Histopathological pulmonary lesions – in medico-legal autopsy cases

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Abstract- *Autopsy is an important tool in identifying the cause and manner of death and hence to establish preventive measures. Lung disorders have varied clinical presentation ranging from infective to neoplastic lesions. Aims and Objectives: The aim of the present study is to find out the occurrence and frequency of various lung diseases by histopathological examination. Methodology: This was a prospective study done on 1541 medico-legal autopsy cases received in department of Pathology, B. J. Government medical college, Pune over a period of 8months during January 2016- August 2016. Gross and microscopy of lung specimens were studied. Results: Pneumonia is the commonest disease affecting males in the age group of 20-50 years, which account for 8.5% of total cases studied. In our study there were 64 cases of TB, which accounts for 4.1% and 6 cases of fungal infections (0.38%). Among non-infective causes congestion (33.29%) and pulmonary edema and congestion together in 39.1% and intra-alveolar haemorrhage (9.3%) and chronic passive venous congestion of lung in (2.3%) cases. Conclusion: Thus, study of lungs in autopsy cases may quite often reveal some natural diseases and its relation contributing to death.*

Keywords- : Medico- legal, Autopsy cases, Pulmonary Lesions, Pneumonia, Tuberculosis

I. INTRODUCTION

Autopsy is an important tool in identifying the cause and manner of death and hence to establish preventive measures. There are large cases of preventable respiratory diseases still leads to morbidity and mortality.1, 2&3. Lung disorders have varied clinical presentation ranging from infective to neoplastic. Approximately more than million people in the world suffer from preventable respiratory diseases4. Still today tuberculosis remains the most important cause of death. Autopsy study is of great value in diagnosing pulmonary lesions which may not be clinically suspected. Histo-morphological study of lung in medico-legal cases reveals some natural diseases and their contribution towards death. This study was carried out with an aim of finding the frequency and occurrence of various lung diseases by gross and histo-pathological examination.

II. MATERIALS AND METHODS

This study was conducted in department of Pathology of B.J.G.M.C., Pune. During a span of 8 months, total 1541 cases of lung were studied to find out the frequency of various pulmonary lesions at autopsy. Autopsy subjects from both sexes were included irrespective of the cause of death. It was a prospective study. Information regarding the registration no., age, clinical details and address were obtained from the doctor and the police paper. Gross examination of lung included colour, volume, consistency, presence of any consolidation, nodule, bullae, scarring, fibrosis, infarction and congestion. All the specimens were adequately fixed in 10% formalin, weighed and dimensions measured. Sections from the representative areas were taken and paraffin blocks were made following standard protocol. Four microns sections were cut and stained with haematoxylin and eosin stain according to standard procedure5. Special stains were used wherever required. All the cases were analyzed by using descriptive statistics.

III. RESULTS

This study was conducted in department of Pathology of B.J.G.M.C., Pune. During a span of 8 months, total 1541 medico legal autopsy cases were studied to find out the frequency of various pulmonary lesions. Autopsy subjects from both sexes were included irrespective of the cause of death. It was a prospective study. The results of our study show Males (74.56%) affected than Female (36.40%). Among the pulmonary diseases of infective aetiology, Pneumonia is the commonest disease affecting male in the age group of 10-60 years. The below table shows age wise and sex wise distribution of various pulmonary lesions. Males were predominantly affected pulmonary lesions are more in age group 20- 60 years.

Table 1. Distribution of pulmonary lesions in medico-legal cases as per age and sex wise.

