

Histomorphological Pattern of Lung in Medicolegal Autopsies

Udayashankar SK¹, Shashikala P², Kavita GU³, Deepti Pruthvi⁴

Postgraduate in Department of Pathology, S.S. Institute of Medical Sciences and Research Centre Davanagere, Karnataka, India

Professor and Head, Department of Pathology, S. S. Institute of Medical Sciences and Research Centre Davanagere, Karnataka, India

Professor, Department of Pathology, S. S. Institute of Medical Sciences and Research Centre Davanagere, Karnataka, India

Professor, Department of Pathology, S. S. Institute of Medical Sciences and Research Centre Davanagere, Karnataka, India

Abstract: Introduction: The lungs are involved in various kinds of inflammatory, neoplastic and other lesions, but they are secondarily involved in almost all form of terminal diseases. The autopsy may reveal diagnosis which may not be suspected clinically or may, in some way, discredit. Aim: To present the pulmonary histopathological alterations identified in autopsy. Methodology: This is a retrospective study done in the Department of Pathology, SSIMS&RC over a period of 3 years from 2011 to 2014. Materials for study consisted of lungs from 22 cases from medico-legal autopsies received during this period. Gross features were recorded and microscopic diagnosis were made. Results: Among the 22 lung specimens from medicolegal autopsies, 17 were males and 5 were females. Findings of primary lung disease were seen in 15 cases, of which 5 were tuberculosis and 7 were pneumonia. Of the remaining cases other than primary lung disease there were 2 cases of ARDS, 2 cases of emphysema, one case of interstitial fibrosis and others showed associated findings like interstitial edema, emphysematous changes and congestion due to non-pulmonary causes. Conclusion: Histomorphological study of lung in medicolegal autopsies may quite often reveal some natural disease and its relative contribution towards death.

Keywords: lung autopsy, Medicolegal autopsies, Histomorphological pattern.

1. Introduction

An autopsy is a medical procedure that consists of 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. An autopsy may be required in deaths that may have medical and legal issues^[1]. Even if the cause of death is established antemortem, performing clinical autopsy helps to study process in situ and enriches medical knowledge^[2].

Medico legal autopsies differ in the purpose and procedure from pathological autopsies but sometimes they overlap with each other at various levels. The lungs are involved in various kinds of inflammatory, neoplastic and other lesions, but they are secondarily involved in almost all form of terminal diseases. The Autopsy may reveal diagnosis which may not be suspected clinically or may, in some way, discredit^[3].

Tuberculosis (TB) today remains one of the world's most lethal infectious diseases. Despite the availability of effective treatment for most cases, tuberculosis is still a cause of death in our environment. Some cases of active tuberculosis are not identified until after the patient had died and an autopsy has been performed^[4]. Pathologic examination of autopsy lungs gives valuable information such as various stages of fibrosis, including early patchy fibrosis and honey combing lesions, and their distribution and progression in the lungs^[1]. The aim of the present study was to present the pulmonary histopathological alterations identified in autopsies.

2. Literature Survey

Males were more affected with lung lesions in studies conducted by Bal MS et al and Hanmante RD et al^[3,5]. In an autopsy study by Bal et al, lungs were involved in majority of the cases (77.33 %) of the cases while primary lesions leading to death were only 33.66 % cases (2008)^[3]. Tuberculosis was the major cause of death in study by Tariq MT et al (2007)^[1].

3. Problem Definition

Lung disorders have varied and complex presentations. As a result, despite availability of modern advanced diagnostic methods, diagnosis is often a challenging task for clinicians. Sometimes, rapid progression of the disease leaves lesser time and role for thorough diagnostic workup and invasive procedures. Therefore it is crucial to determine the leading cause of death in order to adopt correct prophylactic actions for prevention of pulmonary dysfunctions. In that matter histopathological examination of lung autopsy is of great value.

4. Methodology/Approach

This is a retrospective study done in the Department of Pathology, SSIMS&RC over a period of 3 years from 2012 to 2014. Materials for study consisted of lungs from 22 cases (medico legal and clinical) received in the Department of Pathology during this period.

• **Inclusion Criteria:** The subjects were selected from medico legal autopsies irrespective of cause of death.

- **Exclusion Criteria:** Clinical autopsies, autolysed specimen and Partial autopsies where lung specimens were not received.
- **Study Design:** This study was a non-interventional, Descriptive study.
- **Data Collection Procedure:** Information regarding age and brief history of illness etc were obtained from the request forms.

5. Results / Discussion

Commonest pathology encountered was pulmonary edema followed by emphysematous change, pneumonias and tuberculosis. Males were more affected than females.

Table 1: Distribution of lesions in males and females :

Lesions in autopsies				
Lesions	Male	Female	Total	Percentage
Pneumonias	5	2	7	31.81
Tuberculosis	5	0	5	22.72
Fibrosis	1	0	1	04.54
pulmonary edema,	8	4	12	54.54
Emphysematous change	7	3	10	09.09
Emphysema	2	0	2	09.09
ARDS	2	0	2	09.09
sex	17	5	22	

Table 2: Age wise distribution of lung lesions in cases of medicolegal autopsy

Age (years)	Tuberculosis	Pneumonia	Fibrosis	Pulmonary Edema	Emphysematous change	ARDS	Emphysema
0-9	0	1		1			
10-19	0	1		2	1	1	
20-29	0	2		3	2		
30-39	1	2		3	3	1	
40-49	2	1	1	2	3		2
50;59	2	0		1			
60-69	0	0			1		
total	5	7	1	12	10	2	

Maximum number of lesions were encountered in the age group of 40 – 49.

