Evaluation of Primary Pulmonary Malignancies in Central Punjab, Pakistan

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Objective: To study the clinicopathological findings of Primary Pulmonary Malignancy in central Punjab, Pakistan.

Materials and Methods: Three hundred patients of primary malignancies of the lung from Gulab Devi Chest Hospital and other hospitals of Lahore were studied. The history of the Patients and their clinical findings were recorded. The sections of all the cases were stained with Haematoxylin and eosin whereas all large cell carcinomas were stained with Alcian Blue-Periodic Acid-Schiff (AB-PAS) stain.

Results: There were 255 males and 45 females with a male to female ratio of 5.7:1. The age ranged from 10-90 years with a mean age of 54.17±3.46 years. Different tumors were significantly more (p<0.001) in males than in females. The mean age in squamous cell carcinoma cases was significantly high (p<0.001) as compared with adenocarcinoma. Small cell carcinoma cases had significantly low (p<0.02) mean age as compared with squamous cell carcinoma. The difference of mean age in cases of adenocarcinoma approached significant level (0.1>p>0.05) as compared with small cell carcinoma.

Conclusions: The primary lung carcinoma is more common in males. Its prevalence is increasing in young ages.

Key words: Primary Pulmonary Malignancy, Squamous Cell carcinoma, Adenocarcinoma, Small cell carcinoma.

Malignancies of the lung remain one of the most frequently diagnosed malignant neoplasms throughout the world. In Pakistan, amongst the males, the malignant tumors of the bronchus ranked number one. Various regional studies also show that malignancies of the lungs are a common malignancy of the male in Pakistan.

Lung cancer is the most frequent cause of cancer death in both men and women. While the incidence of lung cancer appears to have decreased in white men, it continues to rise in nonwhite men and in women. Most lung cancer is caused by cigarette smoking, but strategies to prevent or reduce this addiction have met with only modest success to date. Smokers who quit remain at an increased though gradually declining risk of lung cancer over at least the next decade.

The overwhelming majority of cases of lung cancer are attributable to cigarette smoking and thus primary prevention should continue to be a major focus of public health campaigns. However, such measures are likely to have only a limited impact on mortality in the short term because of a lag phase in the order of 20 years.

Development of malignancies of the lung is multifactorial process. These factors include smoking, ionizing radiation, metals, diffuse pulmonary fibrosis and asbestos exposure. The age distribution in different malignancies varies in different countries e.g. carcinoma of the breast presents at earlier age in Pakistan as compared with the west. The present study was carried out to see the age and sex distribution of pulmonary malignancies so as to establish the base line data in central Punjab.

Materials and methods

Three hundred patients of primary malignancies of the lung from Gulab Devi Chest Hospital and other hospitals of Lahore were included in this study. Gulab Devi Chest Hospital drains the maximum number of cases of pulmonary malignancies from the region of central Punjab. Patients of all ages and both sexes were included in the study.

History of the patients regarding name of patient, age, and sex, presenting complaints with duration, etc were recorded. Patients were examined clinically; lymph node enlargement was noted and recorded along with relevant investigations, x-ray chest, Bronchoscopy, and CT scan (if available). The specimens included were bronchial biopsy, transthoracic fine needle lung biopsy, open lung biopsy and/or regional lymph node biopsy.

The sections of all the cases were stained with Haematoxylin and eosin whereas all large cell carcinomas were stained with Alcian Blue-Periodic Acid-Schiff (AB-PAS) stain, without diastase as well as with diastase. The tumors were classified according to WHO classification.12 Chi square test was used for statistical analysis.

Results

The age ranged from 10-90 years with a mean age of 54.17±3.46 years. The maximum number of patients (87.01%) was in the age group 40-79 years (Fig.1). There were 255 males and 45 females with a male to female ratio of 5.7:1.

