

A Retrospective Observational Study of Delayed Death in Rescued Hanging Cases

Rajesh Ban Goswami¹, A. Dutta²

Abstract

Introduction: Hanging is one of the most common mode of suicide in Asian countries as well as countries worldwide. Survival period in hanging does not follow a fixed pattern and fatality varies from few seconds to few minutes depending upon various factors such as duration of suspension, type of ligature material, force applied for compression of neck, position of the person etc. Victims usually fail to resist pressure and succumb to death speedily almost within few minutes. However in a few reported cases patient has survived for certain period after immediate and prompt resuscitative measures, but died at a later stage which can specifically be called as delayed or near hanging death. More than 25-30% of suicidal death cases due to hanging are reported in India and the data is expanding every year. We have studied certain number of cases in which people of young adult groups succumbed to death following consequent complications after rescued hanging. *Aims & Objectives:* The present study is conducted to analyse the cases of delayed death in hanging and their comparison with other cases of hanging as well as preventive aspects in such cases. *Materials and methods:* Total Nos. of delayed death in hanging were 07 during 2016 and 2017, among 131 cases of death due to hanging autopsied, which were brought to mortuary of KGH, Raigarh (C.G.), during the period of January 2016 to December 2017. *Observations & Results:* In our study, Male: Female= 1:6, Partial: Complete Hanging= 1:6, Age group-16-36 years, Cause of death= H.I.E followed by pulmonary oedema, Survival period= 24-48 hrs, in one case victim survived around seven days. Soft & Hard materials were used for the purpose of hanging. *Conclusion:* Predominant cause behind death is HIE and pulmonary oedema. Overcoming critical period can reduce morbidity and mortality.

Keywords: Rescued Hanging; Delayed Death; Near Death; Suicide; HIE.

Introduction

Hanging or self suspension is a type of violent asphyxial death which is caused by complete or partial suspension of the body by the ligature material encircling the neck and force of constriction being at least part of the weight of the body. It is one of the most common mode of painless death. There are several mechanisms of death in hanging but death usually occurs due to asphyxia

or cerebral anoxia or vagal inhibition leading to cardiac arrest and scientifically it has been proven that pressure or force of minimum 2 kg (4.4 lbs) is sufficient to bring about death. Effective killing potential with mortality is 80-85% in hanging cases. Hanging is almost always suicidal. Homicidal hanging cases are extremely rare. Suicidal hanging is more common in India and China. Recent trends and statistics show hanging to be the commonest mode of commission of suicide in India followed by consumption of a poison.

Sometimes victim of hanging live for some period and sometimes even survive the hanging. The term "near hanging" refers to patients who survive a hanging injury long enough to reach the hospital. A person can be saved only if specific aggressive resuscitative clinical measures are applied, when rescued within a few minutes of commission of suicidal attempt. Only a few persons survive this critical period. The morbidity and mortality in survivors of delayed hanging death cases occurs

Author's Affiliation: ¹Assistant Professor ²Demonstrator, Dept. of Forensic Medicine & Toxicology, Late Shri Lakhiram Agrawal Memorial Govt. Medical College, Raigarh, Chhattisgarh 496001, India.

Corresponding Author: Rajesh Ban Goswami, Assistant Professor, Dept. of Forensic Medicine & Toxicology, Late Shri Lakhiram Agrawal Memorial Govt. Medical College, Raigarh, Chhattisgarh 496001, India.

E-mail: grajeshban@gmail.com

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due to variety of mechanism but most cases succumb to fatal complications after surviving for some time. Most cases die due to respiratory and neurological complications such as hypoxic ischaemic encephalopathy, aspiration pneumonia, infection and pulmonary oedema.

Review of Literatures

In Indian scenario Verma et al. (2000) [1], Aggarwal et al. (2000) [2], Nithin MD et al. (2011) [3], Bhoi et al (2013) [4], Kumar et al (2014) [5], Kumar et al. (2014) [6], Khetre et al. (2014) [7] Gadhari et al. (2015) [8], Sane et al. (2015) [9], Maled (2016) [10], Debbarma et al., (2016) [11] had documented the incidents of delayed death in hanging cases with it's causes. Apart from Indian scenario Maxeiner (1987) [12], Hausmann et al. (1997) [13] and Virendra Kumar (2007) [14] also reported such kind of cases (i.e. delayed death in hanging) from abroad.

