

Research Article

Socio-demographic and clinical profile of sudden natural deaths in South Mumbai, India

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ABSTRACT

Background: Sudden and unexpected death from the natural disease has been of continuing interest to the medical profession. The aim was to study the socio-demographic and clinical profile of sudden natural deaths, in South Mumbai, India.

Methods: Prospective and descriptive study of sudden natural deaths (SND) whose autopsy conducted in the department of Forensic Medicine and Toxicology, Topiwala National Medical College and Hospital, Mumbai from 1st September 2006 to 31st August 2009.

Results: The total of two hundred thirty SND studied during the study period of three years. The proportion of affected female cases was same as that of a male in each system. Male to female ratio in cardiovascular system, respiratory system, gastrointestinal system, central nervous system, and genitourinary system were 4.75:1, 6.20:1, 8:1, 7:2 and 1:2 respectively. The most of the victims were from Mumbai city (67.83%), followed by Mumbai suburban (23.91%). The maximum number of cases had primary level (27.39%) education. The most common terminal sign and symptoms of SND were unconsciousness (32.61%), followed by chest pain (22.61%). The common place of onset of terminal signs and symptoms of SND were home (44.78%). The most of the deaths seen in monsoon (June-September: 40%), followed by summer (Feb-May: 30.43%).

Conclusions: Proper health education and awareness among the people regarding sudden natural death. We emphasize to reduce the deaths by emergency services and early transportation of the cases after identifying clinical signs.

Keywords: Sudden death, Sudden natural deaths, Unconsciousness, Chest pain

INTRODUCTION

Sudden and unexpected death from the natural disease has been of continuing interest to the medical profession. Sudden death may occur during emotional excitement, mental tension or strenuous physical work or while resting or sleeping in the bed. When the death is unattended and unexpected; the suspicion of homicidal death has to be clarified.¹ In most of the cases, the time elapsed between the onset of symptoms and death is unknown. In reality, such deaths mostly occur within

minutes. There may be no medical history and no significant disease to explain the death.²

Sudden deaths are important from medicolegal standpoints and these seen in all ages especially in the young population.³ If the deceased was quarreling with another man, shortly before death. The medicolegal autopsy should be thorough, to avoid undue murder charge being brought against an innocent person.⁴ Some cases are uncomplicated; however other require the use of special dissections and ancillary studies. The forensic

expert should consider the differential diagnosis, typical scenarios to accurately assign a cause and manner of death. Sudden death cases need thorough scene investigation, detailed medical history, autopsy findings and ancillary studies.⁵

Too often, the autopsy is convoluted by vague histories, unexplained or lack of autopsy findings, and the potential need for ancillary testing. It is difficult to predict, possible preventive measures and its implication for public health. The causes of natural deaths, typical scenarios, and ancillary studies for final diagnosis are areas that prompted the study of sudden natural deaths (SND). The primary objectives of the study are socio-demographic and clinical profile of SND.

METHOD

The study started after approval of institute scientific and ethics committee. The present study carried out in the department of Forensic Medicine and Toxicology, Topiwala National Medical College and Hospital, Mumbai. It is prospective study carried out from 1st September 2006 to 31st August 2009.

Criteria for selection or inclusion of cases

All the cases of SND (deaths occur all of a sudden or within 24 hours of the onset of terminal symptoms and not have been caused by trauma or poisoning). Whose autopsies conducted in the department of Forensic Medicine, Topiwala National Medical College and Hospital, Mumbai.

Criteria for exclusion of cases

Allege case of SND with distinct findings of unnatural deaths on autopsy, chemical analysis of viscera and histopathological examination. Prospective data collected from the autopsy, police inquest, and medical record who received treatment before death and data analyzed by SPSS.

RESULTS

The total of two hundred thirty SND was studied during the study period of three years. In cardiovascular 75.26% deaths out total 190 male cases, and 75% deaths out of total 40 female cases. The observed difference between system wise deaths in the male and female was not statistically significant ($P = 0.206$). The proportion of affected female cases was same as that of a male in each system. Male to female ratio in cardiovascular system (CVS), respiratory system (RS), gastrointestinal system (GIS), central nervous system (CNS) and genitourinary system (GUS) were 4.75:1, 6.20:1, 8:1, 7:2 and 1:2 respectively. Male cases was affected more than female cases in each system.

