

Histomorphological Pattern of Lung in a Sequential Series of 200 Autopsies Sample in Dhaka Medical College

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Abstract

Background: Lung diseases are common health problem in our country. Many lung lesions can remain silent and diagnosed only routine systematic examination of lungs during autopsy and can detect unsuspected lung pathology.

Methods: The study population comprised deceased undergoing medicolegal autopsy in Dhaka Medical College over a period of two years (July 2017 to June 2019). The total number of samples were 200. Gross and histopathological findings of each specimen were documented in details. The data were collected and statistical analysis was done by SPSS.

Results: The age of the study subjects were 45.78± 8.95. About 75% were male and 25% were female. On microscopic examination, out of 200 cases, 85 cases of left lungs and 86 cases of right lungs and 55 cases of both lungs were found normal. Among the abnormal cases, 82 cases of both lungs and 115 cases of left lungs and 114 cases of right lungs were shown histological changes. There was no significant difference between two lungs involved by the diseases. Among non neoplastic lesions, the most common lesions seen were pneumonia. Pneumonia was seen 60 cases (30%) of left lungs and 62 cases (31.0%) of right lungs. Lung carcinoma was seen in only one case (0.5 %) which was squamous cell carcinoma.

Conclusion: Clinically normal appearing lung lesions may contain major pathological lesions when they are microscopically studied. Systematic examination of the lung routinely in forensic autopsies not only would be useful in determining the cause of death.

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Introduction

Pathological examination of autopsy organ is an important diagnostic tool to know the spectrum of various diseases, to understand disease process or pathogenesis, to assess various morphological pattern of same disease and give opportunity to discover new disease.¹

According to WHO data published in 2018, death due to lung cancer in Bangladesh reached 1.71 percent of total deaths.² Number of total deaths from tuberculosis 65,746.² Deaths due to influenza and pneumonia were 4.10 percent and number of total deaths from asthma were 14,674.²

The autopsy is considered as the gold standard for retrospective quality assessment of clinical diagnosis and enhances medical knowledge.³ Many histological findings unrelated to the cause of death are found in routine histopathological examination of medicolegal autopsies. These findings have serve as great academic value and provide information about infrequent lesions which remain unnoticed when a person was alive.

The medicolegal autopsy gives a opportunity for studying not only medically diagnosed and treated neoplasms, but also the natural evolution of untreated diseases. Many incidental findings have been highlighted on histopathological examinations and act as a learning tools for the pathologists as well as the forensic expert.¹

Autopsy is an important way to find out the condition of internal organs, to evaluate disease or injury that could explain the cause and manner of person's death.⁴ Autopsy examination of lung is important for both the medicolegal and clinical purpose. The medicolegal autopsy is done by forensic expert to help the law by identity cause of death, time of death, circumstances of death

and ante-mortem or post-mortem nature of crime.⁵ Clinical autopsy or pathological autopsy is important for post-mortem diagnosis and confirming the clinical diagnosis.⁶

This study is aimed to assess the histomorphological pattern of lung lesions of autopsy samples.

Methods

This study was started after receiving approval of the ethical committee of our institution. It is cross sectional descriptive study with convenient sampling done over a period of two years (July 2017 to June 2019). The study population included deceased person undergoing medicolegal autopsy in morgue under the Forensic Medicine Department of Dhaka Medical College. People of both sexes and all age group were included. The specimen was discarded if there were any sign of putrefaction or any cutting or crushing injury to lung.

All the autopsy subjects irrespective of age, sex & cause of death were included in the study. Both lungs were examined grossly and microscopically. The lungs were fixed in 10% formalin. Grossly lungs were examined for colour, volume (collapsed or inflated), consistency, presence of scarring, fibrosis, bullae, consolidation, nodules, infarction, secretions, oedema, congestion, granuloma or abscess formation & findings are recorded. In the absence of morphologically demonstrable lesions, a minimum of two sections per lung were studied (total 4 sections per autopsy)⁷ and in case of morphologically identifiable lesions, three sections from involved areas are taken. After routine processing and paraffin embedding 4 micro meter sections were taken. All the histological sections were stained in H & E stain & mounted. All the histological sections were examined microscopically & findings were recorded.