Materials and Methods

The present cross sectional prospective study consists of total seven cases of delayed hanging death out of 131 cases of total hanging cases during

Table 1: (P.M. Statistics)

Year	Total No. of P.M. Examination	Total No. P.M. examination of Hanging cases	Total No. of P.M. of delayed death in Hanging
2016	564	71	2
2017	515	60	5
Total	1079	131	7

Table 2: (Distribution of Hanging Cases in Male and Female Study Subjects)

Case No.	Age in years	Sex	Place of hanging	Type of suspension (Complete/Partial)
1	18	F	Residence	Partial
2	35	M	Residence	Complete
3	33	F	Residence	Complete
4	36	F	Residence	Complete
5	16	F	Residence	Complete
6	22	F	Residence	Complete
7	19	F	Residence	Complete

Above table 2 shows distribution of cases of delayed death in hanging. The table shows that hanging cases are more common in young and adult age groups. The cases are more common in females as compared to males. Most of the cases are occurring inside home. In the present study maximum number of cases were of complete hanging while only one case shows partial hanging. (Table 2)

two year period from January 2016 to December 2017. The data were collected from police inquest reports, hospital record and interview of relatives and family members of deceased. Out of 7 cases 4 cases reached at tertiary health care centre from other health care centers as referred one. In this study the subjects were included irrespective of caste, religion, dietary habits and socio-economic status.

Results and Observations

Pictorial depiction of ligature marks in rescued hanging cases

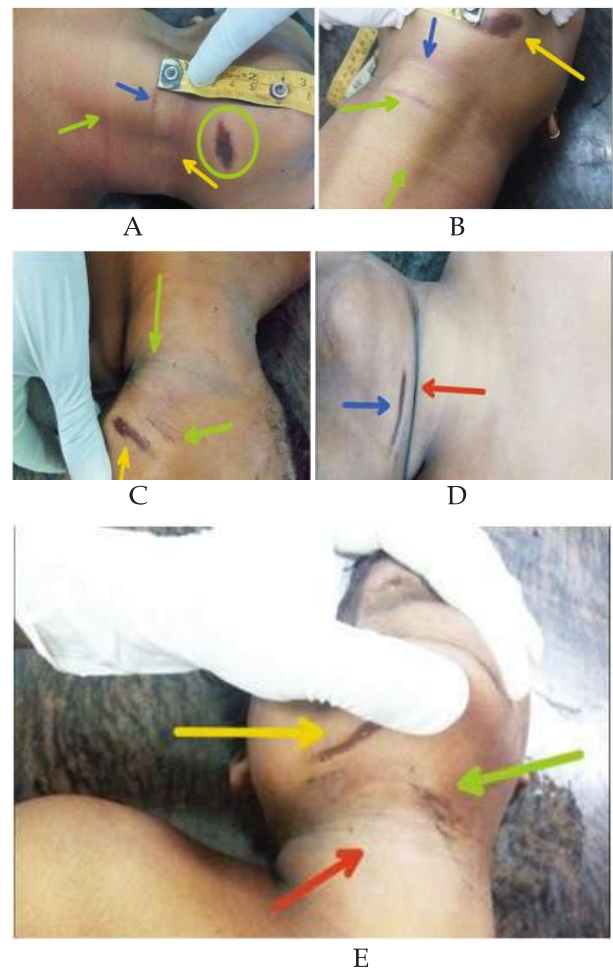


Fig. 1: A= Encircle part shows pressure abrasion mark below the chin and arrow marks show faint reddish ligature mark, B = Yellow arrow shows pressure abrasion mark, green and blue arrow indicates faint reddish ligature mark, C= Yellowish arrow shows pressure abrasion, whereas greenish arrow indicates faint greenish black ligature mark, D= Bluish arrow indicates pressure abrasion and reddish arrow indicates prominent ligature mark, E= Yellow arrow indicates prominent pressure abrasion, while greenish arrow indicates slight pressure abrasion and reddish arrow indicates faint ligature mark.

