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Pattern of Occurrence of Natural Deaths – A 3 years retrospective study

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ABSTRACT

The present study has been carried out to find the occurrence of natural deaths and the diseases causing them in Eastern part of Bengaluru with special emphasis on histopathological correlation. Medico legal autopsy cases with history of Natural Death over period of three yearsbetween January 2019 to December 2021were included in this study. A total of 799 cases were autopsied at our Institute during that period, out of which 104 deaths (13.01 %) were due to natural deaths, The highest number of cases were observed in the age group of 21-30 years (n=29, 27.9 %), Maximum cases (n=12, 11.5%) of cases were found in January month, Majority of the cases were due to the diseases of Cardiovascular system (n=67, 64.1 %) followed by diseases of Respiratory system (n=23, 22.2 %),Maximum cases of natural deaths were due to coronary artery disease (n=44, 42.3%)], followed by pneumonia (n=13, 12.5%).

Keywords: *Natural Death; Coronary Artery Disease; Pneumonia.*

INTRODUCTION

The WHO (world health organisation) defines sudden death as a death occurring less than 24 hours from onset of symptoms, which is otherwise not explained / death known not to be violent or instantaneous for which no cause can be discovered / death without sign of disease.[1] Death is said to be natural when it occurs due to natural disease or pathological condition, old age, disability or devitalisation, in which death is not intended or attempted and also does not occur accidentally but one that is primarily attributed to an illness or an internal malfunction of the body not directly influenced by external forces.[2,3]

An apparently healthy individual of any age when dies suddenly and unexpectedly, without any pre indication or even in case of natural death under suspicious state, with no medical attention and possibility of any disease being responsible for it being considered remote, a suspicion of foul play, injury, poisoning may arise in the mind of officials responsible for the certification of death.[4]

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Determination of cause of death in natural deaths, particularly when the death occurred suddenly, unexpectedly, or in the young, is an important part of forensic autopsy practice, for reasons including the following:[5]

- Performance of a complete and through autopsy on apparent natural deaths can provide valuable information in the interest of public health by identifying public health risks and monitoring disease trends.
- Identification of disease processes and patterns provides epidemiological data that can be used to control disease outbreaks, identify changes in disease patterns, or to identify reportable diseases.
- The timely and accurate diagnosis of medically important diseases can have a significant impact on the relatives of the deceased by allowing them the opportunity to seek treatment for certain hereditary diseases in which the presenting symptom may in fact be sudden death.

Sudden natural deaths constitute a significantproportion of deaths, which undergo medicolegal autopsies. A suspicion of foul play is raised when healthy persons without any significant previous history of illness were found dead. Further, the suspicion over the cause and manner of death increases if the terminal event occurs unnoticed or unobserved by anyone. In such cases, the exact cause of death may be established only after a thorough investigation and autopsy.[6]

MATERIALS AND METHODS

The present study was carried out retrospectively by collecting 3-years data of all the medicolegal autopsies of natural deaths brought to the Morgue of East Point College of Medical Sciences and Research Centre, Bengaluru from January 2019 to December 2021. Relevant data on natural deaths was collected from the police inquest, autopsy and histopathology reports. Finally, the obtained data were tabulated and analysed.

RESULTS

A total of 799 cases were autopsied at our Institute during the study period, out of which 104 deaths (13.01%) were due to natural deaths (Fig. 01).Males (n=89, 85.6 %) outnumbered females (n=15, 14.4 %) (Fig. 02). The highest number of cases were observed in the age group of 21-30 years (n=29,27.9%), followed by 31-40 years (n=23, 22.1 %) and 41-50 years (n=22, 21.6 %) (Table. 01).Maximum cases (n=12, 11.5%) of cases were found in January month, followed by (n=11, 10.6%) in February, while least incidence was found in April and June (n=6, 5.8% in each month) (Table. 02). Majority of the cases were due to the diseases of Cardiovascular system (n=67, 64.1 %) followed by diseases of Respiratory system (n=23, 22.2 %), Other causes include gastrointestinal/hepatic diseases (n=5, 4.8%),

