Spectrum of Pulmonary lesions in Autopsy cases

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Abstract

Aim: This study was designed to determine various pulmonary lesions by histopathological examination of lung tissue received in autopsy department.

Methods: The study was done on 130 lung specimens from autopsy cases received in this department over the period of 5 months. Gross finding and microscopic features were recorded. The tissue specimens were fixed and processed. Paraffin sectioning was done followed by Haematoxylin and Eosin staining. The sections were then examined.

Results: During period from January 2019 to May 2019, total 130 lungs specimens from autopsy department were studied. Lung diseases are more common in males as compared to females. Most common lung pathological findings are Terminal stage (53.84%), Pneumonia (14.61%), Tuberculosis (7.68%), Emphysema (3.06%) & Malignant lesions(0.76%) amongst the cases studied.

Conclusion: Advances in diagnostic technology have not reduced the value of autopsy and a goal-directed autopsy remains a vital component in the study and evaluation of the disease process. There are large numbers of cases of preventable respiratory diseases. This indicates that the autopsy has remained an important complementary tool for identifying and understanding respiratory diseases despite recent advances in diagnostic technology.

Keywords: *Autopsy, Pneumonia, Tuberculosis, Emphysema.*

Introduction

Autopsy is an important and most useful way to find out the condition of internal organs, in which a thorough examination performed on a body after death, to evaluate disease or injury that may be present and to determine the cause and manner of a person's death[1]. Hundreds of millions of people around the world suffer from preventable Chronic Respiratory diseases[2]. The lungs are commonly involved in various inflammatory, neoplastic and other lesions but they are secondarily involved in almost all form of terminal events due to cardiovascular causes[3]. Clinical history, laboratory investigations and imaging studies give supportive information but prompt pathological diagnosis is required for confirmation along with prognosis of the disease. This avoids the patient from more invasive procedures[4]. Therefore it is important to determine the leading causes of death to establish correct prophylactic actions, which is the least expensive strategy for preventing further pulmonary dysfunction and avoiding the need for lung biopsy[5]. A large number of conditions involved the parenchyma of with inflammation, fibrosis or granulomatous reactions[6].

The aim of this study was to determine the spectrum of histopathological findings including neoplastic and non-neoplastic lesions of Lung tissue received as autopsy specimens related or unrelated to the cause of death. In our study condition of the lungs studied grossly & histopathologically.

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Material and Method

The present study was conducted on lung specimens of 130 routine autopsies received in the Department of Pathology, Autopsy section, Civil Hospital, Ahmedabad, Gujarat to find out the frequency of various pulmonary alterations at autopsy. All the autopsy subjects irrespective of age, sex, and cause of death were included in the study. As most of the specimens received are in pieces which are examined grossly & microscopically. The medical history and clinical history were traced. The lungs were fixed in 10% formalin, weighed and dimensions measured. Grossly, lungs were examined for colour, volume (collapsed or inflated), consistency, presence of scarring, fibrosis, bullae, consolidation, nodules, infarction, secretions, edema, congestion, granuloma /abscess formation, the status of bronchi and pleura, and findings are recorded[7]. Irrespective of the presences or absence of morphologically demonstrable lesions, a minimum of 2 sections per lung were studied (total 4 sections per autopsy). After routine processing and paraffin embedding, 4-micrometer sections were taken. All the histological sections were stained with H and E stain and mounted. All the histological sections were examined microscopically and findings were recorded[8].

Results

During a period from January 2019 to May 2019, a total of 130 specimens of lungs from autopsy subjects received, at the autopsy section of the pathology department of B.J. Medical College, Asarwa, Ahmedabad.

Among all the cases, 80% were males and 20% were females. Both sexes showed a high incidence of congestion/edema/interstitial inflammation. Cases of congestion/edema/interstitial inflammation were more commonly found in age group 5th and 6th decade of life.

Table 1: Age wise distribution of pulmonary lesions

Lesion	0-9 years	10-19 years	20-29 Years	30-39 years	40-49 years	50-59 years	≥60 years	Total
Terminal stage	1	1	10	10	10	18	20	70(53.84%)
Pneumonia	0	2	2	2	3	4	6	19(14.61%)
Tuberculosis	0	0	1	1	4	3	1	10(7.69%)
Emphysema	0	0	0	2	1	1	0	04(3.06%)
Malignant	0	0	0	0	0	1	0	01(0.76%)
Autolysed	0	0	1	2	1	1	1	06(4.61%)
Normal Lung	1	1	2	4	3	3	6	20(15.38%)
Total	2	4	16	21	22	31	34	130(100%)

Table 2: Sex wise distribution of lung lesions

Lesion	Male (%)	Female (%)	Total No. of cases (%)
Terminal stage	62(47.69%)	08(6.15%)	70(53.84%)
Pneumonia	12(9.23%)	07(5.38%)	19(14.61%)
Tuberculosis	08(6.15%)	02(1.53%)	10(7.69%)
Emphysema	03(2.30%)	01(0.76%)	04(3.06%)
Malignant	01(0.76%)	00(0%)	01(0.76%)
Autolysed	03(2.30%)	03(2.30%)	06(4.61%)
Normal Lung	15(11.53%)	05(3.84%)	20(15.38%)
Total	104(80%)	26(20%)	130(100%)

Pneumonia is seen in 19(14.61%) out of 130 cases. Among which 12(9.23%) are males and 07 (5.38%) are females. Majority cases were in 6th and 7th decade of life.

Granulomatous (Tuberculosis) lesions are seen in 10(7.69%) out of 130 cases. Among these cases, 08 (6.15%) males affected as compared to 02 (1.53%) females. Granulomatous lesions found more commonly in 4th and 5th decade of life.

