Original Article

Ashphyxial Deaths

Ashphyxial Deaths: A Retrospective Study Conducted at Tertiary Care Hospital of Sindh

1. Waheed Ali 2. Pardeep Kumar 3. Abrar-ul-Hasnain 4. Zafar Ali Seenhro

1. Asstt.. Prof. of Forensic Medicine, 2. Asstt.. Prof. of Forensic Medicine, 3. Senior Lecturer of Forensic Medicine, 4. Lecturer of Forensic Medicine, LUMHS, Jamshoro

ABSTRACT

Objective: To study frequency of patterns and manners of asphyxial deaths autopsied at Liaquat University Hospital.

Study Design: Retrospective study

Place and Duration of Study: This study was conducted at the Department of Forensic Medicine and Office of Police Surgeon- Medico legal section, Liaquat University of Medical and Health Sciences Jamshoro/Hyderabad from January 2010 to December 2014.

Materials and Methods: Medicolegal files of autopsy were studied retrospectively. 135 files were finalized after scrutiny of 2033 autopsies. Causes, types and patterns of asphyxia were noted. Essential data was noted in a pre-designed proforma for study purpose. Data variables were analyzed on Microsoft excel and *Statistix* 8.1 using appropriate statistical tests. P value of ≤0.05 was taken of statistical significance.

Results: One hundred and thirty five cases of asphyxial deaths (out of 2033 autopsies) were studied. Age (mean ±SD) was noted as 49.7±8.9 years. Of 135 cases, 65.9% (n=89) were male and 34.07% (n=46) were female (X^2 = 112.5 p=0.0001). 28.1% and 8.14% of cases showed ligature and manual strangulation respectively. Hanging, drowning, traumatic asphyxia and throttling were noted in 42.21%, 12.59%, 5.18% and 3.7% respectively. Suicidal deaths in 29.6%, homicidal in 57.03% and accidental asphyxial deaths were observed in 13.33%.

Conclusion: Homicidal and suicidal deaths of hanging and strangulation seemed to be the major contributing causes of asphyxial deaths.

Key Words: Asphyxial Deaths, Autopsy, Homicide, Suicide, Sindh

Citation of article: Ali W, Kumar P, Hasnain A, Seenhro ZA. Ashphyxial Deaths: A Retrospective Study Conducted at Tertiary Care Hospital of Sindh. Med Forum 2015;26(9):2-5.

INTRODUCTION

Asphyxia literally means oxygen deprivation. Asphyxia is defined as an entity caused by interference of exchange of air between lungs and atmosphere due to mechanical/manual obstruction. The hanging, strangulation and the drowning are common causes of asphyxial deaths. The organs and tissues of various body systems are adversely affected by oxygen lacking and this causes death.[1,2] The term asphyxia points to the cessation of breathing of obstructive nature caused by a physical barrier. The obstruction site may extend right from nose, mouth, throat, larynx, bronchi and the alveolar lining mucosa, and this causes severe hypoxia. Surprisingly, the various clinical and pathological feature of different type of asphyxia vary a lot.[3] Most vulnerable organ to hypoxia is the brain. Its hypoxia causes unconsciousness, while heart may be pumping for several minutes even after cessation of breathing.[4] Classical features of asphyxia are caused by various environmental factors, mechanical and traumatic factors, pathological conditions and iatrogenic causes. Exchange of gases is blocked mechanically in all types of asphyxias. Respiratory tract disease causes pathological asphyxia. While in toxic asphyxia, some poisonous substances impair the utilization of oxygen by tissues which may be due to poisoning of cell enzyme systems. Lack of oxygen in surrounding air is termed as environmental asphyxia.[5,2] Conventionally, asphyxia applies to all those conditions which interfere with oxygen supply of tissues critically below normal of working levels. Once oxygen supply is below critical levels necessary for cells and tissue survival, results in irreversible organ damage. Oxygen deprivation for duration of 5-10 minutes is sufficient to damage the brain and cardiovascular systems permanently resulting in death. Hanging, ligature strangulation, throttling, suffocation and drowning are the causes of violent deaths of asphyxial origin. Above conditions interfere with pulmonary ventilation resulting in oxygen lack termed as anoxic anoxia. Anoxia produces specific and non-specific pathological changes. Degeneration of parenchyma of body viscera is labeled as non-specific change. The increased vascular permeability, petechiae,

