

Analysis of asphyxia death due to compression around the neck and significance of cello tape sample

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Abstract

This present study was performed on cases of death due to compression of neck by any form like ligature material due to hanging, strangulation etc brought for postmortem examination at mortuary of Government Medical College, Kota, Rajasthan, India during period of 1st January 2019 to 31st December 2019. A total of 1296 postmortem was conducted, out of which 152 were of compression of neck by means of any form. Out of them 143 cases were of hanging, 1 was ligature strangulation, 1 was manual strangulation, 1 was of hanging with antemortem injury over body and 6 were under query as sign of asphyxia present over body but ligature mark was not clearly visible. We observed that dribbling of saliva present in most cases of hanging but not seen in ligature and manual strangulation cases. In query cases we had taken sample of cello tape which was taken on the paper from around the neck for presence of fiber & foreign bodies and its cross match with ligature material. The final cause of death was given after receiving of FSL reports.

Keywords: Hanging, Strangulation, Compression of neck, Cello tape, Dribbling of saliva.

Introduction

Violent asphyxia deaths is one of the most important cause for unnatural deaths among which hanging, strangulation are commonly encountered in the professional life of forensic expert during day to day autopsy. Suicide is a major socioeconomic and public health issue worldwide. Deaths resulting from hanging strangulation shows feature amongst which the ligature mark at the neck is considered to be decisive. As we know Hanging is one of the most leading causes of death in the world which accounts more than a million deaths annually.¹ In India, hanging is second common method of committing suicide after poisoning. Over the past 30 years the incidence of suicide by hanging is on increase, especially among young adults.² The fact that 71% of suicides in India are by persons below the age of 44 years leads a huge social, emotional and economic burden on our society.³ However characteristics finding, the ligature mark, found around the neck in strangulation and hanging and absence of ligature mark or faint ligature mark creates doubts. Hanging is a form of violent asphyxia death in which the body is suspended by a ligature from above that constricts the neck and prevents entry of air into lungs. The constricting force is the weight of the body.⁴ Sometimes the body completely suspends from above and is called complete hanging. When some part of body touches the ground, the procedure is called incomplete or partial hanging.⁵ Hanging produces painless death for the victims and there is no costs involvement other than that of the ligature material. A thin rope around the neck will cause unconsciousness in 15 seconds.⁶ Strangulation is that form of asphyxia which is caused from constriction of the neck by a ligature without suspending the body. Pulling a U-shaped ligature against the front and sides

of the neck while standing at the back can cause death.⁷ Strangulation deaths are classified on the basis of means used to constrict the neck and are of following types. Ligature strangulation, Manual strangulation or throttling, Mugging, Bandedola, Garroting and Palmar strangulation.⁸ As we know in suspicious case circumstantial evidence having important role. Circumstantial evidence: It is indirect type of evidence, which was obtained from the suspicious circumstances. In case of death due to pressure over neck and in which ligature mark is not clear the circumstantial evidence can be taken, Cello tape from around the neck can be taken on paper for cross match with ligature material. Forensic science laboratory used to search out the fibers on cello tape and they tried to cross match it with ligature material. When a ligature material collected from the crime scene FSL team used to collect the sample from the suspension point example fan etc. FSL also used to give report regarding presence of fibers on hanging point and same on neck of deceased with cross match. A proper keeping this in mind we conducted a study, to focus on the above mentioned factors associated with death due to compression around the neck.

Material & Methods

This prospective study was conducted during 1st January 2019 to 31st December 2019 at the Government Medical College, Kota. During this period a total of 1296 postmortem was conducted, out of which 152 were of compression of neck by means of any form. We included cases in which the history and scene of crime examination report given by the investigating police officer and history given by the close relatives and friends who attended the inquest were suggestive of suicide by hanging.

Information regarding ligature material and other related information were gathered from the victims attendants, during postmortem samples was collected or not also noted. We took details of postmortem reports to find out cause of death and specific sample tape around the neck for cross matching it with ligature material is also noted.

