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Original Research

Assessment of prevalence of Lung Lesions at Autopsy: An observational study

[1]Pullkit Agarwal, [2]Amit Kochar

[1]Assistant Professor, Department of Respiratory Medicine, R D J M Medical Colleage & Hospital Muzaffarpur, Bihar, India
[2]Associate Professor, Department of Forensic Medicine, Meenakshi Medicla College Jospital & Research Institue, Tamil Nadu, India

ABSTRACT:
Background
Materials & methods: The department received lung autopsy samples from a total of 50 victims. An expert in forensics performed each of these autopsies. 10% formalin was used to preserve lung tissue fragments. Afterwards, together with the history, clinical information, and gross results, these were transmitted to our department. Haematoxylin and Eosin stain was used to colour all of the histology sections, and they were then mounted. Where necessary, periodic acid- Schiff (PAS) and Ziehl-Neelson stains were also performed. These were subsequently examined under a microscope, and the results were noted. While the forensic expert only submitted small samples of lung tissue, the findings could not be matched with the gross findings. Results were analyzed using SPSS software. **Results:** Out of 50 cases, normal lung tissue was seen in 24 percent while diseased lung tissue was seen in 66 percent. Lysed lung tissue was seen in 5 cases. Out of 33 cases with diseased lung, congestion and edema was seen in 15 cases while changes in interstitium was seen in 8 cases. Inflammation, emphysema changes and hyaline membrane disease were seen in 15.15 percent, 9.09 percent and 6.06 percent of the cases respectively. **Conclusion:** Provision of histopathological examinations of the autopsied tissues are available only in small number of institutions which often leads to delay and damages to the autopsy tissue samples. The histopathological examination helps in establishing the final cause of death.
Key words: Lung, Lesions, Autopsy

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Corresponding author: Amit Kochar, Associate Professor, Department of Forensic Medicine, Meenakshi Medicla College Jospital & Research Institue, Tamil Nadu, India

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INTRODUCTION

The term “autopsy” is derived from the Ancient Greek word autopsia, means “to see for oneself”, autos (“oneself ”) and opsis (“eye”). A handful of histopathological findings unrelated to the cause of death are noticed in routine histopathological examination of medicolegal autopsies. These findings have proved to be of great academic value and serve as an eye opener to the infrequent lesions which go unnoticed when a person is alive. The medicolegal autopsy provides an opportunity for studying not only medically diagnosed and treated neoplasms, but also the natural evolution of untreated disease.[1- 3]

Pulmonary disease is the most common type of involvement and occurs primarily in patients with preexisting structural lung damage such as emphysema or bronchiectasis. Pulmonary involvement is less common in the setting of systemic immune dysfunction, such as hematologic malignancies or primary immunodeficiencies, especially those involving the interferon-γ (IFN-γ)/IL-12 axis.[4- 6]Sudden and unexpected natural deaths and nonnatural deaths may result from various pulmonary conditions. Additionally, several nonpulmonary conditions of forensic significance may be complicated by the development of respiratory lesions. Certain situations with pulmonary pathology are particularly likely to be critically scrutinized and may form the basis of allegations of medical negligence, other personal injury liability, or wrongful death.[7]Hence; the present study was conducted for assessing prevalence of Lung Lesions at Autopsy.

MATERIALS & METHODS

The present study was conducted for assessing the prevalence of Lung Lesions at Autopsy. This study covered every consecutive case that underwent medicolegal autopsy during that time, regardless of age or gender. The department received lung autopsy samples from a total of 50 victims. An expert in forensics performed each of these autopsies. 10% formalin was used to preserve lung tissue fragments. Afterwards, together with the history, clinical information, and gross results, these were transmitted to our department. We created blocks using 4 to 5 mm sections of lung tissue that had undergone paraffin embedding and normal processing. Haematoxylin and Eosin stain was used to colour all of the histology sections, and they were then mounted. Where necessary, periodic acid- Schiff (PAS) and Ziehl-Neelson stains were also performed. These were subsequently examined under a microscope, and the results were noted. While the forensic expert only submitted small samples of lung tissue, the findings could not be matched with the gross findings. Results were analyzed using SPSS software.

