

Original Research Paper

Analysis of Asphyxial Deaths Due To Hanging

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Abstract

Violent deaths resulting from asphyxia chiefly includes Hanging. Medico-legal questions likely to arise in case of hanging are mainly, whether the death was caused by hanging was suicidal, homicidal or accidental. Simulated suicidal hanging interferes the investigating process in unnatural deaths. To arrive at conclusion, detailed external examination, internal examination and analysis of samples, plays vital role. Apart from autopsy the ligature material used, place, point of suspension and review of scene of crime may add to the conclusion. Mumbai city it is considered as city of glamour & heart of state and cosmopolitan population. Always with some stress, suicide by hanging is noted in productive age group of youngsters. Present study is conducted at Government Medical College, Mumbai. All cases of alleged history of hanging brought for autopsy examination were studied. After detailed external and internal examination preserved necessary samples. The medico-legal examination records and inquest papers are analyzed. The observations and analysis of the study is presented here.

Key Words: Asphyxia, Hanging, Ligature Mark, Suicide

Introduction:

Hanging is a form of asphyxia death due to constriction of the air passage at the neck, as a result of suspension of the body by a ligature in the form of a noose, applied in such a manner, when weight of the body or other part of the body e.g. head, act as a constricting force. [1] Asphyxia means 'lack of oxygen'.

Hanging is ordinarily presumed to be suicidal unless the circumstantial and other evidences are strong enough to rebut the presumption. [2] When the constricting force of the ligature causes compressing narrowing of laryngeal and tracheal lumen causing blockage of the airway. [3] Suicide is defined by Beck as "a willful self-inflicted life threatening act which has resulted in death". [4]

Statistics show that India has the highest suicide rate in the world, marginally behind China, but ahead of the west. [6] For men 40% of suicides were among people of age group 15-29. For women, it was nearly 60%. About 95-100 people commit suicide in India every day. [8] Mumbai ranks 3rd among cities in suicide rate in India. [6] As per Police statistics 3 lives lost per day due to suicide Mumbai.

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As per police statistics 2 lives lost per day in Navy Mumbai. [7]

Medico-legal questions likely to arise in case of hanging are mainly, whether the death caused by hanging was suicidal, homicidal or accidental, or whether person was intoxicated with any drugs or alcohol. Time since death, any concealed injuries over body, Simulated suicidal hanging interferes the investigating process in unnatural deaths.

To arrive at conclusion, detailed external examination and analysis of samples plays vital role. Apart from autopsy the ligature material used, place, point of suspension and review of scene of crime may add to the conclusion.

Present study comprises examination of victims of asphyxia leading to death and body of who's referred for post-mortem examination and opinion. The Study consists of complete external and internal examination.

The internal examination of neck structures was done to note down rupture of vessels, hemorrhages any fracture of hyoid bone or thyroid cartilage and efforts made to differentiate between suicidal hanging and ligature strangulation.

Material and Methods:

This study is carried out at Government Medical College and Hospital Mumbai. It is a regional referral centre in Mumbai, where various cases are referred for medico-legal post mortem examination and for expert opinion.

Only the alleged history of hanging cases is included in study. The natural deaths,

accidental deaths, deaths due to multiple injuries are excluded in this present study.

A study of hanging cases brought for post mortem at above institute during period of 1st January to 31st December year in 2012.

We have examined 60 cases of alleged history of hanging. The information is gathered from analyzing the police inquest panchnama and ADR report and statements of relatives taken by police during investigation, study of clinical papers in hospitalized deaths of history of hanging, relatives of deceased were interviewed in some cases where relatives present at the time of post-mortem.

Complete external examination which includes general examination of body, physical parameter like total length, physique, and any other injuries on the body.

Neck is examined with respect to the injuries and ligature mark position, situation with respect to anatomical landmarks, color; texture any other injuries on or around ligature mark on the neck. Face is examined for congestion, cyanosis, petechiae, and ecchymosis. Eyes are examined for conjunctival hemorrhages and other orifices are examined for fluid or blood.

