Hanging Deaths at Tertiary Care Teaching Hospital

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Abstract

Background: Hanging signifies an asphyxiation form which, by a noose or another constricting band tightened by body weight, is secondary to compression or restriction of the neck structures. All hangings are suicidal. Accidental and homicidal hangings are rare and uncommon.

Objective: This research was performed on deaths attributed to neck strain related to hanging and strangulation carried out for post-mortem analysis in the mortuary of Osmania General Hospital

Methods: Detailed information regarding the deceased and the circumstances of the death were collected from the police and relatives by a questionnaire. For certain situations, the detail was matched by an on-site observation or by photos of the incident location.

Results: Knot was present in the right side of the neck in 97(48.5%) cases, over the left side of the neck in 62(31%) cases, and over the center of the occipital region in 41(20.5%) cases. In the present study, it is observed that in 167(83.5%) cases, the level of ligature mark was above the thyroid cartilage, below the thyroid cartilage in 11(5.5%) cases, and overriding the thyroid cartilage in 22(11%) cases. parchmentization was present in 135(67.5%) cases and absent 65(32.5%) cases. The causes for these observations are the ligature material type and the length of suspension which in the majority of cases are parchmentized. 169 cases (84.5%) did not show any changes around the ligature mark, but in 31 cases (15.5%). Fracture of hyoid bone was seen in 3.5% of the cases and fracture of thyroid cartilage was seen in 4.5% of the cases

Conclusion: Our society has a great socio-economic burden due to the high incidence of suicidal hanging among young adults particularly women. The private essence of hanging and convenient access to ligature points and ligature supplies renders suicide avoidance challenging. Marital disappointment, organic disease issues, and dowry abuse are the primary reasons behind suicide hanging.

Keywords: *Hanging, Ligature strangulation, Hyoid Bone, Thyroid Cartilage*

Introduction

For all living things, death is inevitable, but only people prematurely end their lives by suicide.. One of the most widely used techniques, since materials are readily accessible and have a good chance of success, by hanging.

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Hanging is the asphyxia that induces a ligature around the necks due to the suspension of the body, the force that is restrictive is the body's weight (complete hanging), or part the body's weight (partial hanging).[1]

In action, hanging has been since ancient times and prior to the coming of civilization. Death was found especially disgraceful in ancient Rome, and the citizens who died by this means were denied a funeral. As a result of this activity, Greeks assumed that many women were dead. In Roman and Greek cultures, 1.5-10% and 30% of suicides are by hanging. Different causes such as marital disharmony, financial difficulties, mental conditions,

persistent physical pain due to malignancy, and improper evaluation, are the liability of an individual.[2]

Although the majority of the cases are suicide, Hanging can be homicidal or accidental which can often lead to suspicions among family, police and even the surgeon. In such situations when the noose is too tight, there are too many twists, and when the perpetrator is a kid in an odd spot such as sitting or kneeling when it is a complete ligature, there is a controversy.[4,5]

This study is carried out using systematic analyses of the hanging and contrasts the outcomes with other studies and to assess the relevance of post-mortem observations of hanging.

Materials and Methods

All 200 cases of hanging brought to Osmania Medical College and General hospital mortuary for post-mortem examination between the period November 2017 to October 2019 are included in the study.

Detailed information regarding the deceased and the circumstances of the death was collected from the police and relatives by a questionnaire. For certain situations, the detail was matched by an on-site observation or by photos of the incident location. Permission of the ethical committee on the use of human material for research purposes was obtained.

A meticulous autopsy was conducted with special reference to neck structures, the bloodless field of dissection was carried out in all the cases. All the important findings were noted down in the master chart.

Inclusion criteria:

All 200 cases of hanging brought to Osmania Medical College and General Hospital mortuary for post-mortem examination between the period November 2017 to October 2019 are included in the study.

Exclusion criteria:

Cases other than hanging as cause of death.

Statistical Analysis: SPSS software version 22 has been used for statistical analysis. Data were presented as statistical tables and charts.

Results

Table No 1: Distribution of the study population according to age, sex, martial status, locality and fracture of thyroid cartilage.

Age in years	No. of cases	Percent
<10	1	0.5%
11-20	30	15%
21-30	94	47%
31-40	41	20.5%
41-50	20	10%
51-60	10	5%
61-70	3	1.5%
>70	1	0.5%
Sex		
Male	135	67.5%
Female	65	32.5%

Cont... **Table No 1: Distribution of the study population according to age, sex, martial status, locality and fracture of thyroid cartilage.**

Marital status		
Married	117	58.5%
Single	83	41.5%
Locality		
Urban	175	87.5%
Rural	25	12.5%
Treatment		
Treated	24	12%
Not treated	176	88%
History of previous suicidal attempt		
Yes	31	15.5%
No	169	84.5%

The most vulnerable age for hanging is found to be between 21-30 years, wherein 47% deaths occurred. The next vulnerable age group is 31-40 years in which 20.5% deaths occurred. In 11-20 years age group, 30 deaths (15%) have occurred. In 41-60 years age group, 30 deaths occurred. In old age, i.e. after 61 years, incidence came down to1.5%.

