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HISTOPATHOLOGICAL EVALUATION OF AUTOPSY SPECIMENS OF LUNG IN A TERTIARY CARE CENTRE IN NORTH INDIA: A RETROSPECTIVE STUDY

Pathology

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ABSTRACT

Aim/Objectives: To determine the prevalence and pattern of different pulmonary lesions in medicolegal autopsy confirmed by histopathological examination.

Material and Methods: This retrospective study was carried out in the Department of Pathology over a period of one year in 162 cases. Autopsy specimens preserved in formalin were examined and microscopic findings were recorded in detail.

Results: Mean age of patients in our study was 38 years and majority were males. Autolysed tissues were seen in 2.5% cases. Of all the examined cases, significant microscopic findings were seen in 87.6% cases with unremarkable findings in 9.9% cases. In patients with significant findings, edema and congestion were the commonest findings followed by interstitial inflammation. Tuberculosis and Pneumonia were seen in 12.0% and 10.6% cases while Emphysematous changes were seen in 5.6% cases.

Conclusions: Autopsy remains a vital component for the study and evaluation of the disease process. Histopathology examination of autopsy lung tissue is helpful in evaluation of underlying lung pathology.

KEYWORDS

Histopathology; Autopsy; Pneumonia; Emphysema

INTRODUCTION:

Pathologist has an important role to study the disease process which led to death and to establish the cause of death [1]. Examination of all the three body cavities i,e cranium, thorax and abdomen form an essential part of autopsies [2]. The medicolegal autopsy is carried out by forensic expert to establish identity, cause of death, time of death, and ante-mortem or post-mortem nature of crime [2]. The clinical autopsy or pathological autopsy is usually performed by pathologist to establish the cause of death and to study the disease process which led to death [2].

Autopsy is mostly followed by histopathological examination of tissues from various organs [2]. Preservation of tissues in fixative such as formalin is required and if proper preservation is not performed, final histopathological report is often not possible. Despite pitfalls like delays in carrying out autopsies, improper sampling, improper preservation and transport, microscopy of tissues is still considered a very useful method to study the disease process in situ [3].

The lungs are commonly affected by infectious, inflammatory, occupational and neoplastic conditions and are secondarily involved in almost all terminal events [4]. So it becomes utterly important to identify the leading cause of death to establish preventive methods. Autopsy is an important complementary tool to evaluate disease or injury that may be present and to determine the cause and manner of a person's death.

This study describes the prevalence and pattern of lung diseases in medicolegal autopsies, confirmed by histopathological examination.

MATERIAL AND METHODS:

This retrospective study was performed in tertiary care centre in north India over a period of one year from January to December 2017. Viscera from medicolegal cases sent to the department of pathology for histopathological examination during that period were included. Lungs were examined grossly for colour, weight, volume, consistency, areas of fibrosis, oedema, congestion, abscess formation, bullae, cavitary lesions, status of bronchi and pleura (thickening and nodule formation). The lungs were fixed in 10% formalin. Tissues were processed, 4 to 5 micron thickness sections were taken and stained with Haematoxylin and Eosin stain and examined microscopically. Ziehl Neelson staining was also done wherever required. The findings were tabulated in detail

RESULTS:

162 patients formed the material of the study. Majority of the patients were seen in 20-40 year age group (Table 1). Most of the patients were males with male to female ratio of 5.2:1 (Table 1). Autolysed tissue was seen in 2.5 % cases. In rest of the cases, significant findings were seen in 87.6% cases while Normal histological appearance was seen in 9.9% cases. No malignant lesions were found in the study.

In patients with significant findings, edema and congestion were the commonest findings seen in 49.3 % cases followed by interstitial inflammation (21.8%) (Table 2). In patients with congestion and edema, findings included congested blood vessels and intra-alveolar haemorrhages and alveoli distended with protein rich fluid. In patients with interstitial changes, broadening of inter-alveolar septae due to mononuclear infiltrate, interstitial fibrosis and increased alveolar macrophages were seen. Tubercular involvement was seen in 12.0 % cases while Pneumonia was seen in 10.6% cases (Table 2) and was characterized by vascular engorgement, intra-alveolar fluid and neutrophilic infiltrate. Emphysematous involvement of lungs was seen in 5.6% cases and showed large alveoli separated by thin septa and focal fibrosis, few showing ruptured alveoli. Single case of ARDS was seen in 60 year old man who showed congestion, intra-alveolar oedema, inflammation and fibrin deposition.

DISCUSSION:

Medicolegal autopsies are mandatory legal requirement in non natural deaths to assist the law and to perform a medicolegal autopsy, consent from relatives of the deceased is not required [6]. Autopsy is the most useful way to determine the conditions of internal organs of the body. Besides evaluating clinico-pathological variation, autopsy has a significant role in the development of new understanding about old diseases and provides opportunity to discover new diseases.

In our study, majority of cases were males, comparable to previously published studies [7-10]. Autolysed samples in our study were seen in 2.5% cases. The results were better as compared to results of Khare P et al [2] and this can be attributed to availability of good preservation facilities. Normal lung histology was seen in 5.0 % cases in our study, similar to previous studies [2].

In our study, congestion and oedema were the commonest finding and was seen in 49.3% cases, similar to previously to published studies [2,7,9,10]. This may be attributed to death related changes or secondary involvement of lungs in all forms of terminal events due to cardiovascular causes [2]. The second commonest finding was changes in interstitium seen in 21.8% cases and it may be attributed to pollution, smoking or any restrictive lung disease leading to fibrosis [2].

Acute Pneumonia was seen in 10.6% cases, similar to previous studies [7,10]. Tubercular pathology was seen in 12.0% cases, similar to results of Khare P et al [2] and Kandy NC et al [11]. Caseous necrosis

and epithelioid cell granulomas were seen in all cases. Emphysematous changes were seen in 5.6% cases and majority of them were smokers from urban background, similar to results of Khare P et al [2]. Solitary case of ARDS was seen in our study. Previous studies by Khare P et al [2], Bal MS et al [4] and Sachdev S et al [12] also reported a low prevalence of ARDS in autopsy specimens.

CONCLUSIONS:

The current study shows the prevalence of lung lesions among the population in North India and also highlights the various lesions in lungs which were either incidental or direct cause of death. Histopathological examination of autopsy lung tissue is useful for evaluation of underlying lung pathology and may help to reduce the prevalence of preventable lung lesions.

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Table 1: Age And Sex Distribution (n=162)

Age Group	Number	Number of Males	Number of Females
0-20	38	32	6
20-40	84	70	14
40-60	34	29	5
60-80	6	5	1
Total	162	136	26

Table 2: Spectrum Of Significant Histopathological Findings (n=142)

Microscopic Findings	Number	Number of Males	Number of Females
Congestion and Edema	70	58	12
Changes in Interstitium	31	26	5
Emphysematous Changes	8	8	-
Tuberculosis	17	14	3
Pneumonia	15	11	4
ARDS	1	1	-
Total	142	118	24

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