Pulmonary lesions	Males	Females	Total	M:F ratio	0-9	10-19	20-	30-39	40-49	50-59	60-69
Pneumonia	80(61%)	51(38.9%)	131	1.5:1	36	5	20	25	20	25	-
Tuberculosis	44(68.75%)	24(37.5%)	64	1.8:1	1	3	26	15	15	1	1
Pulmonary enema	88(61.1%)	56(38.8%)	144	1.5:1	24	22	49	36	11	4	6
Congestion	312((60.8%)	201(39.1%)	513	1.5:1	68	47	243	118	54	13	7
Intra-alveolar haemorrhages	87(60.4%)	57(39.5%)	144	1.5;1	25	12	21	29	38	8	2
Chronic passive venous congestion	23(63.8%)	13(36.1%)	36	1.7:1	-	-	1	3	5	17	-
Emphysema	4(57.1%)	2(28.5%)	7	2:1	-	-	1	2	4	-	-
Metastatic deposits	5(71.4%)	2(28.5%)	7	2.5:1	-	-	-	1	2	1	2
Bronchial Asthma	1(50%)	1(50%)	2	1:1	-	-	-	-	1	1	-
Acute bronchitis	4(80%)	1(20%)	5	4:1	-	1	-	-	1	2	1
Pulmonary hypertension	4(66.6%)	2(33.3%)	6	2:3	-	-	-	2	1	2	1

Among total 201 infective cases, Pneumonia was the predominant cause of pulmonary lesion followed by tuberculosis and 6 cases had fungal infections.

Table 2. Infective lesions observed in lung

Lesions	Total cases	percentage
Pneumonia	131	65.17%
TB	64	31.8%
Fungal	6	2.9%
Total	201	

Table 3. Patterns of Pneumonia observed in lung.

Lesions	Males	Females	Total	M:F ratio	Percentage
Lobar Pneumonia	32	16	48	2:1	36.6%
Broncho-pneumonia	44	27	71		54.1%
Interstitial Pneumonia	4	8	12	1:2	9.1%

Thus, Males are more affected than females due to Lobar and Bronchopneumonia. Females show more involvement of lungs due to interstitial pneumonia. Bronchopneumonia is the predominant histological pattern observed in lungs

Table 4. Concomitant lesions observed in lung

Acute respiratory distress syndrome with edema	4
Acute bronchitis	5
Bronchial Asthma	2
Emphysema	7
Bone marrow emboli	3
Meconium aspiration	2
Pulmonary hypertension	6
Atelectasis	5
Hyaline membrane disease	3
Thrombo-emboli	7
Secondaries in lung	7

IV. DISCUSSIONS

Medico-legal autopsies are commonly conducted in sudden and unexpected deaths to find out the cause in apparently healthy people. The results of our study show Males (74.56%) affected than Female (36.40%). The reason for this may be men usually are bread earners; therefore they are more exposed to risk factors. They are also addicted for alcoholism and smoking which makes them more prone for various diseases. Among the pulmonary diseases of infective aetiology, Pneumonia is the commonest disease affecting male in the age group of 10-60 years. We found out 131 cases of pneumonia which account for 8.5% of total cases studied. , Males are more affected than females due to Lobar and Bronchopneumonia. Females show more involvement of lungs due to interstitial pneumonia. Bronchopneumonia is the predominant histological pattern observed in lungs. Present study showed 8.5% cases of pneumonia, Kalpana et al6 in 2015 showed 137 cases (7.99%), Selvam V8. et al had (10.1%), Fang et al had (15%), Chauhan1 G et al had (15%), Tariq MT10 et al in 2013 had (4%) and Bal MS9 et al in 2008 had (18%). Thus the results of the present study are similar with the findings of Kalpana6 et al. In our study there were 64 cases of TB, which accounts for 4.1%., Kalpana6 et al in 2015 had 64 cases (4.1%) Bal MS9 et al in 2008 (4%) and Hanmante RD7 et al in 2014 found TB in 1.7% cases. Thus the results of the present study are similar with the findings of Kalpana6 et al. Chauhan1 et al had 7.06% cases of emphysema while in Kalpana6 et al study they were only

0.12%. In the present study the cases of emphysema were 7 (0.45%) which is well correlating with the findings of Kalpana6 et al.