Table 3: Concomitant lesions observed in lung

Concomitant pathology	No of cases
Tuberculosis with edema	4
Tuberculosis with Pneumonia	1
Pneumonia with edema and Emphysematous changes	5
Pneumonia with Emphysema	1
Pneumonia and lung Abscess	1
ARDS with edema and Emphysematous changes	2
Total no of cases with more than one Pattern	14

A total of 14 cases had more than one morphological pattern. In our study, the most common pathology encountered was Pulmonary edema in 54.54% of the cases whereas study by Hanmante R D et al showed pulmonary edema in 21.7% of the cases [5].

Pneumonias made up 31.81% of the total cases which was consistent with study by Hanmante R D et al accounting for 39 %⁵ While in studies by Tariq M T et al and Bal et al pneumonia accounted for 4% and in there study showed pneumonia in 4 %¹,and 18 % respectively^{1,1,2]} Relatively high frequencies in our set up might be due to prolonged hospitalization of the cases before succumbing to the disease.

The present study showed that tuberculosis made up a substantial proportion of cases (22.72 %). (Table 4)

Emphysema was seen in 9.09% cases in the present study which is consistent with study by Hanmante R D et al in their study observed in 6.07% of cases [5]. In the present study showed ARDS was observed in 9.09% while study by Sachdev S et al revealed ARDS in 3.14% [6]. Fibrosis was seen in 4.54% of the cases in present study, Bal M S et al observed fibrosis in 0.66% of cases [3].

Table 4: Comparitive study of Tuberculosis lesion in Different studies

Study	No of cases (%)
Present study	5/22 (22.72 %)
Tariq MT et al (2013) ¹	348/810 (42.96 %)
Garg M et al (2011) ⁴	9/115 (78.26 %)
Hanmante RD et al (2014) ⁵	2/120 (1.7 %)
Bal MS et al (2008) ⁶	32/810 (4 %)

This retrospective autopsy study is on a moderate sample. Though lacking in clinical correlation in all cases, gives an indication of lesions of lung at our institution

6. Conclusion

Autopsy study is of great value in improving the vision and diagnostic setup for better clinical assessment. Histomorphological study of lung in medicolegal autopsies may quite often reveal some natural disease and its relative contribution towards death.

7. Future Scope

Though technology in diagnostics have advanced, autopsy still serves as a supportive and educative tool in identifying and establishing the underlying cause of death. Hence its

importance must be understood, since there has to be newer approaches for old diseases and scope for detection of newer diseases.

References

- [1] Tahir TM, Rehman F, Anwar S, Kamal F. Patterns of pulmonary morphological lesions. Biomedica.2013; 29:64-8.
- [2] Pathak A, Mangal HM, Histopathological examination in medico – legal Autopsy Pros & cons. J Indian Acad Forensic Med. 2008; 32 : 128-31.
- [3] Bal MS, Sethi PS, Suri AK, Bodal VK, Kaur G. Histopathological Pattern in lung autopsies. JPAIMAT.2008; 8: 29-31.
- [4] Garg M, Aggarwal AD, Singh S, Kataria SP. Tuberculous Lesions at Autopsy. J Indian Acad Forensic Med.2011; 33:116-9.
- [5] Hanmante RD, Chavan YH, Mulay PS, Suvernakar SV, Deshpande SA. Histopathological patterns of Lung lesions in Autopsy cases. IJHS.2014;1: 15-9.
- [6] Sachdev S, Pandit SP, Acute Respiratory Distress syndrome: An Autopsy study. JPMER .2014; 48:8-13.

Author Profile



Udayashankar SK is Graduate from JJM Medical College, Karnataka, India.- 1998. Working for the Department of health and family welfare, govt of Karnataka, India, since 1999. 2013- Joined as Postgraduate in MD Pathology, S.S. Institute of medical sciences, Davangere, Karnataka, India.



Shashikala P is Graduation from Bangalore Medical College, Karnataka, India. Diploma in Clinical Pathology from Bangalore Medical College, Karnataka, India. 1990 -MD in pathology from JJM medical college, Davangere, Karnataka, India. Editor - Journal of public health and medical research.



Kavita GU is Graduated from JJM medical college in 1998, Davangere, Karnataka, India. 2001 - MD in Pathology from JJM medical college, Davangere, Karnataka, India. Currently workin as Professor in Department of Pathology, S.S Institute of medical sciences Danangere, Karnataka, India.



Deepthi Pruthvi is Graduate from JJM Medical college, Davangere, Karnataka, India – 1992. Postgraduate from JJM Medical college, Davangere, Karnataka, India – 2004. Professor in department of pathology,SS institute of medical sciences, Davangere, Karnataka, India