Original article

Epidemiological Profile of Medico-Legal Autopsy Cases Reported at a Tertiary Care Center

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Abstract

Aim: The objective of medical legal post-mortem examination is to establish the identity of a body when not known to ascertain the time since death and the cause of death; and whether that the death was natural or unnatural, and if unnatural whether it was homicidal, suicidal, or accidentally.

Material and Methods: The Present study is conducted in 200 corpses reporting for postmortem analysis over a period of one year above 18 years of age presenting to the Department of Forensic Medicine and Toxicology. The corpses are randomly selected and are assessed for the statistics regarding the epidemiology based on the autopsies performed. The Autopsy reports are anonymized with the patient code number, and sex, time of death, manner of death, pattern of death and cause of death data is documented.

Results: Male predominance was observed among the sudden death cases. Sudden death is more common among the cases brought from urban residential areas, with 136 out of 200 cases (68%). Among the causes of sudden death, the most commonly involved organ system was the cardiovascular system (46%), followed by the gastrointestinal system (20%), respiratory system (18%), central nervous system (14%) and genitourinary system (2%).

Conclusion: Our strongest conclusion is that male/female differences in medicolegal autopsies are highly dependent on historical time and geographic location. Increased frequency of sudden deaths among urban, married and adult male populations might be due to sedentary lifestyles in urban areas and increased stress among married individuals due to workload and family responsibilities, indicating a physical and mental disequilibrium in modern times resulting in this type of unexpected deaths.

Key Words: Body mass index, Forensic Medicine, Medicolegal Autopsies, Natural death

Introduction

Medicolegal autopsies form an integral and indispensable part of an investigation of sudden suspicious death. The profile of medico legal autopsy cases is important in order to know the death statistics in a region due to unnatural causes and also help to address the demographic needs according to the mortality statistics specific to that region. It is also necessary in order to prevent the preventable casualties in future and to study the genuine crime rate in the area.[1]

The objective of medical legal post-mortem examination is to establish the identity of a body when not known to ascertain the time since death and

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the cause of death; and whether that the death was natural or unnatural, and if unnatural whether it was homicidal, suicidal, or accidentally. Basically, a post-mortem examination means only when the body was examined after death and that the physician merely looked at the body fully clothed, or that he viewed the body at a Funeral Home, or in a mortgage. A complete autopsy involves opening of all the body cavities in all organs of the trunk, chest, and head. In most cases, it is complete and not a partial examination is more necessary on account of the imperfective evidence of the preliminary examination to assess the possible cause of death.[2,3]

Aims and Objectives

The study was conducted: To evaluate profile of medico-legal autopsies and to find remedial measures to bring down the incidences.

Material and Methods

The present study is a retrospective study of autopsies performed in the Department of Forensic Medicine and Toxicology at Tertiary care institute of India.

Inclusion criteria

1. Corpses who will undergo post-mortem examination is included in the study
2. Manner of death is suggestive for autopsies due to suspicion

Exclusion criteria

1. Corpses with deformed or malformed body and with congenital abnormalities during the death
2. Non-suspicious manner of death without needs for postmortem examination

Relevant information like age, sex and cause & manner of death was collected from Post mortem registers/records, Inquest papers and Post mortem reports. The information was compiled, tabulated and analyzed.

The study is conducted in 200 corpses reporting for postmortem analysis over a period of one year above 18 years of age presenting to the Department of Forensic Medicine and Toxicology. The corpses are randomly selected and are assessed for the statistics regarding the epidemiology based on the autopsies performed. The Autopsy reports are anonymized with the patient code number, and sex, time of death, manner of death, pattern of death and cause of death data is documented. All the data is documented in the Proforma during the study.

Statistical analysis

The recorded data was compiled and entered in a spreadsheet computer program (Microsoft Excel 2007) and then exported to data editor page of SPSS version 15 (SPSS Inc., Chicago, Illinois, USA). For all tests, confidence level and level of significance were set at 95% and 5% respectively.