Correspondence: Dr. Waheed Ali Nahyoon
Assistant Professor of Forensic Medicine, LUMHS, Jamshoro
contact No.: 0335-2294474
E-mail: dr_waheednahyoon@yahoo.com

tardeus sports and tissue cyanosis are a few of specific pathological changes.[2,6,7]

Currently, asphyxias deaths have been on incline in the country because of social issues, economic constraints and various other causes. Less privileged and financial crises are serious problems, sometime quite intolerable, making them depressed and a tendency to live no more. The present study highlights the frequency of asphyxial deaths and their types and socio economical status of the victims at our tertiary care hospital.

MATERIALS AND METHODS

The present study was conducted at the Department of Forensic Medicine and Office of Police Surgeon-Medico legal section, Liaquat University of Medical and Health Sciences Jamshoro/Hyderabad. Patient files of autopsy were studied retrospectively to find out the asphyxial deaths; attended from January 2010 to December 2014. Of 2033 deaths, finally 135 cases of asphyxial deaths were selected for study purpose. Forensic department of Liaquat University hospital keeps the detailed reports of cases as they are part of medical jurisprudence to be presented at the courts of Law.

Autopsy reports were separated to find the demographic information of the victims. Asphyxia in terms of causes, types and patterns was recorded as in forensic reporting. Necessary records of medicolegal importance were noted in a pre-designed proforma. Medicolegal data was collected for analysis. Data was typed in Microsoft excel, copied and pasted to data sheet on *Statistix* 8.1. Student t test (one sample t-test) and Chi square test were operated for the analysis of numerical and categorical variables. Graphing was performed on Microsoft excel sheet. A p- ≤0.05 was defined as significant.

RESULTS

135 cases of asphyxial deaths, out of 2033 autopsies, were studied in a retrospectively (table 2). Demographic characteristics of study population are summarized as in table I. Age (mean ±SD) was noted as 49.7±8.9 years. Of 135 cases, 89 (65.9%) were male and 46 (34.07%) were female (X^2 = 112.5 p=0.0001). Majority of study subjects belonged to rural areas - 67.4%. Majority were non- educated i.e. 68.1%. Muslims and non-muslims were noted as victims (table I). 62% of cases belonged to lower social class, 27.4% to upper social class and 9.62% belonged to middle social class. Unemployment was noted in 76.2% of cases. Different patterns of asphyxial deaths are tabulated in table 3.

Strangulation with ligature and manual were found in 28.1% and 8.14% respectively. While hanging, drowning, traumatic asphyxia and throttling were noted in 42.21%, 12.59%, 5.18% and 3.7% respectively (Graph 2). Suicidal, homicidal and accidental patterns of asphyxial deaths were noted in 29.6%, 57.03% and 13.33% respectively (X^2 = 107.53 p=0.002).

Graph 1 shows the age categories distribution of study subjects. It was evident that majority of cases belonged to 4th decade; however 3 cases of childhood/adolescent age were noted as shown in table I.

Table No.I. Demographic characteristics of study population (n=135)

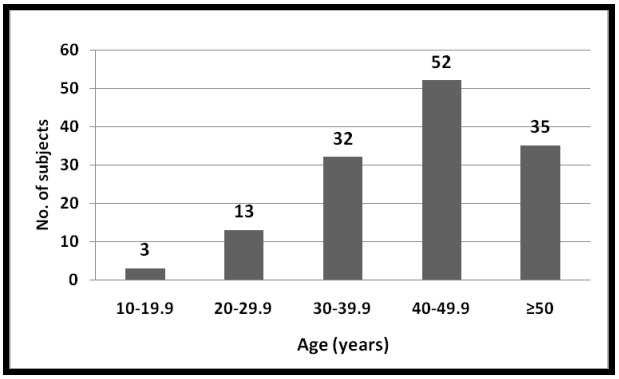
	No.	%
Age (mean± SD)	49.7±8.9 years	
Male	89	65.92
Female	46	34.07
Children	3	2.2
Rural	91	67.40
Urban	44	32.59
Educated	43	31.85
Non educated	92	68.14
Social class		
• Lower	85	62.96
• Middle	13	9.62
• Upper	37	27.40
Muslims	106	78.51
Non muslims	29	21.48
Employed	32	23.71
Unemployed	103	76.29
Farmers	27	20.0