Salivary glands were examined for congestion and hemorrhage. Position of tongue either clinched or inside mouth, dribbling of saliva, Semen emission or defecation. In indicated cases photographs were taken. External examination is followed by internal examination included dissection and evacuation of cranial cavity and thoracic cavity.

Then neck dissection is done in bloodless field. Dissection is done layer by layer with respect to skin, neck muscles, vessels, other soft tissue and internal deep structure of neck. Focusing light and magnifying lens is used during internal and external examination.

Common and internal carotid artery is seen for endothelial damage. Thyroid cartilage and hyoid bone examined and dissected to rule out injury or fracture. Simultaneously larynx and trachea dissected. Salivary glands were examined for congestion and hemorrhage noted.

After dissection of block the fracture of hyoid bone is seen, simultaneously larynx and trachea is seen for congestion or edema.

In systemic dissection visceral pleura, pericardium was seen. Also looked for any other injury was present internally.

After completion of autopsy viscera for chemical analysis is preserved and also various samples collected such as blood for grouping, ligature material, cloths with stains, vaginal swab for chemical analysis. Every case is examined

with respect to above points to arrive at an opinion to cause of death.

Observations and Results:

In this study cases are divided in seven age groups and maximum cases 26 cases (43.33%) were found in 21-30 age group followed by 23.33% cases in 31-40 years. six cases were from juvenile tender age group below 18 years. these cases were related to exam results and parents scolding. (Table 1)

Out of 60 cases of hanging 37 were males (61.66%) and 23 were females (38.33%) female. Male female ratio is 1.6:1. (Table 2)

According to marital status in our study 15 cases (25%) were unmarried, 41 cases (68.33%) married and two cases were of whose spouse was dead. No deceased in divorce state found. (Table 3) In present study out of total 60 case 71.66% cases belongs to Hindu religion 25% were Muslim and 3.3% were Christian. (Table 4)

Place of suicide was home in 49 cases (81.66%), custody in two cases (3.3%), work place three cases (5%) and other at various places jungle, truck etc. in five cases (8.3%) in this study. (Table 5) Maximum cases 24 cases (40%) of suicide occurred in morning followed by afternoon in 30% cases. (Table 6)

In our study history of chronic disease was present in 18.33% and mental disorder in 1.6%. History of addiction was positive in nine males out of total 37 cases and only in one female (4.3%). In this research Dupatta was used as ligature material in 38.33% cases, rope in 35% cases. Sari and other materials were used in 13.33% each. (Table 7)

On external examination cyanosis of nails seen in 28% cases, salivary stain was present in 17 cases (28.33%); tongue was protruded and clinched between teeth in 30% cases; semen emission in 20 cases (57%) out of 37 males and menstrual bleeding was seen in two cases out of 23 cases at the time of suicide. (Table 8) On internal examination petechiae were seen on lungs in 48 cases (80%), heart 9 cases (15%) and in eyes 10 cases (16.6%).

Parchmentization of ligature mark seen in 39 cases (65%), hyoid bone fracture in 8.3% and thyroid cartilage fracture in 3.3% cases. (Table 9) In this study Ligature mark was seen above the thyroid cartilage in 52 cases (86%), at the level 2 cases (3.3%) and below in 6 cases (10%). Post-mortem lividity was present over lower limbs, abdomen, and over back in 15% cases. In present study two people with suicidal hanging died after hospitalization and suicide note was found in four cases out of 60 cases.

Discussion:

Most commonly affected age group is between 21 to 30 years. It correlates with other authors studies. [5, 9-11] Suicide by hanging showed male predominance. [5] Productive younger age group is commonly vulnerable.

Prevalence of suicide is more in married people in our study similar with study of Chavan et al and N. Vijayakumari. [5, 11] Out of 21 married women, 10 women had committed suicide within 7 years of marriage.

The summer and winter season contributes equal cases of suicide. Relatively fewer cases occurred in monsoon season. Maximum cases have occurred in morning i.e. 06 to 12 pm. Ill health due chronic disease also contributes to cause of suicide. There is relation between alcohol consumption and suicidal tendency is found. Place of choice for suicide is home in maximum cases. Maximum cases with complete Hanging were found. We found suicide note in 4 cases out of 60 suicidal hanging cases.