RESULTS

Out of 50 cases, normal lung tissue was seen in 24 percent while diseased lung tissue was seen in 66 percent. Lysed lung tissue was seen in 5 cases. Out of 33 cases with diseased lung, congestion and edema was seen in 15 cases while changes in interstitium was seen in 8 cases.Inflammation, emphysema changes and hyaline membrane disease were seen in 15.15 percent, 9.09 percent and 6.06 percent of the cases respectively.

Table 1: Lung tissue on histopathology

Histopathology findings	Number	Percentage
Normal lung	12	24
Diseased lung	33	66
Lysed lung tissue	5	10
Total	50	100

Table 2: Spectrum of lung pathologies

Histopathology findings	Number	Percentage
Congestion and edema	15	45.45
Changes in interstitium	8	24.24
Inflammation	5	15.15
Emphysema changes	3	9.09
Hyaline membrane disease	2	6.06
Total	33	100

DISCUSSION

Tuberculosis is endemic in many parts of the world and causes many deaths. The most common form is pulmonary tuberculosis, characterized pathologically by necrotizing granulomas, associated pneumonia, and a great propensity for fibrosis and dystrophic calcification. Due to the stigma associated with this disease, in many cases of active TB, either there is a delay in diagnosis and treatment leading to unrestricted exposure of bacilli to environment or the patient fails to take adequate treatment causing multidrug resistance. A subset of patients may require surgical intervention due to the associated complications. The prevalence of tuberculosis is high in the Indian subcontinent, and cases may not be diagnosed until after an autopsy is performed.[7-10]Hence; the present study was conducted for assessing prevalence of Lung Lesions at Autopsy.

Out of 50 cases, normal lung tissue was seen in 24 percent while diseased lung tissue was seen in 66 percent. Lysed lung tissue was seen in 5 cases. Out of 33 cases with diseased lung, congestion and edema was seen in 15 cases while changes in interstitium was seen in 8 cases. Inflammation, emphysema changes and hyaline membrane disease were seen in 15.15 percent, 9.09 percent and 6.06 percent of the cases respectively. Dammas S et al determined if a retrospective autopsy review is indeed accurate in identifying all small lung nodules on CT, and thus provide a true estimate of unsuspected lung tumors.CT studies with reports that described a nodule(s) were then re-reviewed to confirm presence and location of the nodule(s). The CT findings were than compared to the autopsy report to determine if the postmortem examination indeed found the nodule(s).28 autopsy patients had at least one pulmonary nodule identified on their thoracic CT no more than 2 months before death. Nineteen patients (68%) had nodule(s) recorded on the autopsy report, two (approximately 10%) of which proved to have undiagnosed squamous cell carcinoma. Nine patients (22%) had no mention of pulmonary nodules seen on the CT recorded on their autopsy report.Their study suggests autopsies do not identify all small pulmonary nodules found at CT.[10]

Patel S et al determined the spectrum of histopathological findings including neoplastic lesions related or unrelated to the cause of death.A retrospective study of medicolegal autopsies for six years was undertaken in a tertiary care centre to determine the spectrum of histopathological findings including neoplastic lesions related or unrelated to the cause of death and to highlight various incidental and interesting lesions in autopsies. The study consisted of a series of 269 autopsy cases and histopathological findings were studied only in 202 cases. The commonest cause of death was pulmonary oedema. The most common incidental histopathological finding noted was atherosclerosis in 55 (27.2%) cases followed by fatty liver in 40 (19.8%) cases. Neoplastic lesions accounted for 2.47% of cases. Their study has contributed a handful of findings to the pool of rare lesions in pathology.[11]

CONCLUSION

Provision of histopathological examinations of the autopsied tissues are available only in small number of institutions which often leads to delay and damages to the autopsy tissue samples. The histopathological

examination helps in establishing the final cause of death.

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