Observation & Results:

Out of 152 cases, 143(94.07%) were of hanging clearly, 1(0.65%) case was ligature strangulation, 1(0.65%) was manual strangulation, 1(0.65%)

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was of hanging with antemortem injury over body and 6(3.94%) were under query. (Table-1). The query cases did not show any ligature mark or other injury mark on external examination. Internal examination shows muscle hematoma. Signs of asphyxia seen in all cases. The most commonly used ligature materials were saree and thereafter nylon material and electric wire. Out of 152 cases 28.29 % deceased used saree as ligature material and 23.02 % used nylon material also called as nylon rope. This table was included the results of FSL reports of ligature material. (Table-2). As we know dribbling of saliva is very important sign of antemortem hanging total of 132 cases shown mark of dribbling of saliva which is 86.84 % of total cases and remaining 13.16 % cases dribbling of saliva mark not seen. The 6 cases were very important in these cases mark of ligature was very faint and it is almost absent. In these all cases cello tape was taken for FSL. Cello tape which was taken on paper from around the neck for presence of fiber & foreign bodies and their cross match in all these cases police or investigating authority were advised to visit crime scene. They also advised to collect the ligature material and preserve it. Forensic science laboratory always asked the ligature material with cello tape if they found any fiber or foreign bodies on the cello tape sample. In all these cases forensic science laboratory also visited the crime scene and they collected desirable samples. This visits helps and confirm the ligature material. Out of query 6 cases in 2 cases there was use of saree and dupatta was used in 2 cases (Table -4). In remaining 2 cases nail foreign body and fiber of towel was there.

Discussion:

In most conditions ligature material is not available during post mortem examination. In Kota most of the time police came with only dead body. Most of the time relatives took dead body to hospital from the crime scene. In that cases police was informed by hospital authority. It means police or investigating authority most of the times comes with body only they don't want to waste the time to visit the crime scene. As the burden of work is so much on the shoulder of police they used to close the chapter without proper investigation. However despite the fact that the ligature is not available the police prepare the inquest and include the statement of eye witnesses regarding reason and manner of the death. At the time autopsy police by showing their intelligence provide the punchnama called "farh surat hal" which does not contains any details regarding ligature material hence material used to be under query.

In the present study of 143 cases of hanging, which highest in number the incidence of hanging is most common due to high suicide rate. High suicide rate impose a huge social, emotional and economic burden on our society. Both in developed and developing countries suicides among young seem to be on increase.9.10.11.12 The most commonly used ligature materials were nylon materials. In another study done by B.R. Sharma et al. (2008) dupatta was the commonly used ligature material by females, whereas saree was used by males.13 Easy availability of these materials widely makes restriction very difficult. Hence to prevent suicides by hanging we should identify the various precipitating factors and focus on its prevention. Dribbling saliva was observed in most of the cases which is of 86.84 % cases, in spite of different findings were observed by the study done by Yadav et al¹⁴ & Ashok Kumar Samanta et al¹⁵. Ashok et al observed dribbling of saliva was observed in only 47 % cases¹⁵. Yadav et al observed dribbling of saliva in 40 % cases¹⁴. In cases the sample for FSL was taken to rule out any mislead. In these cases mark was almost nil but other findings was consistent with asphyxia. In these cases sample of Cello tape and their reporting from FSL helps investigating authority to finalize the results. No other studies suggest and did this kind of evidence till time.

Conclusion:

The high incidences of suicidal hangings were amongst asphyxia death when pressure is present around the neck. Private nature of hanging and easy availability of ligature materials and ligature points makes prevention of suicide by hanging a difficult task. Also a change regarding social practices and perceptions in India will prevent most of the suicides. Dribbling of saliva

present in case of hanging is a sure sign of antemortem hanging. In query cases where mark of ligature material is questionable, sample of cello tapes helps the forensic expert a positive boost. So it is request to forensic experts please ensure to take cello tape samples if ligature mark is very faint or under questionable.

Table: 1 questionable.

Cause	No of case	Percentage
Hanging	143	94.07
Ligature strangulation	1	0.65
Manual strangulation	1	0.65
Hanging with other injuries over body	1	0.65
Query cases	6	3.94
Total	152	100

Table: 2 (This table includes the final reports given by FSL)

Ligature material	No of cases	Percentage
Orna (Dupatta)	25	16.44
Joute rope	12	7.89
Saree	43	28.29
Nylon rope	35	23.02
Towel	2	1.31
Electric wire	33	21.71
Hand	1	0.65
Other	1	0.65
Total	152	100

Table: 3 (Mark of saliva)

Dribbling of saliva	No of cases	Percentage
Yes	132	86.84
No	20	13.16
Total	152	100

Table: 4 (Only cases which was under query and ligature material was finalized after receive of FSL reports)

Ligature material	No of cases	Percentage
Saree	2	1.31
Dupatta	2	1.31
Nail	1	0.66
Towel	1	0.66
Total	6	3.94

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