Result

The present study was carried out to determine the histomorphological pattern of lung lesions in autopsy specimen. For this purpose a total 200 cases of lung samples were enrolled in this study. After details gross examinations of the specimens, hematoxylin and eosin stained sections were examined under microscopic for histopathological examination.

The age ranged from 19 to 65 years and mean age was 45.78 ± 8.95 . Most of the study subjects were in between 31-40 age group (100 cases, 50%) followed by 41-50 age group (46 cases, 23%). The least number of sample were below 20 years (1 cases, 0.5%) and 1 case above the 60 years age (1 case, 0.5%) (Figure 1).

Among 200 cases, 150 cases were male (75%) and 50 cases were female (25%) and male and female ratio is 3:1 (Figure 2).

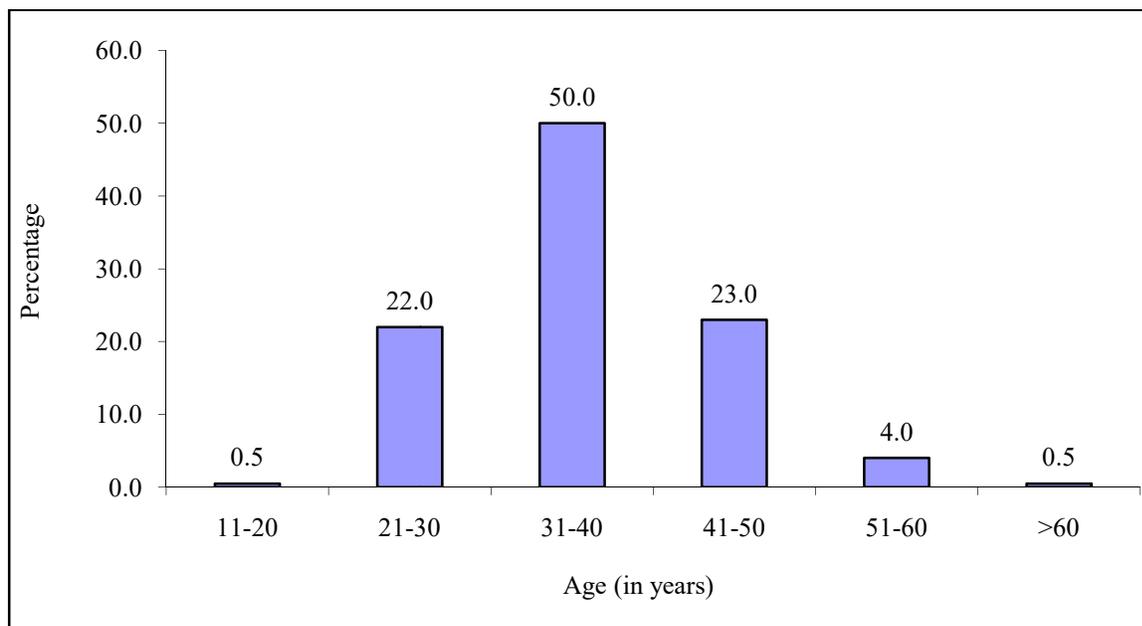


Figure 1. Distribution of study subjects according to age group

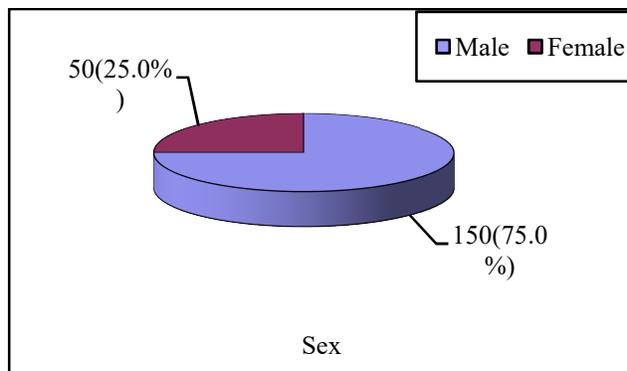


Figure 2. Distribution of deceased according to gender (n=200)