Squamous cell carcinoma was more common in age groups of 50-79 years (Fig 2). Significantly large numbers of cases (P<0.001) of squamous cell carcinoma were above 40 years of age as compared with Adenocarcinoma. The cases in large cell carcinoma group aging above 40 years were significantly less (P<0.05) as compared with squamous cell carcinoma (Table 1). Sex and age distribution in different malignancies is given in tables 2 and 3 respectively. Different tumors were significantly
more (p<0.001) in males than in females (Table 2). The mean age in squamous cell carcinoma cases was significantly high (p<0.001) as compared with Adenocarcinoma. Small cell carcinoma cases had significantly low (p<0.02) mean age as compared with squamous cell carcinoma. The difference in mean age in cases of Adenocarcinoma approached significant level (0.1>p>0.05) as compared with small cell carcinoma.

Table 2. Sex distribution in different histological types of 300 cases of malignancies of the lung

<table>
<thead>
<tr>
<th>Histological type</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Squamous cell ca</td>
<td>120</td>
<td>10</td>
<td>130</td>
</tr>
<tr>
<td>Small cell carcinoma</td>
<td>61</td>
<td>7</td>
<td>68</td>
</tr>
<tr>
<td>Adenocarcinoma</td>
<td>38</td>
<td>16</td>
<td>54</td>
</tr>
<tr>
<td>Large cell carcinoma</td>
<td>25</td>
<td>8</td>
<td>33</td>
</tr>
<tr>
<td>Others</td>
<td>11</td>
<td>4</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>255</td>
<td>45</td>
<td>300</td>
</tr>
</tbody>
</table>

p<0.001, (Different histological types are significantly more in males than in females)

Table 3: Comparison of mean age in different histological types of 300 cases of malignancies of the lung

<table>
<thead>
<tr>
<th>Histological type</th>
<th>n</th>
<th>Range</th>
<th>Mean±SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Squamous cell ca</td>
<td>130</td>
<td>25-85</td>
<td>58.77±11.08*</td>
</tr>
<tr>
<td>Small cell carcinoma</td>
<td>68</td>
<td>18-85</td>
<td>54.7±11.66**</td>
</tr>
<tr>
<td>Adenocarcinoma</td>
<td>54</td>
<td>16-75</td>
<td>50.68±13.55</td>
</tr>
<tr>
<td>Large cell carcinoma</td>
<td>33</td>
<td>15-90</td>
<td>55.88±17.47</td>
</tr>
<tr>
<td>Others</td>
<td>15</td>
<td>10-85</td>
<td>50.80±18.84</td>
</tr>
</tbody>
</table>

*p<0.001 when compared with Adenocarcinoma,  
**p<0.002 when compared with Small cell carcinoma
*p<0.1>p>0.05 when compared with Adenocarcinoma

Discussion

Lung cancer is one of the commonest malignant neoplasms all over the world. It accounts for more cancer deaths than any other cancer. It is increasingly being recognized in Pakistan. Lung cancer is the most frequent cause of death from cancer in men. In addition its prevalence among women is currently rapidly increasing. Main risk factors are smoking, exposure to asbestos and genetic factors. Lung cancer is the most preventable cancer death, yet African-Americans continue to suffer disproportionately from the disease. Lung cancer kills more African-Americans than any other cancer and most lung cancers are smoking-related.[12,13]

The age of patients in this study ranged from 10-90 years with a mean age of 54.17±3.46 years. (Fig.1) This is in accordance with the study of Srivastava[19], he reported the mean age of 55 years in India. However western studies have reported a higher mean age, ranging from 61.8 to 71 years.[14,15,16,17] Squamous cell carcinoma was more common in age groups of 50-79 years (Fig 2). This is in accordance with a number of published reports with an age range of 55 to 75 years[18].

Significantly large numbers of cases (p<0.001) of squamous cell carcinoma were above 40 years of age as compared with Adenocarcinoma. The cases in large cell carcinoma group aging above 40 years were significantly less (p<0.05) as compared with squamous cell carcinoma (Table 1). Moreover different tumors were significantly more (p<0.001) in males than in females (Table 2). Our results are similar with other studies[15,18].

The mean age in cases of squamous cell carcinoma was significantly high (p<0.001) as compared with Adenocarcinoma. The cases of small cell carcinoma had
significantly low (P<0.02) mean age as compared with squamous cell carcinoma. The difference in mean age in cases of Adenocarcinoma approached significant level (0.1>P>0.05) as compared with small cell carcinoma. Similar results were seen in other studies.\textsuperscript{16,19}

References
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