Table 3: Distribution of Ligature Material and its imprints over neck, Survival Period & Clinical course

Case No.	Ligature material	Visibility of ligature mark	Conscious/unconscious during the course of treatment	Survival Period
1	Dupatta	Yes	Unconscious	24-48 hours
2	Nylon rope	Yes	Unconscious	24-48 hours
3	Plastic rope	Yes	Unconscious with status epilepticus	24-48 hours
4	Scarf	Yes	Unconscious with status epilepticus	Around 7 days
5	Dupatta	Yes	Semi conscious to unconscious with status epilepticus	24-36 hours
6	Dupatta	Yes	Unconscious	24-36 hours
7	Dupatta	Yes	Unconscious	Less than 24 hours

Above table 3 shows that ligature mark was visible in almost all the cases. Among study subjects both hard and soft materials were used as ligature material. The table also shows that Period of survival was 24-48 hours in most of the cases, while

in one case subject survived for 7 days, whereas survival period in another case was less than 24 hours. All the patients were unconscious during the course of the treatment and some also suffered from status epilepticus (Table 3).

Table 4: Distribution of Autopsy Findings in Neck Structures and Internal Organs

Case No.	Hyoid Bone	Thyroid Cartilage	Lungs	Brain	Cause of Death
1	Intact	Intact	Congested, intact	Congested	Asphyxia with cerebral anoxia and HIE
2	No	No	Congested, intact	Congested	Asphyxia with cerebral anoxia and HIE
3	No	No	Congested, intact	Congested	Pulmonary oedema with HIE
4	Intact	Intact	Congested, oedematous, intact	Congested, oedematous	Acute ARDS with aspiration pneumonitis and septicaemia
5	Intact	Intact	Congested, intact	Congested, intact	Acute Pulmonary oedema with HIE
6	Intact	Intact	Congested, intact	Congested, intact	Cerebral anoxia with acute encephalopathy, ARDS and shock
7	Intact	Intact	Congested, intact	Congested, intact	Acute Pulmonary oedema with HIE

HIE= Hypoxic Ischemic Encephalopathy, ARDS=Acute Respiratory Distress Syndrome

Above table 4 shows distribution of post-mortem findings in neck structures and internal organs. Hyoid bone and thyroid cartilage is intact in all cases. In most cases lungs and brain were found.

congested and intact. In most of the cases cause of death was HIE followed by pulmonary oedema. In no any case, active surgical intervention like tracheostomy was performed (Table 4).

Discussion

Hanging denotes suspending the body by ligature material by encircling the same around the neck. It is one of the widely used methods of commission of suicide since it ensures narrow failure and painless death [15]. Young adults adopt hanging as a very common method of suicide [16]. In Indian scenario hanging constitutes about 25% of total number of suicides [17]. There are also reported cases where victims of near hanging were survived with complete neurological recovery [18,19]. In our study we found delayed death in hanging was occurred in both male and female subjects, the same thing was found in the study of Sane et al. (2015) [9] and Debbarma et al. (2016) [11], females are more prone to commit suicide than males [21], age range of

victims were 16-36 years, which matches with other studies [9,11]. In the study conducted at Raigarh survival period of the victims were 24-48 hrs and in one case survival period was 7 days, there are references from other authors in the same aspect i.e. survival after hanging: [2,3,4,6,20]. In two cases hard material was used as a ligature material, even in the study of Sane et al. (2015) [9] and Debbarma et al. (2016) [11], where it was documented that incidents of delayed death in hanging also occurs in hard material used as ligature material. Delayed death in Hanging may occur in cases of both partial and complete hanging, which also matches with the other studies. [9,11]. In six out of total seven cases patients remained unconscious during the whole course of treatment, that can be matched with other studies [9,11].

Conclusion

Delayed death in hanging is a rare phenomenon. It has been observed that most of the cases suffered from HIE, apart from that pulmonary oedema and ARDS are the root causes behind death. Still today no standard framework has been devised which can make a rescued patient of hanging "out of danger". Duration of hanging and time between rescue and initial resuscitation is one of the shortcomings of our study, so for the purpose of reduction of this critical period, it is necessary to augment the critical care facilities at primary level.

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