Indian Internet Journal of Forensic Medicine & Toxicology
Vol. 11, No. 4 October-December 2013, 87-89

Original Article

A Study of Respiratory System Related Causes of Sudden Death

Prateek Rastogi[1]*, Jenash Acharya[2]

[1]Associate Professor, [2]Resident, Department of Forensic Medicine and Toxicology, Kasturba Medical College, Mangalore (A Constituent College of Manipal University), Karnataka, India

Email id: *rastogiprateek@rediffmail.com; prateek.rastogi@manipal.edu; [2]jenashmad@hotmail.com

ABSTRACT

Sudden death due to respiratory illness is one of the leading causes of sudden and natural deaths all over the world, the frequency is, however, more in developing and underdeveloped countries. A retrospective study was conducted at our centre in Kasturba Medical College, Mangalore, in cases which came with the history of sudden death with the aim to study respiratory system-related causes of sudden death. The cases with gross positive findings in lungs were taken as samples for study. Out of 2,515 autopsies conducted during the study period, 274 (10.89%) were of sudden death, of which 81 (29.56%) were due to respiratory system-related diseases. Respiratory causes of deaths were seen mostly in the age group of 40–49years (25.9%) and those above 60 years of age (25.9%). Male comprised 88.88% of death related to respiratory causes. Various forms of respiratory illness causing death were pulmonary tuberculosis (TB, 43.2%), pneumonia (28.39%) pulmonary TB with pneumonia (4.93%) and upper respiratory tract diseases association with other extra-pulmonary causes (23.45%). This study emphasizes need to create awareness among people about respiratory health and regular medical checkup.

Keywords: Sudden death, Respiratory system, Indian population, Pulmonary TB, Upper respiratory tract diseases

INTRODUCTION

Respiratory diseases as name suggests involve disease of the respiratory tract, be it illness of upper respiratory tract comprising of nose and larynx or lower respiratory tract involving disease of trachea, bronchus, bronchioles and lung parenchyma proper.[1] The common cause of sudden natural death due to respiratory illness constitute of pneumonia, tuberculosis (TB), chronic obstructive pulmonary diseases and bronchial asthma, etc.[1]

The incidence of sudden unexpected deaths varies greatly from study to study due to the difference in selection criteria of the cases. It has been referred time to time in literatures that due to the lack of precise definition of sudden death the material for studies are taken an death occurring instantaneously, from 6 to 24 h of onset of symptoms[2,3]. In our study, the cases taken were mostly of deaths suspected due to respiratory diseases, which was later confirmed by the absence of any fatal conditions related to other systems and having features only in relation to respiratory system with the aid of histopathological analysis.

MATERIALS AND METHOD

A retrospective study was carried out in the Department of Forensic Medicine and Toxicology of cases autopsied with the history of death due to unknown causes in span of 4 years. During this period, total 2515 autopsies were conducted, out of these 274 (10.89%) were of sudden death. Cases with suggestive findings like pleural adhesions, pleural effusion, comparatively higher weights and cases with frank findings like pus filled cavities, nodular lesions and blood mixed frothy fluid on cut section were subjected for histopathological analysis. The result was entered in charts along with details like age, gender, body mass index and type of respiratory disease confirmed by

microscopic examination. After the data had been collected, it was entered manually into Microsoft Office Excel Worksheet and manually analysed.

RESULTS AND DISCUSSION

Out of the studied 274 cases, 81 (25.56%) cases were due to respiratory illness, which are somewhat similar to those reported by Pande *et al.*[4] (25.43%), higher than as reported by Nordrum[5] (16.7%) and lower than (50.26%) as reported by Kagne *et al.*[6] Among 81 cases reviewed, 72 were males and 9 were females, which is the trend even observed in the study by Murty *et al.*[1] Twenty-one cases (29.9%) fellwithin the age range of 40–49years that matched with equal number among those more than 60 years of age (Figure 1). Least cases (8 in number) were seen with age ranging from 20 to 29 years. This is in contrast with study of Murty*etal*[1] who reported maximum number of cases in the age range of 30–40 years.

On perusal of histopathology reports of all 81 cases, 35 of the individuals suffered from TB, 23 from pneumonia and 4 had both pulmonary TB and pneumonia. Nineteen of the individuals had other diseases like Adult Respiratory Distress Syndrome (ARDS), bronchiectasis and septicemia along with other extrapulmonary causes leading to death (Figure 2). Murty *et al.*[1] reported the main cause was pneumonia (34.9%) followed by pulmonary thromboembolism and asthma.