Results

During the study period total of 3210 cases were brought for medicolegal autopsies to Hospital mortuary, out of which 200 cases were found to be sudden natural death constituting an overall burden of 6.2%. Male predominance was observed among the sudden death cases as out of 200 cases, 158 cases (79%) were male, and 42 cases were female. (Table 1)

The age and gender distribution of the cases showed that most of the cases were reported from the adult age group and the commonly involved age group was 31 to 40 years (34%) followed by 41 to 50 years (30%) in both male and female. (Table 2)

The majority of the cases were average body mass index (BMI) with 122 (61.0%) cases. Out of the 200 cases, 25% (50/200) were obese, and only 12% had low BMI.

Among all cases, 62% of cases were brought dead to the hospital (Table 3). Among the causes of sudden death, the most commonly involved organ system was the cardiovascular system (46%), followed by the gastrointestinal system (20%), respiratory system (18%), central nervous system (14%) and genitourinary system (2%).

Among the cardiac causes, chronic coronary insufficiency is the most common cause. Among the gastrointestinal causes, chronic liver disease was reported in most cases. While among the respiratory causes, pneumonia was mainly observed.

Table 1: Age wise distribution of cases

Age (Years)	Number	Percentage (%)
0-10	1	0.5
11-20	8	4
21-30	36	18
31-40	68	34
41-50	60	30
51-60	20	10
61-70	6	3
71-80	2	1
81-90	1	0.5
>90	0	0
Total	200	100

Table 2: Gender wise Distribution of Cases

Gender	Number	Percentage (%)
Male	158	79
Female	42	21
Total	200	100

Table 3: Distribution of cases according to the place of Death

Place of death	Number	Percentage (%)
Brought dead	124	62
Hospital	30	15
Roadside	8	4
Home	38	19
Total	200	100

Discussion

Deaths of unnatural, suspicious and unexpected manner necessitate an autopsy as a portion of the evidence-gathering process.[4] In sudden death investigation, sequential autopsy examination investigates the underlying cause of death and answers the suspicion of foul play regarding those unexpected deaths.[5]

Among 3210 autopsies during the study period, 200 were sudden natural deaths implying an overall burden of 6.2%. Other studies from northeast India reported the incidence of sudden natural death of 8.6% to 9.2%.[6,7] Meanwhile, the incidence of sudden natural death in other parts of India is reported as low as 0.74 to as high as 13.5%.[1,2,8-10]

Among all cases, males are seen to be affected mostly. Male predominance in sudden natural deaths was observed in many other similar studies from India and around the globe.[11-14] The reason being men have more lethal conditions, whereas women have more disabling chronic conditions. Men and women have somewhat different psychological health problems; one gender cannot be characterized as having better psychological health hence the postmortem rate is low. Our strongest conclusion is that male/female differences in medicolegal autopsies are highly dependent on historical time and geographic location.

The majority of the deaths were observed among married males and from urban areas. A recent study reported marriage dissatisfaction as a significant risk factor of sudden cardiac deaths among males.[15] Urbanization as a factor of cardiovascular mortality was reported in a study from Brazil.[16] This might be due to an increasingly sedentary and stressful urban lifestyle. Maximum cases of sudden death in both sexes were in the 31 to 40 years age group followed by 41-50 years.Several studies reported a higher incidence of sudden natural deaths among young adults in the 30-50 years age zone.[3,4,9-11]

Most cases were reported in average BMI persons followed by obsessed persons. A similar finding was observed in the study of Tyagi et al.[17] According to the present study; most cases were brought dead to the hospital followed by death at home.The majority of the sudden natural deaths in the present study were related to the cardiovascular system. Various studies reported cardiac origin as the most common cause of sudden deaths in both genders, specifically among the adult male population.[3,4,18,19] Several studies[11,12,14,18-20] reported respiratory system ailments as the second prevalent cause of sudden death; however, in the present study, gastrointestinal system problems, particularly chronic liver diseases were reported second most cause of death.

Conclusion

The maximum incidence of the postmortems was reported in the male population compared to the female population. Our strongest conclusion is that male/female differences in medicolegal autopsies are highly dependent on historical time and geographic location. Increased frequency of sudden deaths among urban, married and adult male populations

might be due to sedentary lifestyles in urban areas and increased stress among married individuals due to workload and family responsibilities, indicating a physical and mental disequilibrium in modern times resulting in this type of unexpected deaths. A thorough postmortem and histopathological examination can solve most of the doubts arising from sudden death among the common population.

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Conflict of Interest: none declared

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