Case Report

Delayed death in hanging – a rare case report

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Abstract

Hanging is very common mode of suicide particularly in young adults. Its incidence in India is approximately 25% of total cases of suicide. It is a painless method of committing suicide and death is instantaneous. However, a few cases have been reported in literature in which death has occurred after certain period of time or patient has survived after prolonged resuscitative measures. Here we present two cases of delayed deaths in hanging with the victims eventually succumbing to one or more of the fatal complications after surviving for different time duration.

Keywords: Hanging, delayed, death.

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INTRODUCTION

Hanging is one of the most common methods of suicide in India[1]. Its incidence in India is approximately 25% of total cases of suicide[2]. Only few persons survive this episode, if rescued promptly and usually die at later stage, which more precisely can be called delayed hanging death[3]. However, a few cases have been reported in literature in which death has occurred after certain period of time or patient has survived after prolonged resuscitative measures[1]. Here we present two cases of delayed deaths in hanging with the victims eventually succumbing to one or more of the fatal complications after surviving for different time duration.

CASE REPORTS

Case 1: An 18 year old unmarried female brought to the Government Medical College and Hospital, Latur, Maharashtra, India by her relatives with alleged history of suicidal hanging by a rope to a hook of roof. She was immediately rescued by her brother and admitted in an unconscious state with SPO_2 48%. She was immediately intubated and shifted to ICU and put on mechanical ventilator. In spite of aggressive treatment, her condition was get worsened. She remained unconscious throughout the admission period and died after 7 days. Medico-legal postmortem examination was conducted and findings were, ligature mark (pressure abrasion) present around the neck above the level of thyroid cartilage, going upwards and backwards encircling the neck except over the nape of neck, dark brown to black scab in situ with peripheral shedding. Brain was oedematous. Both lungs were oedematous. Histopathology of brain showed hypoxic brain damage and that of lungs showed pulmonary oedema with consolidation.

Case 2: A 30 year old married female brought to the Government Medical College and Hospital, Latur, Maharashtra, India by her relatives with alleged history of suicidal hanging by a nylon rope to a hook of roof. She was immediately rescued by her husband and admitted in an unconscious state with frothing. She was immediately intubated and shifted to ICU and put on mechanical ventilator. MRI findings were suggestive of hypoxic encephalopathy. In spite of aggressive treatment, her condition was get worsened. She remained unconscious throughout the admission period and died after 11 days. Medico-legal postmortem examination was conducted and findings were, ligature mark (pressure abrasion) present around the neck above the level of thyroid cartilage, going upwards and backwards encircling the neck except over the nape of neck, black scab in situ with peripheral shedding. Brain was oedematous. Both lungs were oedematous. Histopathology of brain showed ischemic brain damage and that of lungs showed pulmonary oedema with pneumonia.

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Image: Showing ligature mark over neck with black scab and partial shedding.

