

Delayed Hanging Death: A case report

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Introduction

Death due to pressure over the neck is common in the day to day practice of the Forensic Pathologist. Three forms of pressure on the neck are of medico-legal importance, namely manual strangulation, ligature strangulation and hanging. Hanging or 'self suspension' is a form of ligature strangulation where the pressure is produced by the weight of the body itself.¹ It is almost invariably suicidal except in some masochistic accidental cases.² But homicidal hanging is extremely rare.

Hanging is one of the commonest method of suicide especially amongst the Asian community. Malaysia, is a country of multi ethnic group and has a population of Malay 59%, Chinese 26% and Indian 8% ethnicity apart from some foreign immigrants from Indonesians Bangladesh, Vietnam and others. But the rate of suicides is more in Indians and Chinese than Malays. Earlier also suicidal cases of hanging, more in Indians have been reported by Nadesan.³

In Singapore, the ethnic composition is different, Chinese form 76.6%, Malays 15% and Indians 6%. Yet the rate of suicide reflected almost a similar pattern with Indians leading with 20.3 per 100,000 followed by Chinese 14.8 per 100,000 and lastly Malays 2.1 per 100,000.³

A Saudi Arabian study showed a similar pattern with non-Arabs particularly Indians, Bangladeshis and Sri Lankans completely out numbering the locals. The study revealed that hanging is a fairly common method of suicide among some segments of the immigrant population in Saudi Arabia. The most striking feature was the very high proportion of Asian victims, notably Indians. Cultural, religious and economic influences may account for the observed differences.^{4,5}

The Indians choose hanging method of committing suicide more than the other ethnic groups probably because of cultural background. In some communities suicide or attempted suicide is considered a disgrace to the individual and their family. Similarly, because of the different culture and religion fear, Malays less commonly commit suicide. Commitments to religious faith and belief in a later life have been reported to correlate negatively to suicide.⁶

Death in hanging is caused by compression of the blood vessels of the neck such that an insufficient amount of

oxygenated blood reaches the brain. Obstruction of the airway can also occur either through compression of the trachea or, when the noose is above the larynx, elevation and posterior displacement of the tongue and floor of the mouth.

Depending on the area of the country and sex of the victim, hanging is either second or third most popular method of suicide.⁷

It is a painless method of committing suicide and death is instantaneous. Only few persons survive this episode, if rescued promptly and usually die at a later stage, which more precisely can be called delayed hanging death. A case of delayed hanging death is presented.

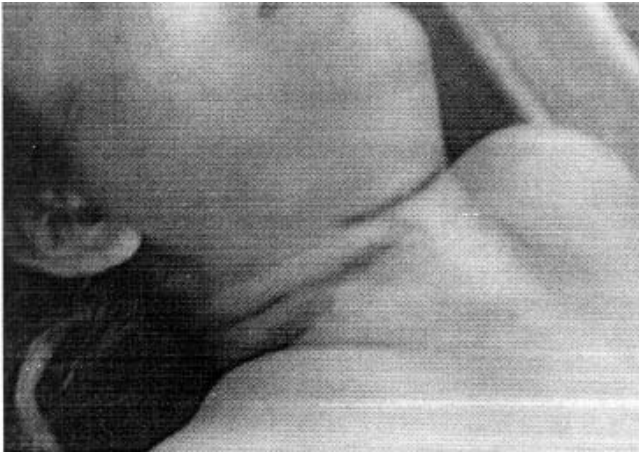
Case Report

A 33-year-old Indian lady was brought to the hospital in an unconscious state by her husband. She was found hanging by using a saree which was attached to the bedroom fan. Her husband discovered her in the room when he went back for lunch. She was well previously and was a business-woman who owned cash and credit shop. But the business had not been good over past few months, which had made her emotionally disturbed.

The clinical examination revealed that her Glasgow Coma Scale was 3/15. Abnormal facial movements and pale discoloration was noted. Ligature mark was noted around the neck with abrasion (Figure 1, 2 and 3). Mechanical ventilation was instituted. CT scan of brain was done which showed no abnormality. Her condition deteriorated steadily and she died 15 hours later.

