

Homicidal Strangulation: The Leading Cause in All Asphyxial Deaths in Allama Iqbal Medical College, Lahore during the Year 2013

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ABSTRACT

Objective: The objective of this study was to find out the commonest cause of death in these asphyxial deaths during the period of study and to compare it with other studies previously carried out on this subject.

Study Design: Observational / descriptive study.

Place and Duration of Study: This study was conducted at Forensic Medicine Department AIMC, Lahore from January 2013 to December 2013.

Materials and Methods: Total medico-legal autopsies were 221. Out of these 32 were the cases of mechanical asphyxial deaths, which were selected for this study. The documents scrutinized for this purpose was, autopsy reports, police papers and hospital charts.

Results: Out of all post-mortems conducted, the mechanical asphyxial deaths were 32 (14.47%). Amongst them the cases of strangulations were the most 16 (50%), next in number were the cases of drowning 8 (25%). There were 6 (18.75%) cases of throttling, and only 2 (6.25%) cases were of hanging. None of them was the case of traumatic asphyxia. In 32 cases of all asphyxial deaths males were 17 (53.12%). Amongst these 16 cases of strangulation the 3rd and 4th decades showed higher incidence. In all asphyxial deaths male (7) and females (15) show almost equal distribution. Strangulation is the most prevalent cause of death in all 32 asphyxial deaths. Almost all strangulation deaths were homicidal and hanging was suicidal. Similarly all throttling cases were homicidal. Ligature strangulation and throttling were the methods used in homicidal manner (50.00%) while hanging was used for suicide (6.25%). In hanging the position of the knot was at occiput in all cases. In ligature strangulation showed the knot on the front in almost all cases.

Conclusion: Amongst all asphyxial deaths the most prevalent cause was strangulation and manner in all was homicidal, it is one of the commonest causes of deaths in our country. So strangulation remains the most preferred method of homicidal asphyxial killings.

Key Words: Asphyxia, Hanging, Ligature Strangulation, Throttling, Drowning, Manner of Death

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INTRODUCTION

The neck is the most important and vulnerable region because it acts as a conduit for important structures, like Carotid vessels, Vertebral vessels, Esophagus and Trachea. Hence it is the important link between Head, Neck and Chest. This region is most susceptible in many injuries to the neck, especially the mechanical compression.

The resultant compression will lead to mechanical asphyxia. The most common means to achieve asphyxia by compression is either by ligature or manual compression. The weight of the body is the main constricting force in hanging¹. Also any direct blow on neck can cause similar damage or arm locks in wrestling Accidental entrapment in ropes can also cause this compression².

Resultant outcome of mechanical compression depends upon the structures involved, individually or in total and their effects. The methods adopted to cause this blockade, the level of constriction and the quantum of force used will change the final outcome.

Only two kg of weight is sufficient to block jugular veins, resulting in blocking the return of blood flow to the heart and manifesting as cyanosis, congestion and petechiae. To block Carotidvessels a weight of 3.5 kg will be sufficient resulting in occlusion of main blood flow to the brain causing cerebral ischemia. A blow or sudden pressure on baro-receptors in carotid bodies will cause sudden cardiac arrest. The airways can either be blocked indirectly by pushing the base of tongue

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upwards and backwards against posterior pharyngeal wall or by direct external pressure. A weight of 15 kg will be required to occlude hard and rigid structures of trachea. The direct compression of the larynx will also cause the fractures of the hyoid and thyroid cartilages^(2, 3, 4, 5, 6).

Every type of constriction to the air passages will cause reduction in air supply causing tissue anoxia manifesting as vascular endothelial damage, capillary dilatation, increasing permeability of blood outwards and ultimate stasis of blood. This patho-physiology will be visible as cyanosis, congestion, petechial hemorrhagedema and serous effusion. The resulted stasis will further cause reduction in circulating blood volume, and hence a viscous cycle is set causing more and more anoxia.

MATERIALS AND METHODS

Data Source: The source of this data was from the 221 medico-legal autopsies conducted during 2013 in the Department of Forensic Medicine & Toxicology Allama Iqbal Medical College, Lahore. The information was collected from autopsy reports, police documents and hospital records. The parameters which were related to asphyxial deaths were focused as, age, gender, types & level of constriction and whether hyoid bone was fractured or not.

Selection Criteria:

Inclusion Criteria: Those cases where the cause of death was by means of mechanical asphyxia were included.