Table 2: Distribution of the study population according to the Type of Hanging (typical/atypical)

Marital status	**Type of hanging**		**Total**
	Typical	**Atypical**	
Married	28	89	117
Unmarried	7	76	83
Total	35	165	200

Table 3; Distribution of the study population according to the Type of Hanging (complete/partial)

Gender	**Type of hanging**	**No. of cases**	**Percent**
Male	Complete	41	20.5%
Female	Complete	17	8.5%
Male	Partial	96	48%
Female	Partial	46	23%

Table 4: Distribution of the study population according to the Postmortem Staining

Post Mortem staining	No. of cases	Percent
Post Mortem staining in lower limbs	51	25.5%
a)With Petechiae	14	27.45%
b)Without Petechiae	37	72.54%
Post Mortem staining at the back	149	74.5%

Table 5: Distribution of the study population according to the Position of Knot, Level of ligature mark, Peri ligature injuries, Effusion of blood

Position of knot	No.of cases	Percent
Right	97	48.5%
Left	62	31%
Centre of Occipital region	41	20.5%
Total	200	100%
Level of ligature mark		
Above the thyroid cartilage	167	83.5%
Overriding the thyroid cartilage	22	11%
Below the thyroid cartilage	11	5.5%
Parchmentisation of the ligature mark		
Present	135	67.5%
Absent	65	32.5%
Periligature injuries		
Present	31	15.5%
Absent	169	84.5%
Effusion		
Present	3	1.5%
Absent	197	98.5%

Knot was present in right side of neck in 97(48.5%) cases, over left side of neck in 62(31%) cases and over centre of occipital region in 41(20.5%) cases. In the present study, it is observed that in 167(83.5%) cases, the level of ligature mark was above the thyroid cartilage, below the thyroid cartilage in 11(5.5%) cases and overriding the thyroid cartilage in 22(11%) cases. parchmentization was present in 135(67.5%) cases and absent 65(32.5%) cases. The reasons for the above observations being the form of ligature material and the duration of suspension leading to parchmentization in majority of the cases. 169 cases (84.5%) did not show any changes around the ligature mark, but in 31 cases (15.5%)

Table 6: Distribution of the study population according to the fracture of hyoid bone, thyroid cartilage

Fracture of hyoid bone	No. of cases	Percent
Present	7	3.5%
Absent	193	96.5%
Fracture of thyroid cartilage		
Present	9	4.5%
Absent	191	95.5%

Fracture of hyoid bone was seen in 3.5% of the cases and fracture of thyroid cartilage was seen in 4.5% of the cases

Discussion

Each suicide is a horrific tragedy that has the premature end of the life of a person and an unabated effect that has a profound effect on the lives of family and community.[6] The study indicates that males are more frequent victims relative to females. The findings have demonstrated that men are the most frequent victims compared to females. One of the common strategies for committing suicide is to remain hanging. It is notably a lethal suicide procedure with an expected fatality rate of more than 70%.[7] There is no chance of changing mind since death usually comes quickly after the hanging in contrast to overdose.[8] During the last 30 years, hanging suicides have risen, particularly among young men throughout the world.[9,10] Males record the maximum number of hanging. The age ranges aged 21-30 years had the largest number of hanging deaths. In the urban areas and in the low socioeconomic community, the majority of hanging deaths occurred. Married men sometimes take their lives by hanging. Studying stress for excellence and success is one aspect that cannot be overlooked in causing hanging deaths. People prefer to hang up at night or choose midday time. Closed inside room has been turning into a safe hanging area. Ceiling rod and fan are also often used as suspension points. Typical ligature marks with hanging partly overnumbered typical ligature marks and hanging complete. Foot hitting the ground is often seen during partial hanging. The ligature marks were disrupted and dominant in majority. In maximum numbers of cases a single ligature above the thyroid cartilage stage with a 1-2cm diameter is found.

Coarse parchment ligature patterns with colour stains varying from red to yellowish brown to dark brown are most often found in hanging deaths. In a few cases, peripheral ligature damage involving abrasions, bruising and cord burns have been observed. Peri-ligature wounds, contusions and abrasions have been seen. Peri-ligature injuries are caused by nodal contusions, by the projection of fibres from the ligature material and by nail claw marks inflicted by the victim fighting in order to free itself at death. They also often used soft ligature products, such as saree, dupatta, lungi and bed sheets. The ligation mark was dark brown and parchmentization with hard and soft ligament materials with an improvement in suspension length.

In situations in which a narrow, strong or hard ligature material is added, a distinct ligature mark groove of width and pattern is found.

In cases of complete hanging, a conspicuous ligature mark is found. When use of softer and more wide ligature fabrics, a less distinctive mark is noticed on the neck. The research revealed characteristics such as dribbles of saliva, transverse tears of carotid affection, abrasions, bruising and rope burns around the ligature mark as well. The ligature mark was usually above the thyroid cartilage, made upward and backward, depending on the location of the knot, to the right or left of the occipital zone. It has been found that the tissues below the ligature mark were pale and gleaming in 197 cases, with blood effusion seen in 3 cases. After the ligature around the neck has been bonded the blood effusion experienced following a lengthy drop. Post-mortem staining happened in 74.5% of the posterior and in 25.5% of the lower limbs based on the duration of the hanging. 10,77 percent of cases have been reported to have accidental discharge from anal and external urethral meat. The most frequent cause for hanging was marital disharmony. The rate of hyoid bone fracture was 3.5%. Thyroid cartilage fracture was 4.5%. The Delayed deaths were minimal.

Since the study was limited to a specific region, the areas confined to Osmania Medical College and hospital jurisdiction were covered. Deceased information is focused primarily on the records of the police, family, inquiries and photographs from the incident scene.

Conclusion

The high suicide rate among young adults, particularly women, is a major socio-economic burden for our society. Avoidance of suicide is challenging because of its private existence and easy access to ligature points and supplies. The main cause behind suicide by hanging is marital discontent, organic diseases and dowry abuse.

Ethical Clearance: Ethical clearance was obtained from College institutional ethics committee of Osmania Medical College and General Hospital prior to the commencement of the study.

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