Spectrum of Pulmonary Histopathological Lesions: A Study of 100 Autopsy Cases

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Abstract

Background: Present days air pollution, environmental inhalants and chemical cum toxic substances become uncontrollable worldwide. Autopsy is an important and most useful way to find out the condition of internal organs in which a thorough examination is 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.

Material & Methods: The study is done on 100 lung specimens from autopsy cases received in the Govt Medical College, Department of pathology, Patiala. Gross findings and microscopic features were recorded. The tissue specimens were fixed and processed and Paraffin sectioning was done followed by Haematoxylin and Eosin staining. The sections were then examined.

Results: Out of 100 specimens of lungs from autopsy subjects, 84 (84%) were males and 16 (16%) were females. Terminal events were seen in 58 cases. Emphysematous lesions were seen in 23 cases out of which 18 were males and 5 females. Granulomatous (Tuberculosis) lesions were seen in 9 cases. Pneumonia was seen in 7 out of 100 cases. There was only one case of malignancy.

Conclusion: In our study, the most common findings were terminal events and emphysema and these were more common in males. So we should plan to prevent the causes and reduce the prevalence of these conditions by various preventable measures.

Keywords: granulomatous, autopsy, pneumonia, emphysema and tuberculosis.

Introduction

The importance of lung diseases in the pathology and clinical medicine cannot be overemphasized. Present days air pollution, environmental inhalants and chemical cum toxic substances become uncontrollable worldwide.¹ Millions of people around the world suffer from preventable chronic respiratory diseases.² A large number of conditions that involve the parenchyma of lung are associated with inflammation, fibrosis or granulomatous reactions.³ 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.\textsuperscript{4,5} An autopsy may be 
required in deaths that may have medical 
and legal issues.\textsuperscript{6-9} Pathologic 
examination of autopsy lungs gives 
valuable information such as various 
stages of fibrosis, including early patchy 
fibrosis and honeycombing lesions, and 
their distribution and progression in the 
lungs.\textsuperscript{10-16} Tuberculosis (TB) 
today remains one of the world's most 
lethal infectious diseases.\textsuperscript{17} 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.\textsuperscript{18} Postmortem 
examination of lung specimen can 
increase the overall proportion of 
pneumonia cases with a definitive diagnosis and 
importantly provide information that increases 
our understanding of the various causes of 
pneumonia.\textsuperscript{19,20}

Aims and Objective
The aim of this study was to analyse the findings 
by the histopathological examination in lung 
tissue received in autopsy specimens and to 
determine the underlying diseases and associated 
co-morbidities.

Material and Methods
The present study was conducted on lung 
specimens of 100 routine autopsies received in the 

\begin{table}[h]
\begin{center}
\begin{tabular}{|c|c|c|c|}
\hline
Sr No. & Lung Pathology & Cases & Male & Female \\
\hline
1. & Terminal Events & 58(58\%) & 52(52\%) & 6(6\%) \\
2. & Emphysema & 23(23\%) & 18(18\%) & 5(5\%) \\
3. & Granulomatous & 9(9\%) & 7(7\%) & 2(2\%) \\
4. & Pneumonia & 7(7\%) & 5(5\%) & 2(2\%) \\
5. & Malignant lesion & 1(1\%) & 0(0\%) & 1(1\%) \\
6. & Normal & 2(2\%) & 2(2\%) & 0(0\%) \\
\hline
\end{tabular}
\end{center}
\end{table}

Terminal events were seen in 58 cases (Table 1) 
Among which 52\% were males and 6\% were 
females. Emphysematous lesions were seen in 23 
cases, out of which 18\% were males and 5 \%
females. Granulomatous (Tuberculou s) 
lesions were seen in 9 cases, out of which 7 were 
male 
and 2 were females. Pneumonia is seen in 7 cases, 
out of which 5 were males. There was only one 
case of malignancy which was a case of 
adeno carcinoma in a female. Only 2\% cases were 
show normal lung.

Results
A total of 100 specimens of lungs from autopsy 
subjects were received at the autopsy section of the Pathology 
department of Government Medical 
College, Patiala, out of the which 84 (84\%) were 
males and 16 (16\%) were females.
Figure 1: Micrograph of congestion and haemorrhage (arrow) in terminal event.(40x)

Figure 2: Micrograph showing emphysematous changes in lung (arrow).(10x)

Figure 3: Micrograph showing abundant acute inflammatory infiltrate (arrows) along with focal areas of oedema and congestion in case of pneumonia.(10x)

Figure 4: Micrograph shows tumour cells (arrows) arranged in acini fashion in adenocarcinoma lung.(40x)

Discussion

The present study was compared to the other similar studies.