Among non-infective causes congestion (33.29%) and pulmonary edema (29.8%) cases. Thus it is the most common finding in lungs associated with other systemic conditions. Present study showed 460 (29.8%)cases of pulmonary edema , while Kalpana et al6, Chauhan1 et al and V.Selvam8 showed pulmonary edema in 1325 cases(76.26%), 182 (54.32%) and 32 (29.6%) cases respectively. The present study findings are correlating with V.Selvam8. In the present study there were (9.3%) cases of intra-alveolar haemorrhages and chronic passive venous congestion was seen lung in 36 cases (2.3%) cases. There were also cases of acute bronchitis (0.41%), Emphysema (0.45%), acute respiratory distress syndrome (0.25%), and Bronchial Asthma in 2 cases (0.1%), Secondaries in lung in (0.6%), Thrombo-emboli in 7 cases (0.45%), Bone marrow emboli in 3 cases (0.19%), Hyaline membrane disease in 3 cases (0.19%), and meconium aspiration in 2 cases (0.1%). Six cases of fungal infections (0.38%) of cases these cases were not found in studies conducted by V.Selvam8 and Chauhan1 et al. No specific Lung pathology was observed in 166 cases (9.68%) cases by Kalpana6 et al, while our study had 80 cases i.e. (7.17%).

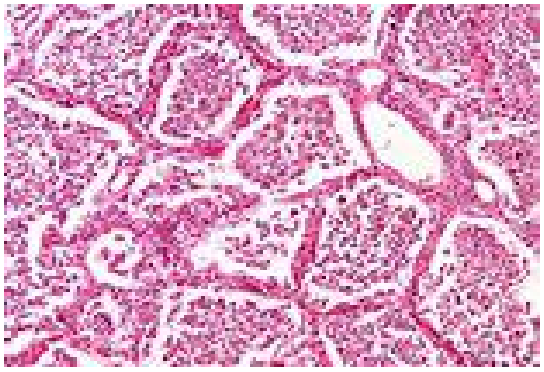

Figure 1. Lobar Pneumonia in stage of gray hepatisation. The alveoli are filled with neutrophils

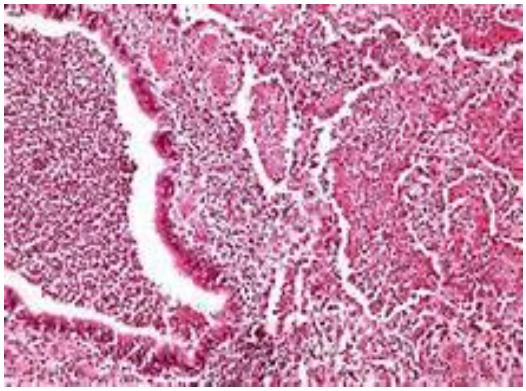

Figure 2. Bronchopneumonia- Intra-bronchial and peri-bronchial collection of neutrophils.

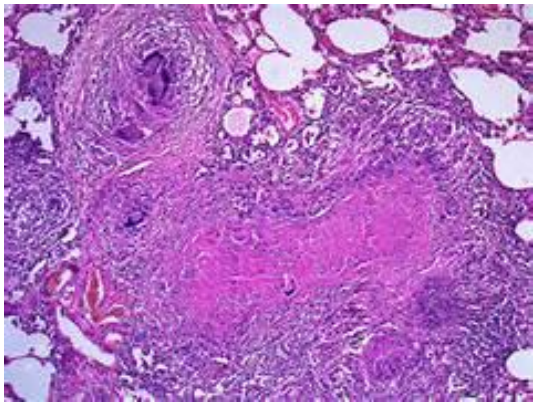

Figure 3. Granuloma formation in Lung with langhan's type of giant cell - H&E x100.