Table No.2: Frequency of asphyxial deaths (n=135)

Total cases	Violent asphyxial deaths	
	No.	%
2033	135	6.64

Table No.3: Frequency of different patterns of asphyxial deaths in study population (n=135)

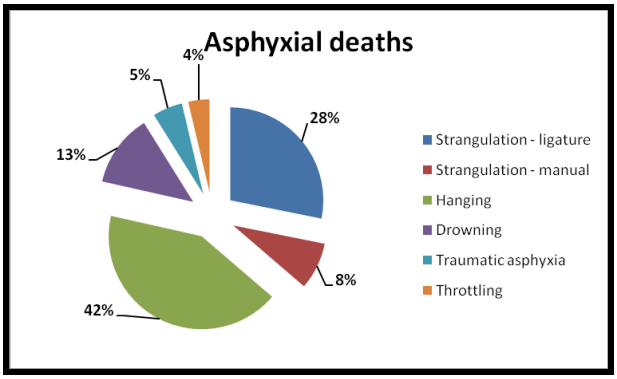
	No.	%
Strangulation - ligature	38	28.14
Strangulation - manual	11	8.14
Hanging	57	42.21
Drowning	17	12.59
Traumatic asphyxia	7	5.18
Throttling	5	3.7
Total	135	100



Graph No. 1: Bar graph showing age categories distribution of study subjects

Table No.4: Medicolegal aspects of asphyxial deaths in study population (n=135)

	No.	%
Suicidal	40	29.62
Accidental	18	13.33
Homicidal	77	57.03
Total	135	100



Graph- No.2. Asphyxial death distribution of study population

DISCUSSION

The Liaquat University Hospital, Hyderabad/Jamshoro caters a large number of medicolegal cases from wide areas of Sindh. Out off 2033 autopsies, 135 cases of asphyxial deaths were recorded in present study which showed a frequency of 6.64%. Our findings are consistent with the study of Tirmizi et al[8] which reported frequency of 7.08% due to violent asphyxia. Another cited study[9] had reported a 5.26% frequency of asphyxial deaths out of more than two thousands autopsies.[9] The findings of above studies are in keeping with the present study. A frequency of 15.7% of asphyxial deaths has been reported[10] which is very high and is in contrast to present and previous studies.[8,9] Such controversies might had been introduced due to longer duration of study was conducted for.

Of 135 cases, 89 (65.93%) were male and 46 (34.07%) were female (X^2 = 112.5 p=0.0001) in present study (table I), our these findings are consistent studies cited.[8,10] A Turkish study reported frequency of 79.8% for male; while another study showed frequency of 70.56% for male and 29.44% female committing suicide by hanging.[11] Another 10 years audit from India has reported male to female ratio of 3:2 which is highly comparable to the present study.[12] The male to female ratio (1.9:1) of present study is similar to a study cited.[8] Frequency of strangulation, hanging, drowning, traumatic asphyxia and throttling are in comparison to previous reports.[13-15]

Asphyxial deaths of drowning was remarkably noticed in male counterparts which is in consistent to previous studies which had reported frequency of 81.9% and 80.1% respectively.[16,17] Male dominancy in drowning asphyxial deaths is due to their life style due to swimming and consequently the drowning. Our findings are similar to study cited.[18] In present study, seven deaths were caused by traumatic asphyxia which is in keeping with previous study.[9] Majority of cases in traumatic asphyxia were male which is also consistent to above mentioned study.

In present study, ligature and manual strangulation was observed in 28.14% and 8.14% of cases which is consistent to a previous study reported from USA.[19] It was reported that the manual strangulation is always homicidal and most of the victims are the female and young children. Manual strangulation of present study findings are in keeping to above study.

As regards age of the asphyxial deaths cases, majority of cases were in their 4th decade (40 years) which is highly consistent with previous study from New Zealand conducted.[20] A previous study from Faisalabad had reported younger age in suicidal asphyxial deaths which is in contrast to the present study.[21]

The present study reports strangulation and hanging as common causes of asphyxial deaths. The present study has explored the frequencies of various modes, methods and patterns of violent asphyxial deaths as regards gender and age vulnerability.