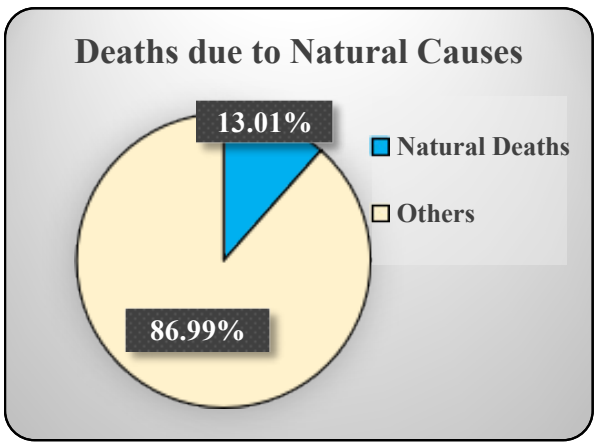

Fig. 1: Deaths due to Electrocution

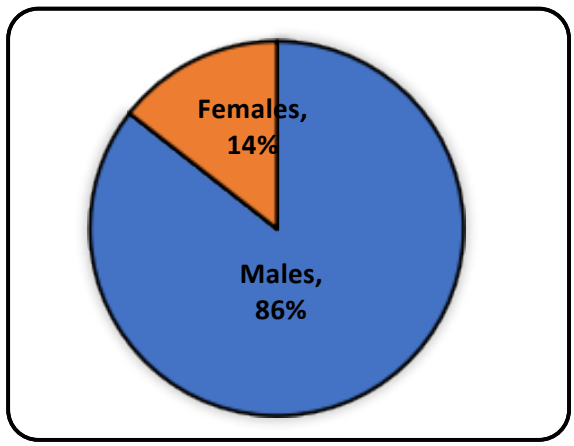

Fig. 2: Sex wise distribution of Cases

Table 1: Distribution of cases according to age

Age Group	Male (%)	Female (%)	Total (%)
0 – 10	0 (0)	2 (13.3)	2 (1.9)
11 – 20	0 (0)	1 (6.7)	1 (0.9)
21 – 30	27 (30.3)	2(13.3)	29 (27.9)
31 – 40	20 (22.5)	3(20)	23 (22.1)
41 – 50	20 (22.5)	2 (13.3)	22 (21.2)
51 – 60	12 (13.5)	2 (13.3)	14 (13.5)
>60	10 (11.2)	3 (20)	13 (12.5)
Total	**89**	**15**	**104**

Table. 2: Month-wise Distribution of cases

Month	No. Cases	Percentage
January	12	11.5
February	11	10.6
March	10	9.6
April	6	5.8
May	8	7.7
June	6	5.8
July	7	6.7
August	7	6.7
September	8	7.7
October	10	9.6
November	10	9.6
December	9	8.7
Total	**104**	**100**

Table. 3: Distribution of cases according to involvement of Body System

System Involved	No. Cases	Percentage
Cardiovascular	67	64.4
Respiratory	23	22.2
Gastrointestinal	5	4.8
Genitourinary	3	2.9
Central Nervous	2	1.9
Miscellaneous	4	3.8
Total	**104**	**100**

Table 4: Distribution of Sudden Death Cases According ToEtiology.

System Involved	Etiology	No. Cases	Percentage
Cardiovascular	Coronary Artery Disease	44	42.3
	Cardiac Hypertrophy	6	5.8
	Acute myocardial infarction	6	5.8
	Chronic myocardial infarction	7	6.7
	Bacterial Pericarditis	3	2.9
	Other Causes	1	0.9
Respiratory	Pneumonia	13	12.5
	Pulmonary Tuberculosis	2	1.9
	Emphysema	2	1.9
	Pulmonary Edema	6	5.8
Gastrointestinal	Cirrhosis of Liver	3	2.9
	Gangrenous Intestine	1	0.9
	Other Causes	1	0.9
Genitourinary	Chronic Pyelonephritis	2	1.9
	Glomerulosclerosis	1	0.9
Central Nervous	Intracranial Haemorrhage	1	0.9
	Tumours / Malignancy	1	0.9
Miscellaneous		4	3.8
Total		**104**	**100**

genito-urinary system diseases (n=3, 2.9%), central nervous system diseases (n=2, 1.9%) respectively (Table. 03).