Table 2 Comparison of percentage of Terminal Events in various studies.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Study</th>
<th>Cases</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Manjit et al(2008)</td>
<td>87 out of 150(58%)</td>
<td>67(44.6%)</td>
<td>16(10.6%)</td>
</tr>
<tr>
<td>2.</td>
<td>Chuhan et al(2015)</td>
<td>182 out of 335(54.32%)</td>
<td>141(42.08%)</td>
<td>41(12.23%)</td>
</tr>
<tr>
<td>3.</td>
<td>Rupali et al(2017)</td>
<td>743 out of 1263 (58.8%)</td>
<td>425(33.65%)</td>
<td>318(25.17%)</td>
</tr>
<tr>
<td>4.</td>
<td>Present study (2017)</td>
<td>58 out of 100 (58%)</td>
<td>52(52%)</td>
<td>6(6%)</td>
</tr>
</tbody>
</table>

Table 3 Comparison of percentage of Emphysema in various studies.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Study</th>
<th>Cases</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Udyashankar et al(2015)</td>
<td>10 out of 22(45.4%)</td>
<td>7(31.8%)</td>
<td>3(13.6%)</td>
</tr>
<tr>
<td>2.</td>
<td>Selvambizai et al(2016)</td>
<td>16 out of 100 cases(16%)</td>
<td>13(13%)</td>
<td>3(3%)</td>
</tr>
<tr>
<td>3.</td>
<td>Present study (2017)</td>
<td>23 out of 100 cases (23%)</td>
<td>18(18%)</td>
<td>5(5%)</td>
</tr>
</tbody>
</table>
Table 4 Comparison of percentage of granulomatous diseases in various studies

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Study</th>
<th>Cases</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Manjit et al (2008)</td>
<td>13 out of 150(8.6%)</td>
<td>11(7.3%)</td>
<td>2(1.33%)</td>
</tr>
<tr>
<td>2.</td>
<td>Chuhan et al(2015)</td>
<td>21 out of 335(6.26)</td>
<td>14(4.17%)</td>
<td>7(2.08%)</td>
</tr>
<tr>
<td>3.</td>
<td>Udyashankar et al(2015)</td>
<td>5 out of 22(22.7%)</td>
<td>5(22.7%)</td>
<td>Nil</td>
</tr>
<tr>
<td>4.</td>
<td>Rupali et al(2017)</td>
<td>32 out of 1263(2.5%)</td>
<td>22(1.74%)</td>
<td>10(0.79%)</td>
</tr>
<tr>
<td>5.</td>
<td>Present study</td>
<td>9 out of 100 cases(9%)</td>
<td>7(7%)</td>
<td>2(2%)</td>
</tr>
</tbody>
</table>

Table 5 Comparison of percentage of Pneumonia in various studies.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Study</th>
<th>Cases</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Manjit et al(2008)</td>
<td>14 out of 150(9.3%)</td>
<td>10(6.66%)</td>
<td>4(2.66%)</td>
</tr>
<tr>
<td>2.</td>
<td>Chuhan et al (2015)</td>
<td>49 out of 335(4.62%)</td>
<td>31(9.25%)</td>
<td>18(5.37%)</td>
</tr>
<tr>
<td>3.</td>
<td>Udyashankar et al(2015)</td>
<td>7 out of 22 (31.81%)</td>
<td>5(22.7%)</td>
<td>2(9.09%)</td>
</tr>
<tr>
<td>4.</td>
<td>Selvambigai et al(2016)</td>
<td>40 out of 100 cases(40%)</td>
<td>24(24%)</td>
<td>16(16%)</td>
</tr>
<tr>
<td>5.</td>
<td>Rupali et al(2017)</td>
<td>242 out of 1263(19.1%)</td>
<td>141(24%)</td>
<td>101(7.9%)</td>
</tr>
<tr>
<td>6.</td>
<td>Present Study</td>
<td>7 out of 100 (7%)</td>
<td>5(5%)</td>
<td>2(2%)</td>
</tr>
</tbody>
</table>

Terminal stages (figure 1) are one of the most common findings among various studies. Our findings were similar to the studies done by Manjit Singh [17] et al, Chuhan et al [2] and Rupali et al [5] as in table 2. In our study, the emphysema (figure 2) cases were 23% which were comparable with study done by Selvambiazai. [1] In a similar study done by Udyashankar et al [18], the percentage of emphysematous lesions were quite high (45.4%) as in table 3.

In the present study, 9 cases of granulomatous diseases were noted. This was in comparable with the study done by Manjit et al[17], Chauhan et al [2] and Rupali et al[5] as in table 4.

The present study shows 7 cases of Pneumonia (figure 3). History of smoking was present in 23% of cases. This result is comparable to the findings of Manjit et al [17] and Chauhan et al [2] but Udyashankar et al [18], Selvambigai et al [1] and Rupali et al [5] show somehow higher cases as in table 5.

In our study, only 1 case of adenocacinoma (figure 4) was seen in a female which was comparable to studies done by Manjit et al [17] and Chauhan et al [2].

Conclusion
The current study of autopsy specimens of lung show that the most common findings were terminal events, emphysema and tuberculosis in Punjab region and these lesions are more common in males. Despite recent advances in diagnostic technology, there are large number of cases of preventable respiratory diseases for which the autopsy has remained an important complementary tool for identifying and understanding.

References
4. Tariq Mahmood Tahir, Fakeha Rehman, Sadia Anwar and Farrukh Kamal.Pattern of pulmonary morphological lesions seen at autopsy Biomedica Vol. 29 2013:64-68