CONCLUSION

Homicidal and suicidal deaths of hanging and strangulation seemed to be the major contributing causes of asphyxial deaths in present study. Both manners of asphyxial deaths, in one way or other, indicate a social and economic frustration and carelessness, which are preventable if solved with honesty. Homicidal and suicidal deaths are a good eye opener for the government and for organizations claiming of brining an uplift of socio economic justice in the country.

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

REFERENCES

1. Reddy KSN. Death and its causes. In: The essentials of forensic medicine & toxicology. 28th ed. Hyderabad: K Suguna Devi; 2009.p.110--115.
2. Rahman MM, Haque MR, Bose PK. Violent asphyxial deaths: A study in Dinajpur Medical College, Dinajpur. J Enam Med Col 2013;3(2): 91-93.
3. Miziara ID, Bertaccini F. Three different mechanisms of death: an unusual form of a child murder by asphyxia. Am J Forensic Med Pathol 2011; 32:164-5.
4. Badiadka KK, Kanchan T, D'Souza DH, Subhash K, Vasu S. An unusual case of self-strangulation by ligature. J Forensic Leg Med 2012; 19:434-6.
5. Ali SMA, Khalil I. Pattern of homicidal deaths in Peshawar and effects of ban on local

manufacturing of firearms. J Sheikh Zayed Med Coll 2012; 3:277-81.
6. Mirza FH, Adil SE, Memon AA, Ali Paryar H. Exhumatio - Nuisance to the dead, justified? J Forensic Leg Med 2012; 19:337-40.
7. Saeed A, Perveen H, Zafar T. Fatal homicidal violence against women and girls in Faisalabad. Ann Punjab Med Coll 2010;4:150-4.
8. Tirmizi SZ, Mirza FH, Paryar HA. Medicolegal investigation of violent asphyxial deaths – an autopsy based study. J Dow Uni Health Sci 2012; 6(3):86-90.
9. Singh A, Gorea RK, Dalal JS, Thind AS. A study of demographic variables of violent asphyxial death. JPFMAT 2003;3:Print ISSN-0927 – 5687.
10. Azmak D. Asphyxial deaths: a retrospective study and review of the literature. Am J Forensic Med and Pathol 2006;27(2):134-144.
11. Uzun I, Buyuk Y, Gurpinar K. Suicidal hanging: fatalities in Istanbul retrospective analysis of 761 autopsy cases. J Forensic Leg Med 2007; 14(7): 406-9.
12. Satish VK, Sonne L. Strangulation deaths during 1993- 2002 in East Delhi (India). Leg Med 2006; 8(1):1-4.
13. Bhosle SH, Batra AK, Kuchewar SV. Violent asphyxial death due to hanging: A prospective study. J Forensic Med Sci Law 2014; 23 (1):1-8.
14. Khalil ZH, Naeem M, Adil M, Khan MZI, Abbas SH, Alam N. Asphyxial deaths: a four year retrospective study in Peshawar. J Postgrad Med Inst 2014; 28(1):24-6.
15. Ullah A, Raja A, Yasmin, Abdul Hamid A, Khan J. Pattern of causes of death in homicidal cases on autopsy in Pakistan. Gomal J Med Sci 2014; 12: 218-21.
16. Singh OG, Lepcha C, Serma PC. Fatal accidental smothering: A Case Report. J Punjab Acad Forensic Med Toxicol 2011; 11(1):42-43.
17. Donson H. National Injury Mortality Surveillance Systems (NIMSS) – A profile of fatal drowning in South Africa: 2004. Medical Research Council/ UNISA. Pretoria.
18. Andrew TA, Fallon KK. Asphyxial games in children and adolescents. Am J Forensic Med Pathol 2007; 28:303-7.
19. Di Maio VJ. Homicidal asphyxia. Am J Forensic Med Pathol 2000; 21(1):1-4.
20. Beautrais A. Suicide in New Zealand I: time trends and epidemiology. NZ Med Assoc 2003;116 (1175):ISSN 1175 8716.
21. Lalwani S, Sharma GASK, Rautji R, Millo T. Study of suicide among young and middle aged adults in South Delhi. Indian J Prev Soc Med 2004; 35(3-4):173-8.