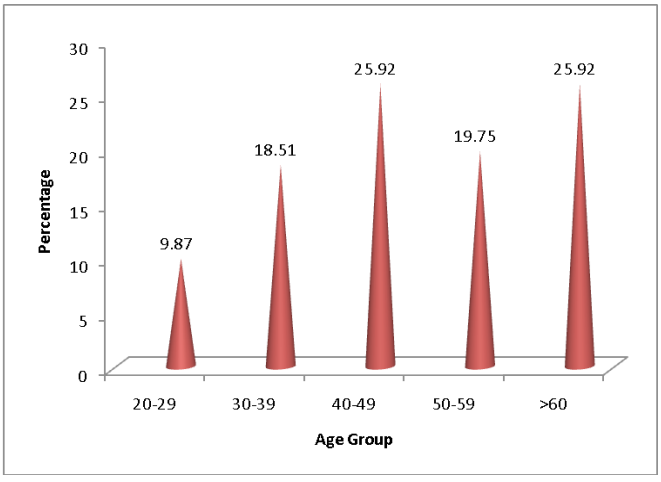

Figure 1: Percentage distribution of study sample in relation with age (years)

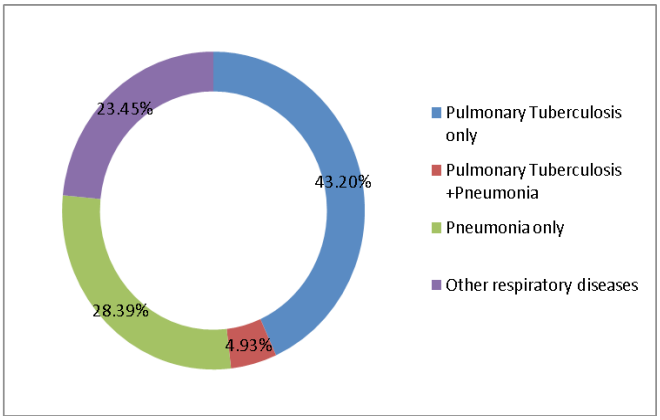

Figure 2: Percentage distribution of causes of respiratory illness

Pleural effusion was found unilaterally in eight cases and bilaterally in six cases. The effusion was straw coloured in most of the cases, while four of the cases had purulent yellowish or greenish pus mixed fluid. Pleural adhesion was found unilaterally in 12 cases and bilaterally in 39 cases, which suggested previous history of infections. Sub-pleural hemorrhage was seen in one case. Twenty-nine cases had apparently healthy pleura (Figure 3).

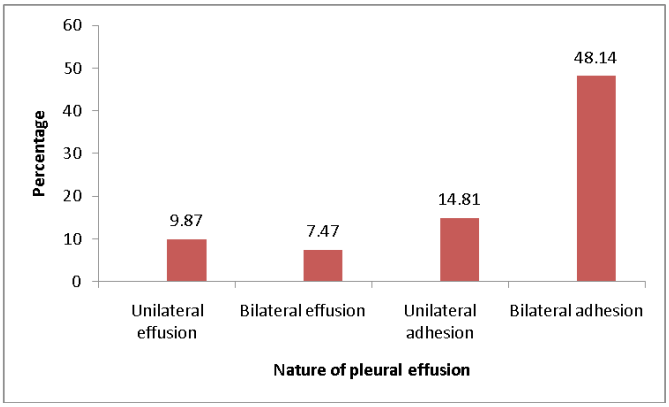

Figure 3: Findings in pleura

CONCLUSION

- Among all the respiratory diseases, TB was found in nearly half of the cases. TB remains a major respiratory cause of morbidity and mortality worldwide and has been identified as a 'global emergency' by the WHO[7].
- Pleural adhesions and effusions can be taken as gross

path gnomic findings in routine autopsy cases and further histopathological analysis should be done to diagnose the underlying condition of lung parenchyma.

- Respiratory illness was found to be prevalent among individuals above the age of 40 years, maximum being geriatric individuals aged more than 60 years of age.
- Although less common and hard to diagnose, asthma and Chronic Obstructive Pulmonary Disease (COPD) can cause death of an individual in which cases hospital case records should be properly evaluated to calculate the respiratory parameters before coming to a conclusion.
- Smoking and alcohol, however, are established substances to have a severe impact on respiratory diseases, but these were not taken into account for this retrospective study as most of the individuals were unidentified and less were known about their personal habits.

REFERENCES

1. Murty OP, Agrawal A, Chin CJ, Tee PP, Kangatharan P, Fadzly M. Respiratory causes of death: Autopsy review of 10 years at Kuala Lumpur. J Forensic Med Toxicol 2007; 24(2): 66-73.
2. Kuller L, Cooper M, Perper J. Epidemiology of Sudden death. Arch Intern Med 1972; 129: 714-19.
3. Reddy KSN. In: The Essentials of Forensic Medicine and Toxicology, 18th ed. Hyderabad: K Sugunadevi, 1999; 120-21.
4. Pande AK, Dongre AP, Sapate AB, Dhawne SG. Study of sudden deaths from natural causes. J Forensic Med Toxicol 2003; 20(2): 23-28.
5. Nordrum I. Unexplained and explained natural deaths among persons above 1 year of age in a series of medico-legal autopsies. Forensic Sci Int 1998; 93: 89-98.
6. Kagne RN, Kamble SR, Godbole HV, Borde BS. Study of sudden natural deaths. J Forensic Med Toxicol 1999; 16(1): 31-33.
7. World Health Organization (WHO). Tuberculosis Fact sheet N°104- Global and regional incidence. March 2006, www.who.int/mediacentre/factsheets/fs104 Retrieved on 6 October 2006.