According to histopathological findings, 85 cases (42.5%) in left lung and 86 cases (43%) showed no significant cases (Table I). The highest number of cases were diagnosed as pneumonia (figure 3), (60 cases, 30% in left lung and 62 cases, 31% in right lung). The second highest number of cases diagnosed as congestion (45 cases, 22.5% in left lung and 46 cases in right lung). 5 cases of granulomatous inflammation were seen (2

cases in left lung and 3 cases in right lung). Bronchiectasis was observed in 3 cases (2 in left lung and 1 in right lung). Emphysema was found in 2 cases (all are in left lung). 2 cases were diagnosed as acute respiratory distress syndrome (1 case in left lung and 1 in right lung). 1 case was diagnosed as malignant neoplasm which was squamous cell carcinoma present in left lung).

Table I: Frequency of different lung lesions observed by histological evaluation in autopsy series (n=200)

Diagnosis	Number of patients	Percentage
Left		
Normal lung	85	42.5
Pneumonia	60	30.0
Congestion	45	22.5
Granulomatous inflammation consistent with tuberculosis	2	1.0
Lung abscess	2	1.0
Bronchiectasis	2	1.0
Emphysema	1	0.5
Acute respiratory distress syndrome	1	0.5
Squamous cell carcinoma	1	0.5
Right		
Normal lung	86	43.0
Pneumonia	62	31.0
Congestion	46	23.0
Granulomatous inflammation consistent with tuberculosis	3	1.5
Lung abscess	1	0.5
Bronchiectasis	1	0.5
Acute respiratory distress syndrome	1	0.5

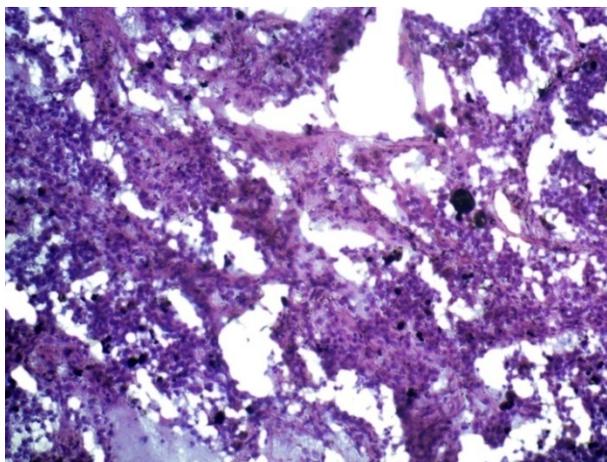


Figure 3. Lymphocytic infiltration (Diagnosis- Pneumonia, case no -11, H & E, 20X)

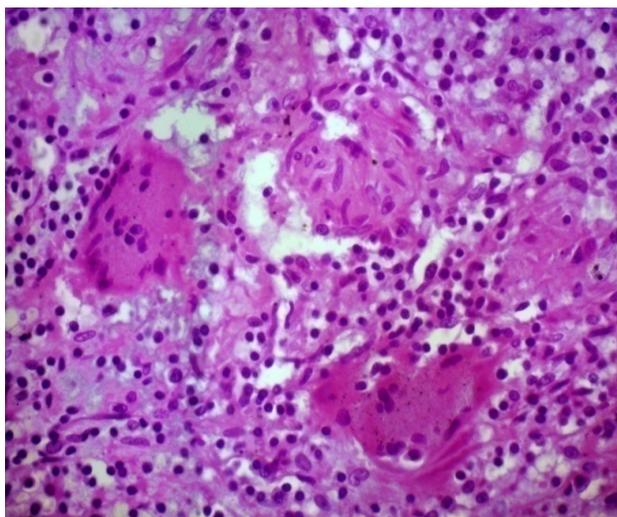


Figure 4. Epithelioid granuloma, multinucleated giant cell and caseous necrosis. (Diagnosis- Granulomatous inflammation consistent with tuberculosis , case no -56, H & E, 40X)