Maximum cases of natural deaths were due to coronary artery disease (n=44, 42.3%)], followed by pneumonia(n=13, 12.5%). While in four cases (3.8%) of sudden death, cause of death could not be revealed, even after thorough post mortem examination & other investigations (Table. 04).

DISCUSSION

In the present study, the incidence of natural death cases was 13.01 %, which was close to Rana M N, Anil R. Pandey A R (10 %)[7], Rao(8.67%) et al[8]. In contrast higher incidence of sudden natural deaths was seen in other studies done by Obiorah (55.6%) et al[9], Escoffery and Shirley(51.3%) et al[10], Nordrum(27.8%) et al[11]. Higher incidences of sudden natural death cases in those studies may be due to different life styles of people, geographical area and different types of cases as these studies were done outside India.

In our study male predominance was observed (n=89, 85.6 %). The findings are in consistent with the studies done by Pathak and Mangal (63.33%)[12]. Rana M N and others(84.79%)[7].Chaturvedi M et.al (76.6%)[13].

In the present study Most of the cases fell in the age group of 21-40 years (n=52, 50 %). The finding is in consistent with the work of Gupta BD et.al[14], Jani CB et.al[15] and Pathak A et.al[12]. Majority of the studies done in India are showing the maximum numbers of sudden natural deaths in middle aged people (31-40 years). More number of young adultscases are being reported with sudden deaths in the recent past.It may be due to urbanization, westernization of our population, sedentary life style, habits, stress, lack of regular exercise and lack of regular medical check-up or follow-up.

In the present study, maximum cases of sudden natural deaths (11.5%) were found in the month of January, followed by month of February (10.6%). Accordingly, from our study, it is shown that most cases of sudden natural deaths were found in the winter season. It coincides with studies done byBhagora R L[16], Chin-Tun Hung et al.[17]. Low temperature has a harmful effect on blood pressure, and can alter the myocardial oxygen supply, increase ventricular wall strain, cardiac exertion and oxygen demand, and reduce coronary blood flow.

In the present study we observed that maximum deaths were related to diseases of cardiovascular system constituting to 64.1 % which is similar to other similar studies done by Puranik(56.4%) et al[18], Azmak(55%)[19]and Rana M N et.al (54.38 %)[7]. Preponderance to cardiovascular system could be due to changing ways of living, food habits- high concentration of fatty or junkfoods, stress, lack of exercise with sedentary lifestyleand extreme indulgence of younger adults in predisposing factors like smoking and alcoholism.

In our study we found diseases of respiratory system as second most common cause of sudden natural deaths (22.2%) which is similar to studies done byRao D S et.al (27.45%)[8] and Escoffery and Shirley(23%) et al[10], Rana M N et.al (23 %)[7].

CONCLUSION

From the present study we can conclude that diseases of the cardiovascular system are the major contributing factor for sudden natural deaths especially coronary insufficiency or coronary artery disease. The age distribution shows that involvement of younger age groupappears to be slightly higher in the recent past. Changing life style, food habits, addictions, stress are some of the contributing factors. Awareness on routine health check-up amongst the general public would help to reduce the incidence of such deaths. Further, a thorough post-mortem examination and histopathological and laboratory diagnosis always helps in avoiding unnecessary litigations in such cases.

Conflict of Interest – Nil.

Source of Funding – Self.

Ethical Clearance– Approval taken from Institutional Ethical Committee.

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