Original Research

A Histopathological Evaluation of Prevalence of Lung Lesions in Autopsy Cases: An Institutional Based Study

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Abstract

Background:A comprehensive autopsy involves the inspection of the three primary body cavities: the cranium, thorax, and abdomen. Hence, the present study was conducted for evaluating the prevalence of lung lesions at autopsy.

Materials &Methods: The study encompassed a total of 200 cases that underwent medicolegal autopsy during the specified timeframe, regardless of age or sex. Among these, 53 cases involved lung autopsy samples. Each autopsy was conducted by a forensic expert. Lung tissue samples were preserved in 10% formalin and subsequently sent to department, accompanied by relevant history, clinical details, and gross findings. All histological sections were stained using Hematoxylin & Eosin and mounted for evaluation of the results.

Results:A total of 200 cases were evaluated. The mean age was 46.9 years. 53.5 percent of the cases belonged to the age group of more than 40 years. Lung pathologies were seen in 26.5 percent of the cases. Congestion and oedema, changes in interstitial, pneumonia, emphysematous changes and acute respiratory distress syndrome wereseen in 22.64 percent, 15.09 percent, 24.53 percent, 11.32 percent and 26.42 percent of the cases.

Conclusion: The histopathological analysis plays a crucial role in determining the definitive cause of death. This investigation emphasizes the presence of various lung lesions, which may be classified as either incidental findings or direct contributors to mortality.

Key words: Lung, Lesions, Autopsy.

INTRODUCTION

The term "autopsy" refers to the examination of a deceased individual's body, serving as a critical method for assessing the state of internal organs and determining the underlying causes of death, whether due to disease or injury.[1] A comprehensive autopsy involves the inspection of the three primary body cavities: the cranium, thorax, and abdomen. Among these, the evaluation of the lungs within the thoracic cavity is paramount in both medicolegal and clinical autopsies. The medicolegal autopsy, conducted by a forensic specialist, aims to assist legal investigations by clarifying the identity of the deceased, the cause and time of death, and whether the circumstances surrounding the death were pre- or post-mortem in nature. Conversely, the clinical or pathological autopsy is typically performed by a pathologist to ascertain the cause of death and to analyze the disease processes that contributed to it.[2]

Following the autopsy, histopathological analysis of tissue samples from various organs is often conducted. However, if the tissue samples are inadequately preserved in fixative or are not representative, a conclusive histopathological report may be unattainable.[3- 5] Despite challenges such as delays in performing autopsies, improper sampling, and issues with preservation and transport, microscopic examination of tissues remains a valuable approach for investigating disease processes in situ, thereby enhancing medical understanding. Research has indicated notable discrepancies, both major and minor, between clinical diagnoses and autopsy findings.[6-9]Hence; the present study was conducted for evaluating the prevalence of lung lesions at autopsy.

MATERIALS & METHODS

The present study was conducted to evaluate theprevalence of lung lesions at autopsy. This study encompassed a total of 200 cases that underwent medicolegal autopsy during the specified timeframe, regardless of age or sex. Among these, 53 cases involved lung autopsy samples. Each autopsy was conducted by a forensic expert. Lung tissue samples were preserved in 10% formalin and subsequently sent to our department, accompanied by relevant history, clinical details, and gross findings. Specimens measuring 4 mm to 5 mm were extracted from the lung tissues and placed in cassettes. Following standard processing procedures, paraffin embedding was performed to prepare the blocks. All histological sections were stained using Hematoxylin& Eosin and mounted for evaluation of the results. Assessment of results was done using SPSS software.

RESULTS

A total of 200 cases were evaluated. The mean age was 46.9 years. 53.5 percent of the cases belonged to the age group of more than 40 years. Lung pathologies were seen in 26.5 percent of the cases. Congestion and oedema, Changes in interstitium, Pneumonia, Emphysematous changes and acute respiratory distress syndrome was seen in 22.64 percent, 15.09 percent, 24.53 percent, 11.32 percent and 26.42 percent of the cases.

Table 1: Age-wise distribution

Age group (years)	Number	Percentage
Less than 15	23	11.5
15 to 30	37	18.5
31 to 40	33	16.5
More than 40	107	53.5
Total	200	100

Table 2: Incidence of lung pathologies

Lung pathologies	Number	Percentage
Present	53	26.5
Absent	147	73.5
Total	200	100

Table 3: Spectrum of histopathological findings

Histopathological findings	Number	Percentage
Congestion and oedema	12	22.64
Changes in interstitium	8	15.09
Pneumonia	13	24.53
Emphysematous changes	6	11.32
Acute respiratory distress syndrome	14	26.42
Total	53	100

DISCUSSION

Inflammation, Infections, occupational diseases and neoplastic lesions are common in lungs. In Autopsy internal organs including lungs are studied to decide cause of death and figure out prevalence of various lung lesions. So, prophylactic prevention plan can be prepared for prevention of various lung lesions induced mortality and reducing need for invasive biopsy as well.[8 – 10] Hence; the present study was conducted to evaluate the prevalence of lung lesions at autopsy.

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24.53 percent, 11.32 percent and 26.42 percent of the cases. Khare P et al studied the prevalence and pattern of lung diseases in medicolegal autopsies, confirmed by histopathological examination. Tissue bits from lungs, retrieved at the time of autopsy, were preserved in 10% formalin. These were processed and examined microscopically. During the study period, a total of 86 cases were analyzed. Out of these, 4 cases (4.8%) exhibited autolysis of the tissue, while 26 cases (30.1%) showed no significant histopathological abnormalities. Notably, significant microscopic findings were identified in 56 cases (65.1%). A diverse array of microscopic alterations was observed, with the most prevalent being edema and congestion, accounting for 28.5% of the cases, followed by interstitial changes at 11.9%. Granulomatous inflammation was present in 9.5% of the cases, and acute pneumonia and emphysema were each noted in 5.9% of the cases. Additionally, 1.2% of the cases were attributed to Hyaline Membrane Disease (HMD), Meconium Aspiration Syndrome (MAS), and acute respiratory distress syndrome (ARDS). The series also included 1.2% of cases involving young adults with fungal colonies accompanied by necrosis and abscess formation, raising the possibility of mucormycosis in that instance. Their study underscored the presence of various lung lesions confirmed through histopathological examination, which were either incidental findings or direct contributors to mortality.[11]

Goswami PR et al assessed the frequency of various lung lesions in relation to age and sex and analyze histopathological spectrum of lung lesions. A non-interventional, record-based, cross-sectional, retrospective autopsy study was conducted involving 139 lung autopsy samples at the Department of Pathology. The lung specimens were preserved in 10% formalin and subsequently processed. Paraffin wax embedding was performed, and the sections were stained using hematoxylin and eosin (H&E). Both gross and microscopic examinations of the samples were carried out, leading to the establishment of diagnoses. All observations were meticulously recorded and organized in tabular form. The study identified pneumonia as the most prevalent pathological lung lesion, indicating that lung infections are a significant contributor to mortality. Consequently, the findings advocate for the effective implementation of strategies aimed at preventing hospital-acquired pneumonia to potentially decrease mortality rates.[12]

CONCLUSION

The histopathological analysis plays a crucial role in determining the definitive cause of death. This investigation emphasizes the presence of various lung lesions, which may be classified as either incidental findings or direct contributors to mortality.

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