DISCUSSION

The brain cannot withstand lack of oxygen for a period exceeding five minutes, beyond which permanent cerebral damage results[4]. The clinical features of a patient of hanging involve respiratory and central nervous system. The common respiratory signs are respiratory distress, hypoxia, pulmonary edema etc; and signs related to central nervous system are like restlessness, unconsciousness, muscular rigidity, convulsions, amnesia, hemiplegia etc[5]. Very rarely the victims of hanging survive after prolonged period of unconsciousness. Delayed death occur due to aspiration pneumonia, infections, oedema of lungs, oedema of larynx, hypoxic encephalopathy, infarction of brain, abscess of brain, cerebral softening[6]. Hocking (1961) reported a case of man who died 7 days after hanging. Death was due to complications arising from fracture of the larynx sustained during an attempt[4]. Aggarwal *et al* reported a case of 20 year old female who survived for 9 days after hanging, remaining unconscious throughout in the hospital and died due to cerebral damage caused by cerebral anoxia[1]. Kumar RR and Punitha R reported three cases of delayed deaths due to suicidal hanging with the victims eventually succumbing to one or more of the fatal complications after surviving for different time duration ranging from 36 hours to 6 days. Causes of death were various complications i.e. hypoxic encephalopathy with pulmonary oedema, pulmonary oedema with haemorrhage and hypoxic encephalopathy with aspiration pneumonia[7]. Nitin MD *et al* reported three cases of delayed deaths due to suicidal hanging. A 43 year old woman survived 9 months after hanging with mechanical ventilator support. She was clinically diagnosed to have suffered from hypoxic ischemic encephalopathy and severe bronchospasm due to partial hanging. She was on mechanical ventilator for 9 months. On the day of her death, she suffered from refractory hypotension with severe bronchospasm along with excessive tracheobronchial secretions. A 23 year old girl survived 48 hours after partial hanging and died as a result of hypotension and pulmonary oedema. A 55 year old woman survived 24 hours after attempted suicidal hanging and succumbed to cerebral hypoxia[5]. Maxeiner H reported six cases of suicide by hanging with delayed death with survival times lay between 18 hours to 4 days. In two cases intravital vertebral death occurred. In other cases death was due indirectly to hypoxic brain damage which had led to greater or lesser extent to elective parenchymal necrosis[8]. Bhoi SB *et al* reported a case of 18 year old female who survived for 7 days after hanging and remained unconscious throughout in the hospital and died due to cerebral damage caused by cerebral anoxia[9]. Virendra Kumar reported a case of 33 year old Indian lady who survived 15 hours after hanging and died due to hypoxic encephalopathy due to neck compression[3]. Hausmann and Betz reported a case of delayed death 4 days after attempted suicide by hanging where the individual was conscious and showed no neurological abnormalities. The cause of death was a cerebral infarction following a traumatic thrombosis of the sub totally ruptured carotid arteries[10]. Vaghela DR and Patel PR reported a case of suicidal attempt by hanging who survived for 36 days and died due to irreversible brain damage and respiratory arrest[11]. Verma SK and Agarwal BB reported a case of an adult male survived for 39 days after he was accidentally hanged while helping passengers trapped in the lift of an outpatient department in a teaching hospital[12]. Fremingston K. Marak and R. Balaraman reported a case of an 18-year-old unmarried girl who attempted suicide by hanging who survived for 28 days and remained unconscious till death[13]. Venkatesaprasanna J *et al* reported a case of female survived for 28 days after suicidal attempt by hanging and died due to irreversible brain damage and respiratory arrest[14]. Here we discussed two cases of suicidal hanging which were succumbed to death after variable durations ranging from 7 days to 11 days. Causes of death were various complications following hanging. Both cases were females, hospitalized in an unconscious state and remained unconscious till death. Pulmonary oedema was common finding. Pulmonary oedema one of the most common complications occurs in patients immediately following their rescue from acute airway obstruction or suicidal hanging[2]. The pathophysiology of type I post-

obstructive pulmonary oedema as in post hanging is thought to be influenced by both hydrostatic forces and increased permeability of alveolar epithelium following sudden upper airway obstruction[15]. Pulmonary capillary membrane damage leads to increased capillary permeability, hyperemia in lungs due to abrupt fall in intrapulmonary pressure following sudden removal of airway obstruction and pulmonary vasoconstriction mediated by vasoactive substances like histamine, serotonin and kinins; release of which is triggered by cerebral hypoxia[16]. Hypoxic ischemic encephalopathy is an important complication in a patient who survives an attempt of hanging. Hypoxic brain injury of global cerebral ischemia occurs due to reduced cerebral blood flow over the entire brain. At the time of hanging, oxygen supply is decreased to brain because of pressure on carotids, severe enough to damage brain cell. This hypoxia ultimately leads to encephalopathy. Necrosis of brain cells leads to inflammatory reactions, which ultimately causes swelling and oedema. Brain oedema together with postural lung congestion and infection leads to respiratory failure[14]. This is consistent with our findings. So, hypoxic encephalopathy and pulmonary oedema are the most common complications. Delayed death can occur any time following hanging.

CONCLUSION

In spite of all measures, delayed death must be anticipated in all cases of hanging as there is no predictable of fixed time duration that can be used as framework to say with certainty that patient is *'out of danger'*.

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