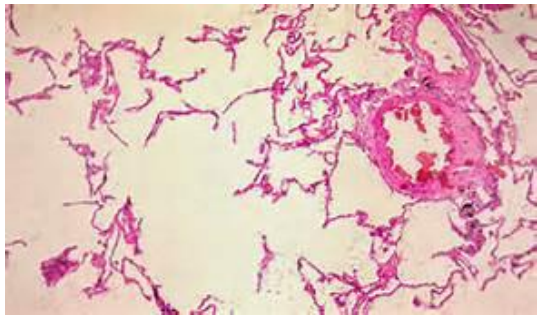

Figure 4. Emphysema -H&E x100 showing dilated air spaces.

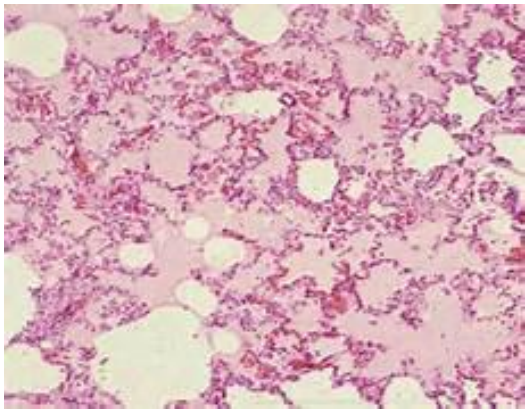

Figure 5. Diffuse pulmonary edema in lung

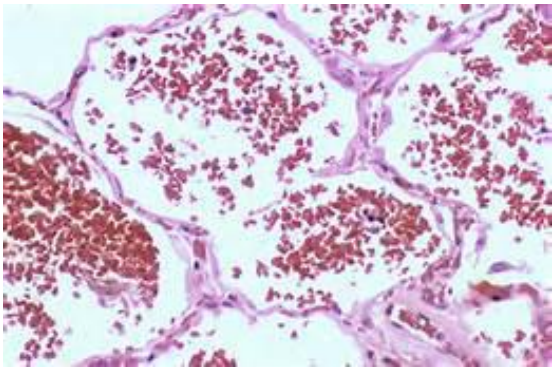

Figure 6. intra-alveolar haemorrhages.

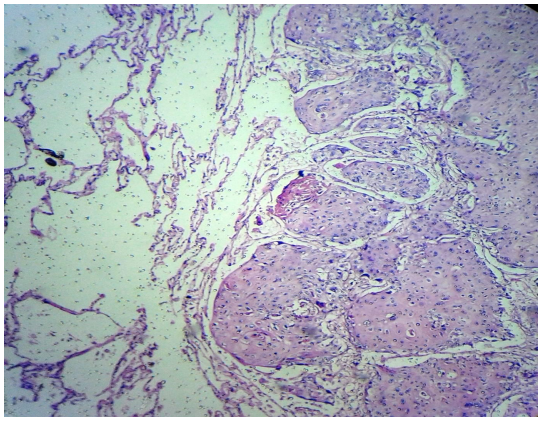

Figure 7. Deposits of squamous cell carcinoma in lung

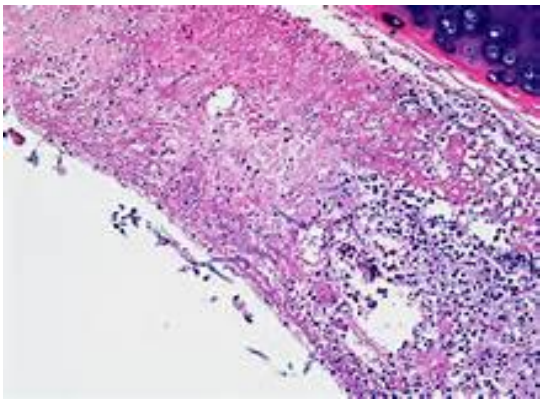

Figure 8. showing Aspergillous with inflammatory cells

V. CONCLUSION

The present study provides a comprehensive data about spectrum and frequency of Lung lesions; Advances in diagnostic techniques have not reduced the value of autopsy, Histopathological study of lungs in autopsy cases often reveal some natural diseases and its relation contributing to death.

VI. ACKNOWLEDGMENT

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