Patterned ligature mark is found in all cases. Ligature mark is completely circling the neck ill the cases. Hanging was complete in almost cases. Parchment is seen in 65% cases.

Petechial hemorrhage present in 80% cases most commonly associated feature with hanging. Fracture of hyoid and thyroid is seen in few cases. Negative findings are not a single case with rupture of vessels is seen.

Conclusion:

Hanging is always considered suicidal in nature until contrary is proved. Asphyxia due to hanging is commonly preferred mode of suicide as non-expensive, death is certain. Meticulous external and internal examination can help to arrive at confirm opinion as to the cause of death and also to reply questions of investigating officer answers on different points.

Chemical analysis samples also play vital role, however more detailed study is required with crime scene visits.

References:

1. J.B. Mukharjee. Textbook of Forensic Medicine and Toxicology, 3rd Edition
2. Krishan Vij. Textbook of Forensic Medicine and Toxicology, 5th Edition
3. K S N Reddy. Essentials of Forensic Medicine and Toxicology, 11th Edition
4. Sandeep S Kadu, Rajshrikant Asawa. Medico-legal evaluation of suicidal deaths in rural area.
5. Chavan K.D et al. Study Of Suicidal deaths In Rural Region of Beed District of Maharashtra, International Journal of Medical Toxicology and Legal Medicine, Vol. 1, No.2, 1999, Jan-June, P. 29-31.
6. National Crime Records Bureau. Accidental deaths and suicides in India. New Delhi: Government of India; 2012
7. Publication: The Times Of India Mumbai, Date: Feb 22, 2008; Section: Times City ; Page: 5

8. www.ndtv.com/article/India/suicide rates-in-India are highest in the 15 to 29 age group report.
9. Patel A.P., Bansal A. et al. Study of Hanging Cases in Ahmedabad Region, JIAFM, vol.34 no.4 Oct-Dec 2012, page no.343-345
10. Th.Meera et al. Pattern of Neck Findings in Suicidal Hanging-A Study in Manipur. Oct- Dec 2011, Vol. 33, No. 4, page 350-352
11. N. Vijayakumari. Suicidal Hanging: A Prospective Study, JIAFM October- December 2011, Vol. 33, No. 4, page 353-355

Table 1: Age Wise Distribution of Cases

Age group(yrs)	Cases	Percentage
0-10	0	0
11-20	6	10
21-30	26	43.33
31-40	14	23.33
41-50	6	10
51-60	4	6.6
60 onwards	4	6.6

Table 2: Sex Wise Case Distribution

Sex	Cases	Percentage
Male	37	61.66
Female	23	38.33

Table 3: According to Marital Status

Status	Cases	Percentage
Unmarried	15	25
Married	41	68.33
Divorce	0	0
Spouse dead	2	3.3

Table 4: According to Religion

Religion	Cases	Percentage
Hindu	43	71.66
Muslim	15	25
Christian	2	3.3

Table 5: According to Place of Suicide

Place of Suicide	Cases	Percentage
Home	49	81.66
Custody	2	3.3
Work Place	3	5
Hospital	1	1.6
Other	5	8.3

Table 6: According to Time Period of Suicide

Time	Cases	Percentage
Morning	24	40
Afternoon	18	30
Evening	8	13
Night	7	11.66
Midnight	3	5

Table 7: Ligature Materials Used For Hanging

Ligature material used	Cases	Percentage
Rope	21	35
Dupatta	23	38.33
Sari	8	13.33
Other	8	13.33

Table 8: Positive Findings on External Examination

External Findings	Cases	Percentage
Saliva stain	17	28
Tongue protruded	18	30
Cyanosis	17	28
Seminal ejaculation	20 out of 37	54
Menstruation	2 out of 23	9

Table 9: Positive Findings on Internal Examination

Internal Examination	Cases	Percentage
Petechial hemorrhage	48	80
Parchmentization of skin	39	65
Hyoid or thyroid fracture	5	8.3