ORIGINAL ARTICLE

STUDY OF PREVALENCE OF HISTOPATHOLOGICAL LESIONS IN LUNG AT AUTOPSY

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ABSTRACT

Background: In present days, the air pollution and other environmental inhallants, chemical cum toxic substances become uncontrollable, so, the lungs are involved by inflammatory as well as occupational disease. Lungs are also involved in all cases of terminal events due to cardia vascular disease. Thousands of people around the world suffer from preventable lung lesions . The clinical and radiological findings in respiratory diseases are nonspecific and prompt histopathological study is essential. Autopsies are carried out to establish cause of death of the person along with previous antemortem history, investigations and other imaging studies to rule out lung lesions. This study also helps prevalence of pulmonary lesions load in community.

Aims & Objectives: This study was carried out with the objective to study prevalence of different pulmonary lesions in autopsy that are confirmed by histopathological examination.

Methodology: The retrospective study of 200 lung specimens received at autopsy was carried out in the Department of Pathology, SMIMER, Surat. Gross findings and microscopic features were recorded. The tissue specimens were processed and examined microscopically.

Results: A total of 200 lungs from autopsy specimens were studied. Lung diseases are more common in males as compared to females. Most common lung pathological findings are of congestion/oedema/changes interstitium/pulmonary haemorrhage (68.5%), pneumonia (17.5%), tuberculosis (3.5%) followed by other inflammatory lesions (fungal/other granuloma) (4%) and emphysema (1.5%) among the cases studied.

Conclusion: Advances in diagnostic technology have not reduced the value of autopsy and a goal directed autopsy remains a vital component for the study and evaluation of the disease process. Autopsy is an important tool in identifying and understanding of lung disease that helps in evaluation of outcome as well as gives clue for prevention of the same. It also helps to reduce prevalence of lung disease in society by educational counselling as well as periodic medical checkups.

Keywords: autopsy, tuberculosis, pneumonia, interstitial lesions, ARDS

INTRODUCTION

The spectrums of lung lesions include congestion, oedema, various inflammatory lesions, chronic obstructive pulmonary diseases and neoplastic lesions. Lungs are also secondarily involved in almost all form of terminal events due to cardio vascular causes.[1,2,3] Clinical history, laboratory investigations and imaging studies give supportive information but prompt pathological diagnosis is required for confirmation along with prognosis of the disease. This avoids the patient from more invasive procedures.[4] It is important to determine the leading causes of death that helps to take preventive actions which are less expensive for prevention of progressive lung disease and avoid the need of invasive procedure i.e. lung biopsy.[5]

The main aim of autopsy is to study the pathology of different organs after death to determine the cause of death and prevalence of various organ lesions that gives clue to the diseases burdening the society. It helps for prophylactic actions to be taken.[6] In our study, the lungs were studied grossly & histopathologically. Gross pathologic examination of autopsy lungs gave information regarding status of lung, i.e. collapsed or hyper inflated, congestion, presence of firm to hard areas with tubercles and necrosis, fibrosis, bullae, consolidation, nodules, infarction, secretions, abscess formation and also provides information regarding status of bronchi and pleura (thickening and nodule formation) which provides hint to the diagnosis. Different histopathological patterns in lung specimen were studied along with gross findings in consideration to know the cause of morbidity and mortality.

METHODOLOGY

Sample size: Retrospective study of lung specimens of 200 routine autopsies were carried out in Autopsy Section, Department of pathology, SMIMER, Surat to find out the prevalence of various pulmonary lesions at autopsy.

Methods: The study included all autopsy subjects irrespective of age, sex & cause of death. Both Lungs were examined grossly for colour, weight, volume (collapsed or inflated), consistency, areas of fibrosis, oedema, congestion, abscess formation, bullae, cavitary lesions, status of bronchi and pleura (thickening and nodule formation). The sections were taken from representative areas. Biopsy sections from both lungs were processed, 4 to 5 micron thickness sections were take and stained with Haematoxylin and Eosin stain and examined microscopically. Ziehl Neelson stain and Period Acid Stain were also done wherever required. The findings were noted. As this study was retrospective from autopsy section, so no seperate permission of ethical committee was asked.

RESULTS

Sex wise distribution of the lung lesions are shown in table 1.

Among all the cases, 84% were males and 16% were females. Both sexes showed a high incidence of congestion/oedema/interstitial inflammation, i.e. 68.5% followed by 17.5% cases of pneumonia. i.e the second most common cause in this study. Tuberculosis lesions were seen in 7 cases, out of which 4 were males and 3 were females. Terminal event such as emphysematous change was found in 3 cases, all of which were males. ARDS was found in 2 cases only, No malignant lesions were found in the study. 7 cases showed autolytic changes and only 1 case was of normal lung.
The age wise distribution of the cases are shown in Table No. 2.