Exclusion Criteria: The cases having other causes than mechanical asphyxia were excluded

RESULTS

Cause of Death: In total 221 medico-legal autopsies which were conducted during 2013 in the Department of Forensic Medicine & Toxicology, Allama Iqbal Medical College, Lahore 32 cases (14.47%) were of mechanical asphyxial deaths. (Table No. 1)

Table No. 1 Causative Agent (221 cases)

	Total	%age
Blunt Means	30	13.57
Sharp Means	19	8.6
Fire-arms	95	43.13
Poisoning	6	2.71
Burns	5	2.26
All Asphyxial Deaths	32	14.47
Electrocution	2	0.64
Natural Deaths	32	14.47
Total No. of Cases	221	100.00

Types of Neck Compression: In our study out of 32 cases of asphyxia, in 16 the death was caused by ligature strangulation (50%), 8 died by drowning

(25%), 6 were throttled (18.75%) and in 2 the cause of death was hanging (6.25%). (Table No. 2) (Fig. No.1)

Table No.2: Types of Neck Compression (220 cases)

Types	No. of Cases	%age
Strangulation	16	50.0
Drowning	8	25.0
Throttling	6	18.75
Hanging	2	6.25
Total	32	100.00

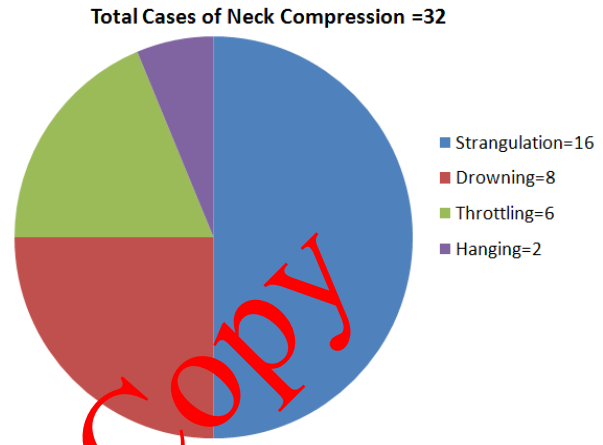


Figure No.1: Neck compression

Table No. 3: Sex Distribution in 32 Cases of Asphyxia

Type of Asphyxia	Male/%age	Female/%age	%age	Total
1. Strangulation	7 (21.88%)	9 (28.12%)	50%	16
2. Drowning	7 (21.88%)	1 (3.12%)	25%	8
3. Throttling	3 (9.375%)	3 (9.375%)	18.75%	6
4. Hanging	0 (0%)	2 (6.25%)	6.25%	2
Total	17 (53.125%)	15 (46.875%)	100%	32

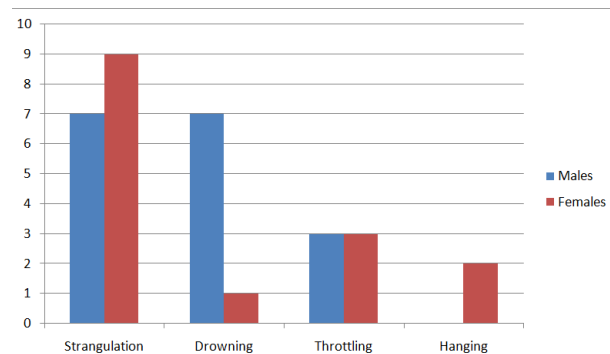


Figure No:2 Sex Distributions of 32 Cases of Asphyxial Deaths

Sex Distribution: The strangulation is equivocal in two genders, 7 males and 9 females. The next higher

number is of drowning 7 in males and only 1 in females showing more exposure of males. The throttling in both sexes in this study had equal in numbers and only 2 females performed hanging. (Table No. 3)

Distribution On Age: In consideration to age the most common age group involved in our study was between 15-25 years. Out of 32 cases, 13 were in this age group (7 of Strangulation, 5 of Drowning and 1 of Throttling). And next to it was the age group of 25-35 years, in which there were 6 cases (4 of Strangulation, 1 of Throttling and 1 of Hanging). The third in number was the age between 35-45 years, having 3 deaths (1 of Strangulation and 2 of Drowning). (Table No. 4)

Table No. 4: Age Distribution in 32 cases

Years	Strangulation	Drowning	Throttling	Hanging	Total
5-15	4	0	4	0	8
15-25	7	5	1	0	13
25-35	4	0	1	1	6
35-45	1	2	0	0	3
45-55	0	1	0	0	1
>55	0	0	0	1	1
Total	16	8	6	2	32

Manner of Death: In all un-natural deaths the manner is homicidal, suicidal or accidental. In this study, out of 32 cases of asphyxial deaths, the homicidal manner was seen in 22 cases which were 68.25% (16 of Strangulation and 6 of Throttling). Suicidal cases were just 2 (6.25%) and accidental manner was seen in 8 cases (25%). (Table No. 5)

Table No. 5: Manner of Death in All Asphyxial Deaths (n=32)

	Homicide	Suicide	Accidental	%age
Strangulation	16	0	0	50%
Throttling	6	0	0	18.75%
Drowning	0	0	8	25%
Hanging	0	2	0	6.25%
Total no. of Cases	22	2	8	
Percentage	68.75%	6.25%	25%	100%

DISCUSSION

Incidence of Death: In our study the asphyxial deaths were 32 out of 221 of total medico-legal autopsies which were carried out at the Department of Forensic Medicine & Toxicology, Allama Iqbal Medical college, Lahore during 2013 with an incidence of 6.9 and 14.47% of all types of deaths.