Emphysematous lesions are seen in 04(3.06%) cases. It was found more commonly in age group 30-39 years. 03(2.30%) males affected as compared to 01 (0.76%) females out of 130 cases.

One malignant lesion was found out of 130 cases. It was metastatic carcinoma present in 50 years old male. It was probably of renal origin.

Discussion

This study was compared to the other similar study. The results of this study showed that among the pulmonary diseases, Pneumonia is the commonest disease affecting more commonly persons above 50 years of age. There are 19 cases of pneumonia out of 130 cases. Males are affected more than females. This result is comparable to the finding of Fang at el (2004) study which shows 15% cases of pneumonia[9].[Figure 1]

In our study, there were 10 cases of tuberculosis out of 130 cases, among which 2 (20%) cases are of miliary tuberculosis involving lung, liver, kidney and spleen. Granulomatous lesions are more common on 4th and 5th decade of life. In our study, 8 males and 2 females have granulomatous lesions. These findings are comparable to Hjortn et al study and similar results also found in Sanefugi et al study, in which 19% cases are of miliary TB among tuberculosis cases[10,11]. [Figure 2]

The result showed that there are 4 cases of emphysema out of 130 cases. Emphysema affected 3 males and 1 female. 3 males had history of smoking. In our study 75% cases were associated with smoking. Similarly Niazi in her "Morphological study of pulmonary embolism in autopsy cases" found significantly greater numbers (77.5%) of emphysema cases in smokers[12].

[Figure 3]

In our study, we found 1 (0.76%) case of malignancy, occurring in 50 years old male. [Figure 4].In rest of cases, the majority were showing changes of terminal events like interstitial edema, congestion, due to cardio vascular causes. In 6 cases lungs were autolysed and 20 cases showed the morphology of normal lung.

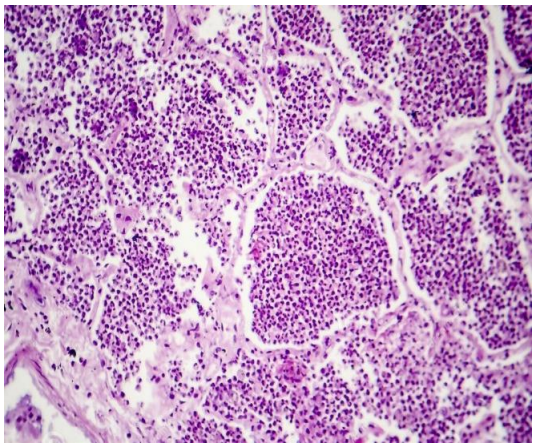

Figure 1: Shows abundant acute inflammatory cell infiltrate , focal areas of edema and congestion (pneumonia, H, and E stain)

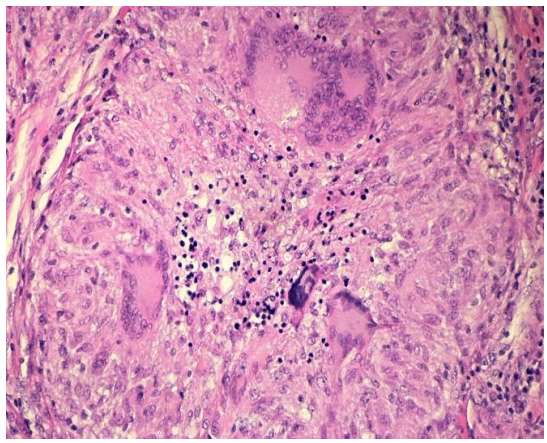

Figure 2: Shows Langhans' giant cell (tuberculosis, H, and E stain)

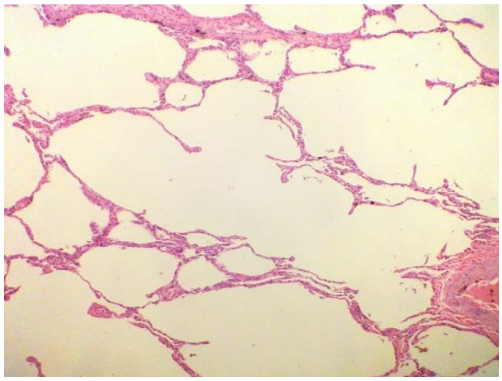

Figure 3: Shows abnormally large alveoli with focal destruction of alveoli separated by thin septa emphysema H& E stain

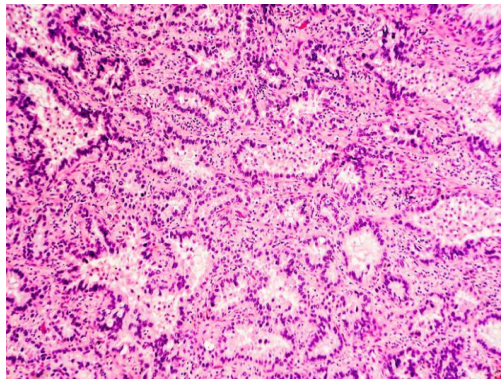

Figure 4: Shows malignant cells infiltrating into lung tissue (Metastatic Carcinoma of Lung, H and E stain)

Conclusion

The study shows the incidence of various lung lesions in the autopsy specimens received in a tertiary care hospital in Ahmedabad. Pneumonia is the most common pathological change observed in this study. Lung lesions are more common in males as compared to females. Such retrospective and prospective studies also provide an insight into the true prevalence of diseases or lesions.

Ethical Clearance-All procedures performed were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. For retrospective studies, formal consent is not required.

Source of Funding- Self

Conflict of Interest – Nil

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