

HISTOMORPHOLOGICAL STUDY OF SPECTRUM OF LESIONS IN LUNG AUTOPSY

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Abstract

Background: Lungs are the vital organ which participate in exchange of gases between the inspired air and blood. The common lesions in lung include inflammation, infection, occupational lung diseases and neoplastic diseases. Autopsy plays a pivotal role in medical practice to examine the internal organs grossly and study the histopathological findings to establish cause of death. Objectives: 1. To study the spectrum of lesions in lung autopsy specimens in relation to age and sex 2. To determine the common cause of death by studying the lung pathology. **Materials and Methods:** This is a retrospective study of 100 lung autopsy specimens, which was carried out in the Department of the Pathology, Raichur Institute of Medical Sciences, Raichur, over a period of three years from January 2019 to December 2021. Gross and microscopic findings were recorded. Specimen were fixed in 10% formalin, processed and embedded in paraffin wax. Sections were cut, stained with Hematoxylin and eosin stain and examined under the microscope. **Result:** A total of 100 lung autopsy specimens were studied in which lung diseases were common males (74%) compare to that of females (26%). The Lung lesions were most commonly seen in the age group of 16-30 years (37%). The most common lung lesions were of Congestion/ edema/ changes in interstitium/ pulmonary haemorrhage in (60%). The most common cause of death in the study was of Trauma/Road traffic accident (RTA) in (31%) followed by sudden death (18%). **Conclusion:** Autopsy of diseased lung and its pathological examination provides critical information and improves the clinical diagnosis inspite of modern technologies.

INTRODUCTION

The lungs are ingeniously constructed to carry out their cardinal function: the exchange of gases between inspired air and blood.^[1]

The lungs are involved in various kinds of inflammatory, neoplastic and other lesions. Secondary involvement of lungs are seen in almost all forms of terminal events due to cardiovascular causes.^[2] Millions of people around the world suffer from preventable chronic respiratory diseases.^[3]

Lung disorders have varied and complex presentations. The clinical and radiological findings are mostly nonspecific. So prompt pathological investigations and diagnosis are essential to improve patient survival and reduce further morbidity and mortality.^[4] It is very crucial to determine the leading causes of death and with the help of less expensive preventive actions, we

can further avoid the progression of pulmonary dysfunction and unnecessary interventions.^[5]

Autopsy is a medical practice in which thorough body examination is done after the death and internal organs are studied grossly and histopathologically to determine the cause of death or manner of death^[6,7].

Objectives

1. To study the spectrum of lesions in lung autopsy specimens in relation to age and sex.
2. To determine the common cause of death by studying the lung pathology.

MATERIALS AND METHODS

This is a retrospective study carried out in the department of the pathology, Raichur Institute of Medical Sciences, Raichur, over a period of three years from January 2019 to December 2021. The study included a total of 100 lung autopsy

specimens, irrespective of age, sex and cause of death. These specimen were examined grossly, section were taken from representative areas and stained with hematoxylin and eosin stain and examined microscopically. Periodic acid Schiff and Ziehl-Neelsen stain were done wherever necessary. Autolysed specimens were excluded from the study.

Data was analysed using Microsoft Excel.

RESULTS

A total of 100 lung autopsy specimens were studied over a period of three years from January 2019 to December 2021. In 100 cases of autopsy lung, 74 cases (74%) were males and 26 cases (26%) were of females. The most common lung lesions were of Congestion/ edema/ changes in interstitium/ pulmonary hemorrhage in both males and females 60 cases (60%) followed by normal lung in 20 cases (20%). Pneumonia were seen in 11 cases (11%), Acute Respiratory Distress

Syndrome (ARDS) in 3 cases (3%), Tuberculosis in 2 cases (2%), Emphysema in 4 cases (4%). No malignant lesion was observed in the present study. [Table 1]

Cases of Congestion/ edema/ changes in interstitium/ pulmonary haemorrhage and normal lung were seen more commonly in the age group of 16-30yrs. Cases of Pneumonia, ARDS were more common in the age group of 31-45 yrs. 2 cases of tuberculosis were seen in the age group of 16-30yrs and 46-60yrs respectively. Emphysema were more commonly seen in the age group of 46-60 yrs. [Table 2]