Discussion

The age of the study subjects were ranged from 19 to 65 years with a mean age of 45.78 ± 8.95 . This study was similar to the study done by Patel et al.,(2018).¹ Among them 150 cases were male (75%) and 50 cases were female (25%) with a male female ratio 3: 1 which is similar to the study done by Kaur et al., (2017).⁸ In this study out of 200 cases, 85 cases of left lungs and 86 cases of right lungs

and 55 cases of both lungs were found normal. This study consistent with a study done by Kaur et al.,(2017).⁸ Among the abnormal cases, 82 cases of both lungs and 115 cases of left lungs and 114 cases of right lungs were shown histological changes.

In this study, the most common non neoplastic lesion was pneumonia. Pneumonia was seen in 60 cases (30%) of left lungs and 62 cases (31.0%) of right lungs. The highest incidence of pneumonia was seen in the age group 31 to 40 in both left and right lungs. This study correlates with study done by Selvambigai et al (2016) where pneumonia was found in 40% cases.⁹ Among the abnormal cases, 82 cases of both lungs and 115 cases of left lungs and 114 cases of right lungs were shown histological changes.

In this study, the most common non neoplastic lesion was pneumonia. Pneumonia was seen in 60 cases (30%) of left lungs and 62 cases (31.0%) of right lungs. The highest incidence of pneumonia was seen in the age group 31 to 40 in both left and right lungs. This study correlates with study done by Selvambigai et al (2016).⁹

In this study second most common disease was congestion. Congestion was seen in 45 cases of left lungs (22.5%) and 46 cases (23.0%) of right lungs. The most common affected age group was 31 to 40 years. Similar study was also done by Patel et al (2018) where congestion and edema found in 93 cases (26.72%).¹

In the present study, 5 cases of granulomatous inflammation were seen. Among them 2 cases of granulomatous inflammation were seen in left lungs and 3 cases were seen in right lungs. A previous study done by Kurawar and Vasaikr (2017) is correlates with this present study.¹⁰

In the present study, 3 cases of bronchiectasis were found. 2 cases of bronchiectasis were seen in left lung and 1 case in right lung. Similar results were seen in study conducted by Kurawar and Vasaikr (2017).¹⁰ In the present study, 3 cases of lung abscess were seen, of which 2 cases were in left lungs and 1 case in right lung. A retrospective study done by Udaya Shankar Sk et al., (2015) is correlates with this present study.¹¹

In the present study, 2 cases of emphysema were found and all the study subjects were male and age range was between 30 to 45 years. The nearly similar study was seen in a study done by Chauhan et al., (2015).⁷ In the present study, 3 cases of lung abscess were seen, of which 2 cases were in left lungs and 1 case in right lung. A retrospective study done by Udaya Shankar Sk et al (2015) showed the similar result.¹¹

In the present study, 2 cases of emphysema were found and all the study subjects were male and age range was between 30 to 45 years. The nearly similar study was seen in a study done by Chauhan et al (2015).⁷

2 cases of acute respiratory distress syndrome were found in this study. Among them 1 case was 35 years female and another was a 40 years male. A study conducted by Bal et al., (2008) is consistent with this study.¹²

In this study only one case of malignant tumor was found which was squamous cell carcinoma at the age of 65 years. A study done by Kurawar and Vasaikr (2017) showed the same result.¹⁰

Conclusion

In this study a good number of diseased show normal lungs. Some other diseased show inflammatory lung diseases such as pneumonia, congestion, granulomatous inflammation, bronchiectasis, emphysema and

one case of carcinoma were found as well as. Finally, considering the findings of this study, it may be concluded that an apparently normal lungs in gross examination, may be the site of important pathologic lesions.

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