Cases of congestion/oedema/interstitial inflammation were more commonly found in age group of 31 to 60 years. Cases of pneumonia were commonly found in age group of 31 to 45 years. Case of tuberculosis and other granulomatous lesions were commonly found in the age group of 31 to 45 years. Emphysematous changes were found in the age group of 46 to 60 years. A low incidence of ARDS was found in two age groups,ie. between new born to 15 years and in 46 to 60 years group.

Table 1: Sex wise distribution of lung lesions (n = 200)

Lesion	Male (%)	Female (%)	Total (%)
Congestion/Odema/Changes in Interstitium/ Pulmonary Haemorrhage	118 (59.0)	19 (9.5)	137 (68.5)
Pneumonia	30 (15.0)	5 (2.5)	35 (17.5)
Tuberculosis	4 (2.0)	3 (1.5)	7 (3.5)
Other Inflammatory Lesion (Fungal/Other Granuloma)	4 (2.0)	4 (2.0)	8 (4.0)
Emphysematous Changes	3 (1.5)	0	3 (1.5)
ARDS	1 (0.5)	1 (0.5)	2 (1.0)
Malignant Lesion	0	0	0
Autolysed	7 (3.5)	0	7 (3.5)
Normal Morphology	1 (0.5)	0	1 (0.5)
Total	**168 (84.0)**	**32 (16.0)**	**200 (100)**

Table 2: Age wise distribution of lung lesions (n=200)

| Lesion	0-15 yrs (%)	16-30 yrs (%)	31-45 yrs (%)	46-60 yrs (%)	>60 ys (%)
Congestion/Odema/Changes in Interstitium/ Pulmonary Haemorrhage	5 (2.5)	27 (13.5)	45 (22.5)	45 (22.5)	15 (7.5)
Pneumonia	3 (1.5)	4 (2.0)	15 (7.5)	9 (4.5)	4 (2.0)
Tuberculosis	0	1 (0.5)	3 (1.5)	1 (0.5)	2 (1.0)
Other Inflammatory Lesion (Fungal/ Other Granuloma)	1 (0.5)	1 (0.5)	4 (2.0)	0	2 (1.0)
Emphysematous Changes	0	0	1 (0.5)	2 (1.0)	0
ARDS	1 (0.5)	0	0	1 (0.5)	0
Malignant Lesion	0	0	0	0	0
Autolysed	0	0	2 (1.0)	2 (1.0)	1 (0.5)
Normal Morphology	0	1 (0.5)	0	0	0
Total	**10 (5.0)**	**34 (17.0)**	**70 (35.0)**	**62 (31.0)**	**24 (12.0)**
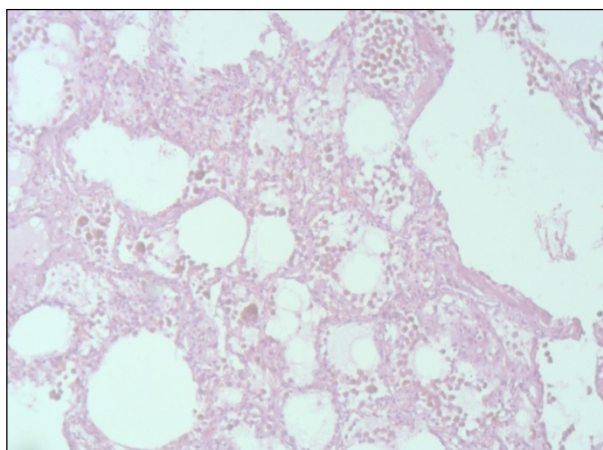
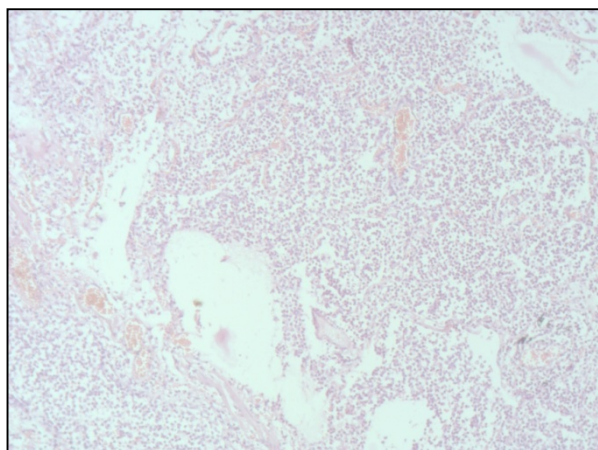**Figure 1 : Micrograph of Chronic Venous Congestion**

