanging' refers to victims who survive a hanging injury long enough to reach hospital. Hanging is preferred method of suicide as death is painless and almost instantaneous. However, with immediate rescue, aggressive resuscitation and intensive care, many patients survive for longer periods. Prolonged stay leads to disappearance of external evidence of ligature mark and other injuries which makes the task challenging for forensic experts. But meticulous clinical documentation can be of great help. We present case of 25 years old married female who survived for 33 days after attempted suicide by hanging. On admission, she was received intubated with stable vitals. She was on ventilatory support and remained unconscious throughout the period of stay. Cause of death was opined as death due to Hypoxic Encephalopathy as result of complication of Ante-mortem Hanging which was consistent with MRI and Histopathology findings.

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### **INTRODUCTION**

Hanging is form of asphyxia which is caused by suspension of the body by a ligature which encircles the neck, the constricting force being the weight of the body.<sup>1</sup> The term 'Near hanging' refers to victims who survive a hanging injury long enough to reach hospital.<sup>2</sup> Hanging is preferred method of suicide as death is painless and almost instantaneous. However, with immediate rescue, aggressive resuscitation and intensive care, many patients survive for longer periods.<sup>3</sup> The various causes of death in hanging are asphyxia due to occlusion of airways, cerebral ischemia due to occlusion of neck blood vessels, fracture dislocation of cervical vertebra as in cases of judicial hanging and rarely due to reflex vagal inhibition of the heart.<sup>4</sup> The fatal period ranges from instantaneous death to 3-5 minutes in most cases. Death delayed for several days is rare. Delayed death occurs due to aspiration pneumonia, infections, pulmonary edema, Hypoxic Encephalopathy, infarction of brain and cerebral softening.<sup>1</sup> Prolonged hospitalisation leads to disappearance of external evidence of ligature mark and other injuries which makes the task challenging for forensic experts. But meticulous clinical documentation can be of great help. We report a case of suicidal hanging by female who survived for 33 days after hanging and died due to delayed complications of hanging.

#### **Case Report**

A 25-year-old married female was found hanging with help of her sari with a ceiling fan in evening hours at her home. She was immediately brought down by her relatives and was taken

to a private hospital. She was kept there for 12 days in ICU and subsequently referred to our institute. On admission she was received intubated with stable vitals and shifted to medical ICU. Treatment was initiated as per protocol and relevant investigations were done. She was diagnosed as a case of hypoxic encephalopathy on basis of clinical examination and MRI. She remained unconscious, tracheostomied on ventilator throughout her stay. She died on 33rd day at noon. As per MCCD, cause of death was Cardio-pulmonary arrest due to Attempted Hanging. The post-mortem of the deceased was conducted next day on requisition of police. Following findings were observed:

#### **External Findings**

Decedent was averagely built and nourished. Both eyes and mouth were closed and bilateral cornea were hazy. During post mortem, No ligature mark was seen around the neck. Instead, clear tiny fragile fluid filled blisters were seen all around the neck. The lesions were diagnosed as Miliria Crystallina as per treatment record by the dermatologist. Complete treatment record was carefully examined. On admission, the ENT doctor had very diligently described the ligature mark. It was described as ligature mark present on upper part of neck with peeled off scab extending from right angle of mandible to left angle of mandible, 16 cm long and 2-4 cm wide.

#### **Internal examination**

On layer dissection, no underlying muscle hematoma was found. Hyoid, thyroid and cricoid cartilage were intact. On

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further dissection, mucosa of trachea and larynx was found congested. Brain was congested and oedematous. There was cerebral softening in capsulo-ganglionic region. Both lungs were congested, oedematous and had multiple reddish haemorrhagic patches on surface. All other internal organs were congested. Uterus was empty. MRI reported hyperintensity in basal ganglia on T2W images. MRI was done five days after attempted hanging.

The cause of death was opined as a Hypoxic Encephalopathy consequent upon Ante-mortem Hanging. Autopsy findings were consistent with histology examination which confirmed congestion and edema in both lungs as well as brain.

## DISCUSSION

Although delayed death in hanging is rare but few cases have been reported. Prompt rescue and aggressive treatment can lead to better prognosis. However, in majority of patients respiratory and neurological complications develop. Due to hypoxic injury, higher cortical centres suffer first being most sensitive to oxygen. This results in unconsciousness leading to hypostatic pneumonia. As lung tissues are affected, further anoxia ensues which results in injury to basal ganglia and finally respiratory and other vital centres resulting in delayed death. Pulmonary edema and hypoxic encephalopathy due to necrosis of brain cells are most notable causes of death in delayed periods.<sup>4</sup>Cerebral hypoxia triggers release of vasoactive mediators like histamine, serotonin and kinase which causes pulmonary vasoconstriction and sudden fall in intra pulmonary pressure due to abrupt release of obstruction leading to pulmonary hyperaemia.<sup>2</sup>Hausmann and Betz<sup>5</sup> reported a case in which survival of a four days was recorded following attempted suicide by hanging. The cause of death was given as cerebral infarction following traumatic thrombosis of sub-totally ruptured carotid arteries. Debburma and Deka did a study on eight cases and concluded that the cause of death were hypoxic encephalopathy, pulmonary edema and pneumonia.<sup>6</sup>Sandeep Kumar Giri and ArunKumar reported a case in which a female survived for three days and died due to hanging and its complications with edema and congestion of brain and lungs.<sup>7</sup> Meticulous clinical documentation which is very important from forensic point of view in such a delayed deaths is usually ignored.

In the present case, due to hospitalisation for period of over a month there was no external ligature mark seen. However, detailed clinical documentation was of great help. Appropriate history taking as well as thorough examination of treatment record is must before commencing post-mortem examination in such cases. Good documentation of case is as important as aggressive patient care. This can be of great help in aiding the administration of justice.

## CONCLUSION

Fatal period in hanging varies according to mechanism of death. In Asphyxia, fatal period is 5 to 10 minutes and is longer and takes 12 to 20 minutes if death is due to occlusion of cervical blood vessels. In judicial hanging with long drop death maybe instantaneous. All the patients of near hanging must be aggressively managed and guarded prognosis should be described to their attendants. The significance of documentation cannot be emphasised more.

**Conflict of interest:** None

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