On autopsy examination she was found to be 160 cm tall and thin. The floor of the ligature mark and the abrasion associated with it was of brownish discoloration. Apart from this light brown colour was seen in the lightly depressed ligature indentation above and below the main ligature mark. There was parchmentization internally underlying the mark.

Internally, the meninges and brain along with the nasopharynx, larynx, trachea and bronchi were congested with inflammatory signs. The lumen of the respiratory tract was filled with large amount of mucus. The lungs were congested and consolidated. The pleural surface was red. Besides, the tongue and oropharynx were swollen. The findings of other organs were unremarkable. The cause of death



Figures 1 and 2. Ligature mark with brownish discoloration around the neck.



Fig. 3: Abrasion (Healing) near the Ligature Mark

was due to hypoxic encephalopathy due to neck compression.

Discussion

There are few methods of hanging. It can be self sus-

suspension to a high point such as ceiling beams and staircase or self suspension to convenient low securing point such as door knobs and bedposts. Ropes, wires, string, cloth, scarves, neckties and numerous other materials may be used depending on availability.⁸

In cases of hanging, death usually occurs immediately after strangulation and is caused by ischaemic cerebral damage due to neck compression.⁹ But for this victim death was delayed which is not a common occurrence. There are a number of mechanisms by which hanging may cause death. Carotid arteries are less commonly occluded because presence of sternomastoid muscles. In this case, the victim was unconscious which means bilateral carotid arteries are occluded. Vertebral circulation was insufficient to maintain cortical function. The unremitting pressure had cut off the blood supply of the brain for at least 4 minutes in order to have irreversible brain damage. The extent of ligature marks on the skin and depression was consistent with occlusion of carotid arteries more than 4 minutes.⁸

Besides, a period of reflex cardiac arrest by external pressure upon baroreceptors in the carotid sinuses and carotid sheaths can also be the cause of death. This can stimulate afferent stimuli via glosso-pharyngeal nerves to the tenth cranial nucleus in the brainstem. This generates cardio-inhibitory impulses in the nucleus which pass through the vagus nerves to the heart. The victim's face was pale when she was brought to hospital with no congestive or petechial signs. Reflex cardiac arrest was apparently the mechanism. In order to have brain damage, the heart must have been in a period of asystole for at least 4 minutes duration.¹⁰ The ability of the heart to recover and restart functioning after 4 minutes of ischemia is acceptable because the myocardium can easily survive this length of hypoxia. Another mechanism suggested was that external stimuli such as common resuscitation practice might restart the asystolic heart.

Aggarwal et al from Delhi (India) reported a similar case where a 20year old female survived for nine days in the hospital being unconscious throughout, after a hanging episode and died ultimately due to cerebral anoxia.¹¹

In another study from Delhi, an uncommon accidental hanging of an adult male was reported who got trapped in the lift of a building and was accidentally hanged. He also survived for 39 days in the hospital and died.¹²

Earlier, Maxeiner reported a similar case of delayed hanging death in six cases of suicides who were all unconscious throughout till death.¹³

For brain death after hospitalization to occur, there must be paralysis of the cardio-respiratory centres. These

centres are more resistant to hypoxia than actual infarction than the neocortex which is the first area of brain to suffer irreversible brain damage. Heart is more resistant than brain to hypoxia; therefore in asphyxia cessation of the heart is the result of failure of brain rather than vice versa.

Just contrary to the above studies, Hausmann and Betz reported a case of delayed death 4 days after an 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 subtotally ruptured carotid arteries.⁹

The present case had the usual pattern of post mortem hypostasis as because the victim was hospitalized and was on the bed immediately after the episode. If the victim were in vertical position, post mortem hypostasis would have been as the glove and stocking distribution. The classical signs of asphyxia were absent instead a pale face was seen due to compression of the carotid arteries and the feet were off the ground (complete hanging). But if the body is fully supported on the ground (i.e. partial hanging) then the jugular veins are compressed and petechiae are present. Besides, there was no laryngeal fracture which was similar to the findings in literature⁷, and no hyoid bone fracture or soft tissue haemorrhage because of soft ligature material used, which was a saree.¹⁴

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