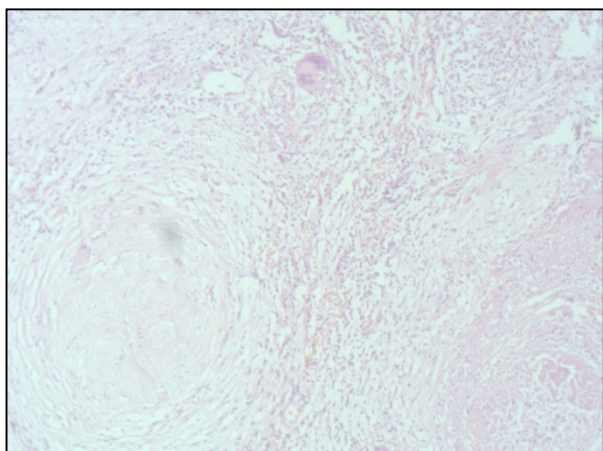**Figure 2: Micrograph of pneumonia (Neutrophillic exudate into the alveoli)**

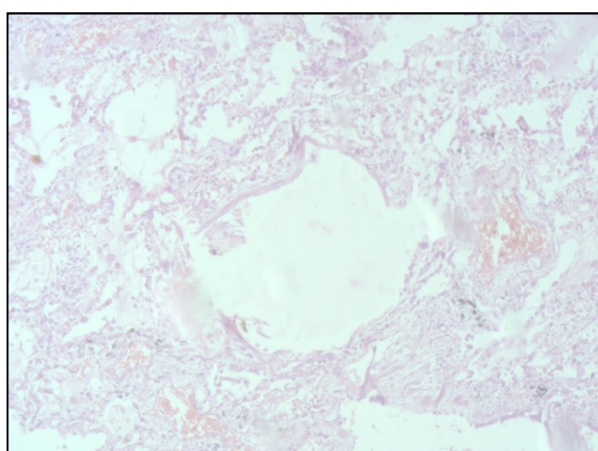**Figure 3 : Micrograph of Tuberculosis**

Figure 4. Micrograph of ARDS

DISCUSSION

The present study was compared to the other similar study. In the present study, males were more commonly affected than females. That was comparable to the study by Rupali et.al.[7] Selvambigai et. al.[8] Puneet et. al.[9] Chauhan et.al.[10]. The terminal events include congestion/oedema/changes in interstitium/pulmonary haemmorhage. Terminal events are one of the most common findings in the various studies. Our present study findings were comparable to Chauhan et. al, Rupali et.al.[7], and Puneet et. Al[8].

In present study, pneumonia was found second most common lung lesion and our findings were comparable to Chauhan et. al and Rupali et.al. In our study, the occurence of Tuberculosis was comparable to Rupali et.al and somewhat comparable to Chauhan et.al. In our study, the occurence of ARDS was comparable to Rupali et.al and Pratima et.al[11] Majority of lung lesions in our studies were of terminal events. These changes due to pollution, smoking, any restrictive lung disease leading to fibrosis and cardiovascular disease.

In present study, there was a very low prevalence of ARDS i.e. 1% which was also comparable by study done by Sachdev et.al.[12] where there were 125 lung autopsy cases over a period of 3 years and Manjeet et.al also showed low prevalance of ARDS. In this study, majority of the cases were found in the age group of 31 to 60 years which was comparable to study done by Selvambigai et.al. which was 20 to 50 years and Rupali e.al which was also 20 to 50 years.

LIMITATIONS

The limitation of the study was the non receipt of the whole organ or representative sample at the time of autopsy, which if overcome will set much higher standard of autopsy reporting and would be a more useful tool in understanding cause of death.

CONCLUSION

From present study of autospy specimens of lungs, the most common findings were terminal events, pneumonia and tuberculosis. We should plan to prevent the causes and reduce the prevalance of preventable lung lesions. All the factories and industries should take care of their respective employees for

periodic medical checkup, educational counselling should be given on exposure of environmental pollutants to the people.[8] As majority population of our study was 30 to 60 years age group that were working people.

Despite recent advances in diagnostic technology, autopsy has endured as a vital complementary tool of recognising and understanding chronic respiratory diseases. It also serves as reassuring and educative tool in identifying and establishing the underlying cause of death. Autopsy study is of great value in refining the vision and diagnostic setup for better clinical evaluation. Histomorphological study of lung in autopsies may quite often disclose common diseases affecting lungs and their relative contribution towerds death.[7]

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