This incidence in our study is higher than the studies conducted by Rehman et al in 2000 1.6%⁷, Malik SA et al in 1999 1.75%⁸, and by Bashir MZ et al in 2000 1.88%⁹ in asphyxial deaths. In study of Srivastava AK et al in 1987 it was 2.94%¹⁰ of all deaths 24.53% of all asphyxial deaths; in Hussain SM et al in 2008 it was 5%¹¹ of all deaths and 82% of asphyxial deaths, and in

study of Hussain SM 1.17%¹² & Demirci M2009 12.4%¹³ of all and 5.5% of all deaths but lower than that of Azmak D 2006 15.7%¹⁴ in Edirne Turkey.

Type of Neck Compression: In our study the incidence of ligature strangulation is the highest 50.0% (n=16), then is throttling 18.75% (n=6), drowning was 25.0% (n=8) and hanging was 6.25% (n=2). Our study values are showing Ligature strangulation as higher number than hanging in comparison to other studies as, (Hanging 57.0%, Ligature strangulation 21.0%, and Manual throttling 18.0%)⁹ by Bashir MZ et al in 2000, (Hanging 61.17%, Strangulation 21.19% and Manual throttling 17.64%)⁸ in Malik Sa et al 1999, (Hanging & Ligature strangulation 80.70% and Manual throttling 19.30%)⁷ Rehman IU et al in 2000, (Hanging & Ligature strangulation 85.0% and Manual throttling 6.0%)¹⁵ by Sharma BR et al In 2008, (Ligature strangulation 12.40%)¹³ Demirci S, et al in 2008, (Ligature strangulation 19.23%, Manual throttling 46.15%)¹⁰ Srivastava AK et al in 1987, (Hanging 41.80%, Ligature strangulation 2.90% and Manual throttling 2.30%)¹⁴ by Azmak D et al in 2006 (Hanging 69.0%)¹¹ by Hussain MS et al in 2008.

Age Distribution: In all asphyxial deaths (hanging, ligature strangulation, drowning and throttling) the dominant age group in our study is 15-25 (n=13). Next is 5-15 (n=8). And on 3rd number is 25-35 (n=6) in our study. This is quite different from previous studies 57%¹¹, 20-30 age group¹², and average age of 41.9 years¹⁴. In study of Bowen¹⁶ the highest incidence was seen of hanging in 50-59 age groups. In another study of Guarner & Hanzlick¹⁷ average age of 31 years showed highest incidence in USA.

Sex Distribution: In Ligature Strangulation out of total 32 cases of asphyxia, 7 were males (21.88%) and 9 were females (28.12%). Next were cases of drowning, in which 7 were males (21.88%) and 1 was female (3.12%). The cases of throttling were 6, out of them 3 were males (9.375%) and 3 were females (9.375%). Only 2 cases of females were those of hanging (6.25%). While the study of Azmak¹⁴ is showing 83.9% cases were those of males. Bashir MZ⁹ et al shows males 73.07% and females 26.92%.

In Bashir MZ⁹ it is shown that ligature strangulation and throttling 58.9% males and 41.02% females respectively. For Ligature strangulation Azmak D¹⁴ has reported male/female ratio as 1:3 and for throttling as 1:2. 30.77% were males and 69.23% were those of females in study of Srivastava AK¹⁰ indicating higher incidence of females than males.

Manner Of Death: In our study the homicidal manner is higher (22 out of 32: 68.75%) than the study of Bashir MZ⁹ showing 45.05% but is less than of Demirci S¹³ showing 85%.

The suicidal manner is quite low in our study (4 out of 32: 6.25%) than Bashir MZ⁹ showing 45.45% and that

of Azmak D¹⁴; indicating 47%. It is less than of study of Demirci S¹³ showing 15%. There were eight cases (8 out of 32: 25%) of accidental drowning; Bowen DA¹⁶ reported 5% of accidental auto-erotic asphyxia.

CONCLUSION

Amongst all asphyxial deaths the most prevalent cause was strangulation and manner in all was homicidal, it is one of the commonest causes of deaths in our country. So strangulation remains the most preferred method of homicidal asphyxial killings.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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