A majority of victims were from Hindu religion (80.9%) cases followed by Muslim (13.04%) and Christian (3.48%). The most of the victims were from Mumbai city (67.83%), followed by Mumbai suburban (23.91%) and outside Mumbai (5.65%). It observed 68.26% victims married followed by unmarried (12.61%). The education status of victims were primary level (27.39%), high school (19.57%), higher secondary (14.78%), and illiterate (13.04%).

Table 1: Terminal signs and symptoms of SND.

Symptoms	Number of cases	Percentage
Unconsciousness	75	32.61
Chest pain	52	22.61
Breathlessness or dyspnea	41	17.83
Giddiness	32	13.91
Hematemesis	6	2.61
Headache	3	1.3
Nausea and vomiting	2	0.87
Hemoptysis	2	0.87
Bleeding per vagina	2	0.87
Abdominal pain	2	0.87
Not known	13	5.65
Total	230	100

Table 2: Place of onset of terminal signs and symptoms.

Place of onset	Home	Railway premises	Road (pedestrian, occupant of motor vehicle)	Site of occupation	Public places	Total
No. of cases	103	45	43	33	6	230
%	44.78	19.57	18.7	14.35	2.61	100.01

The most common terminal sign and symptoms of SND were unconsciousness (32.61%), followed by chest pain (22.61%), and breathlessness or dyspnoea (17.83%, Table 1). The common place of onset of terminal signs and symptoms of SND were home (44.78%), railway premises (19.57%), and road (18.7%, Table 2).

The most of the deaths seen in monsoon (June-September: 40%), followed by summer (Feb-May: 30.43%). The majority of cases seen in the month of September (15.65%) followed by March (11.3%) and the least number of cases in January (3.91%). External injuries seen in (15.65%) cases and the most common injuries were abrasions. In India, police inquest is the

investigation of sudden unexpected deaths and unnatural deaths and conducted under 174 Criminal procedure code.⁶ A majority of cases referred from the jurisdiction of Agripada police station (PS) attached to the hospital (37.83%). As per police inquest, the investigating officers

DISCUSSION

We studied socio-demographic and clinical signs of SND in South Mumbai, India. We observed the equal proportion of male and female in each system wise deaths. The number of cases of a male than female in all the system was more except GUS. Our findings coincided with the studies of Azmak et al, Zanjad et al and Rao et al.^{2,7,8}

The percentages of Hindu religion are more than other communities in India.⁹ It provide an explanation for more cases of SND. Mumbai divided in two district i.e. Mumbai city and Mumbai suburban.¹⁰ Our hospital is located in Mumbai city district, which explain maximum number of victims were referred from this area. The maximum victims were married and coincided with the study of Kumar et al.¹¹ Frequency is more in victims with the primary level education because, their inadequate knowledge of diet, health facilities, addictions, physical and mental stress.

The most common symptoms was unconsciousness in the study of Akinwusi et al coincided with our study. Tiemensma et al found chest pain as a common symptom.^{12,13} The primary reason for unconsciousness was due to the rapid progression of three modes of death i.e. syncope, coma and asphyxia. Morentin et al observed syncope prior to death in 14.70% cases.¹⁴ The place of onset of the terminal signs and symptoms observed at the home coincide with the study of Tiemensma et al and Kuller et al.^{13,15} Most of the deaths observed in monsoon, and it does not coincide with the study of Azmak et al because, the difference in the demography.² Maximum cases seen in the month of September and least in January. The injuries sustained to victims during the sudden onset of the terminal signs and symptoms of SND and not related to the cause of death. But these injuries possibly aroused suspicion in IO during the inquest.

Some of the deaths, even though belonged to the areas outside the jurisdiction of Agripada PS. Their police stations located far away and this was main reason Agripada PS conducted the inquest of such cases. Investigating officers were unable to ascertain manner of death in maximum cases due to their lack of proper training and knowledge regarding deaths. They had time constraint due to their routine works and could not give enough importance to the inquest.

CONCLUSION

The data engendered regarding terminal sign and symptoms and socio-demographic factors of SND will be

(IO) should ascertain the probable manner of death after the inquest. The probable manner of death after police inquest was unknown to the IO in 67.83% cases followed by natural (31.3%), and unnatural (0.87%).

useful for preparation of preventive guidelines for SND among the community. According to our study the male to female ratio is higher for all system wise causes of deaths and we emphasized on gender-based early screening. The need of appropriate health education, awareness and preventive programs by the health sector for people. We need proper planning of emergency services and early transportation of cases after identification of terminal signs and symptoms from their place of onset.

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