In the present study, the most common cause of death was Trauma/RTA which were seen in 31 cases (31%) and sudden death in 18 cases (18%). Other causes of death were assault seen in 10 cases (10%), burns in 3 cases (3%), found dead in 12 cases (12%), drowning in 5 cases (5%), hanging in 4 cases (4%), poisoning in 8 cases (8%), snake bite in 5 cases (5%) and electrocution in 4 cases (4%). [Table 3]

Table 1: is showing sex wise distribution of lung lesions (n=100)

Lesion	Male	Female	Total
Congestion/edema/changes in interstitium/pulmonary haemorrhage	43%	17%	60%
Pneumonia	9%	2%	11%
ARDS	1%	2%	3%
Tuberculosis	2%	0%	2%
Emphysema	4%	0%	4%
Normal lung	15%	5%	20%
Total	74%	26%	100%

Table 2: is showing age wise distribution of lung lesions (n=100)

Lesion	0-15yrs	16-30yrs	31-45yrs	46-60yrs	>60yrs%
Congestion/edema/changes in interstitium/pulmonary haemorrhage	4%	24%	14%	14%	4%
Pneumonia	0%	2%	4%	2%	3%
ARDS	0%	1%	2%	0%	0%
Tuberculosis	0%	1%	0%	1%	0%
Emphysema	0%	1%	1%	2%	0%
Normal lung	1%	8%	7%	3%	1%
Total (100%)	5%	37%	28%	22%	8%

Table 3: showing frequency of cause of death in lung autopsies (n=100)

Cause of death	No of cases	Percentage
Assault	10	10%
Burns	3	3%
Sudden death	18	18%
Found dead	12	12%
Drowning	5	5%
Hanging	4	4%
Poisoning	8	8%
Snake bite	5	5%
Trauma/RTA	31	31%
Electrocution	4	4%
Total	100	100%

DISCUSSION

Autopsies are done to confirm the identity, cause of death, time of death and also ante-mortem or post-mortem nature of death there by helping in ascertaining the disease process which led to death.

In the present study, a total of 100 lung autopsy specimens were studied and lung pathology were more commonly affected in males (74%) compared to that of females (26%). Similar findings were seen in the study conducted by Chavi Gupta et al^[8] (84%), and Goswami et al^[7] (90%).

The lung lesions in the present study were most commonly seen in the age group of 16-30yrs (37%)

where as in the observation done by Bhavneet Kour et al^[9] showed maximum cases in the age group of 31-45 yrs (34.4%).

Terminal events are the most common findings in many studies. It includes Cases of Congestion/ edema/ changes in interstitium/ pulmonary haemorrhage. In the present study terminal events were the most common lesions associated with lung autopsy specimens (60%). These findings were in concordance with study done by Rupali et al^[10] (58.8%), Puneet Garg et al^[11] (58%) and Manjit et al^[12] (58%). These changes could be because of pollution, smoking, cardiovascular diseases and any restrictive lung diseases leading to fibrosis.^[9]

Normal morphology in lung autopsy specimens were the next most common finding in the present study (20%), this is comparable to the study done by Manjula K et al^[13] (20.77%).

In the present study, Pneumonia cases were seen in (11%). The study conducted by Goswami et al^[7] (33.8%) and Udayashankar et al^[14] (31.81%) showed Pneumonia as the most common lesion occurring in the lung autopsy specimens in their study.

In the present study, Tuberculosis were seen in (2%), similar in comparison to the study done by Selvam et al^[15] (2.8%).

ARDS were seen in 3% of cases. Similar findings were obtained from the study done by Sachdev S et al^[16] (3.14%), Divyarani et al^[17] (4.8%).

In the present study, Emphysema were seen in 4% of cases. The study done by Tahir et al^[18] (4%) and Sumaya et al^[19] (4.7%) also obtained similar findings.

Most common cause of death in the present study was Trauma/RTA (31%) followed by sudden death (18%). The study done by Sumaya et al^[19] also showed cases of RTA (26.2%) followed by Sudden death (15.9%) as the most common cause of death. Chakma et al^[20] study observed that, the commonest cause of death was shock and haemorrhage (45.53%) followed by head injury cases (22.77%).

No malignant lesion was seen in the present study. The study done by Bhavneet Kour et al^[9] and Smitha Jhaveri et al^[21] also had the same observation.

CONCLUSION

Autopsy is the gold standard medical practice to confirm the cause of death. Despite of recent advances in diagnostic technologies, autopsy remains an important tool for identifying and understanding the preventable respiratory diseases.

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