

## PATTERN OF PRIMARY PULMONARY MALIGNANCIES IN CENTRAL PUNJAB

M. RIAZ HUSSAIN, SAEED A. KHAN, NASEER A. CHAUDHRY, M. ASHRAF AND M. TAYYIB  
*Departments of Pathology, PGMI, Gulab Devi Chest Hospital, University of Health Sciences, Lahore*

*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 the tissues were stained with haematoxylin and eosin whereas all large cell carcinomas were stained with Alcian Blue-Periodic Acid-Schiff (AB-PAS) stain. There were 255 males and 45 females with a male to female ration of 5.7:1. the age ranged from 10-90 years with a mean age of  $54.17 \pm 3.46$  years. Different tumours 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 to adenocarcinoma. Small cell carcinoma cases had significantly low ( $P < 0.02$ ) mean age as compared to 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.*

### INTRODUCTION

Cancers of the lung remain one of the most frequently diagnosed malignant neoplasms throughout the world<sup>1-4</sup>. In Pakistan, amongst the males, the malignant tumours of the bronchus rank number one<sup>5</sup>. Various regional studies also show that malignancies of the lung are a common malignancy of the male in Pakistan<sup>6-7</sup>.

Development of malignancies of the lung is a multifactorial process. These factors include smoking<sup>8</sup>, ionizing radiation, metals, diffuse pulmonary fibrosis<sup>9</sup> and asbestos exposure<sup>2</sup>. 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<sup>10</sup>.

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, 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 (is available).

The specimens included were bronchial biopsy, transthoracic core 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<sup>11</sup>, without diastase as well as with diastase.

The tumors were classified according to WHO classification<sup>12</sup>. Chi square test was used for statistical analysis.

### RESULTS

The age ranged from 10-90 years with mean age of  $54.17 \pm 3.46$  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 males 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 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 tumours were significantly more ( $p < 0.001$ ) in males than in females (Table 2). The mean age in squamous cell carcinoma cases was significantly

**Table 1:** Comparison of patients of malignancies of the lung, below 40 years of age with those above 40 years.

S. No.	Histological Type	Age	
		Below 40 Years	Above 40 Years
1.	Squamous cell carcinoma	6	124*
2.	Small cell carcinoma	4	64
3.	Adenocarcinoma	10	44
4.	Large cell carcinoma	6**	27
5.	Others	2	13
	Total	28	272

\* P < 0.001 as compared with adenocarcinoma.  
 \*\* P < 0.05 as compared with squamous cell carcinoma.

**Table 2:** Sex Distribution in Different Histological Types of 300 Cases of Malignancies of the Lung.

S. No.	Histological Type	Male	Female	Total
1.	Squamous cell carcinoma	120	10	130
2.	Small cell carcinoma	61	7	88
3.	Adenocarcinoma	38	16	54
4.	Large cell carcinoma	25	8	33
5.	Others	11	4	15
	Total	255	45	300

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.

S. No.	Histological Type	Age		
		No. of Cases	Range	Mean ± SD
1.	Squamous cell carcinoma	130	25 – 85	58.77 ± 11.08*
2.	Small cell carcinoma	83	18 – 45	54.7 ± 11.66**
3.	Adenocarcinoma	54	16 – 75	50.68 ± 13.55
4.	Large cell carcinoma	33	15 – 90	55.88 ± 17.47
5.	Others	15	10 – 85	50.80 ± 18.84

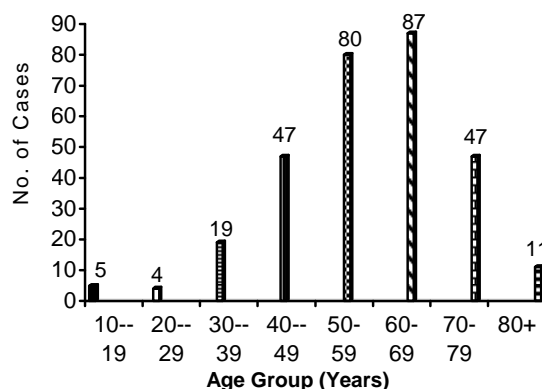
\* P < 0.001 when compared with Adenocarcinoma and P < 0.002 when compared with Small cell carcinoma.  
 \*\* 0.1 > P > 0.05 when compared with Adenocarcinoma.

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.

**DISCUSSION**

Malignancies of the lung remain one of the most frequently diagnosed malignant neoplasms throughout the world<sup>3</sup>. It is the number one cause of cancer death in American males and females<sup>13-16</sup>. Bronchogenic carcinoma is being diagnosed with increasing frequency in China, Japan, Canada, and European Countries, as well as in India<sup>17-21</sup>. Similarly in Pakistan, malignant tumours of the lung ranked number one, among males<sup>5,22</sup>.

Carcinoma of the lung is generally considered a disease that predominantly affects middle aged and elderly men<sup>15,18-20,23</sup>. In this study of 300 cases of primary lung carcinoma there were 255 males



**Fig. 1:** Age Distribution in 300 Cases of Malignancies of the lung.

and 45 females with a male to female ratio of 5.7:1. it is in accordance with the study of Jindal<sup>24</sup>, who reported a ratio of 5.2:1 and that of Al-tamimi et al<sup>25</sup> with a ratio of 5:1. However male to female ratio in other studies was 2:1, 2.4:1 and 2.9:1<sup>17,20,26</sup>.

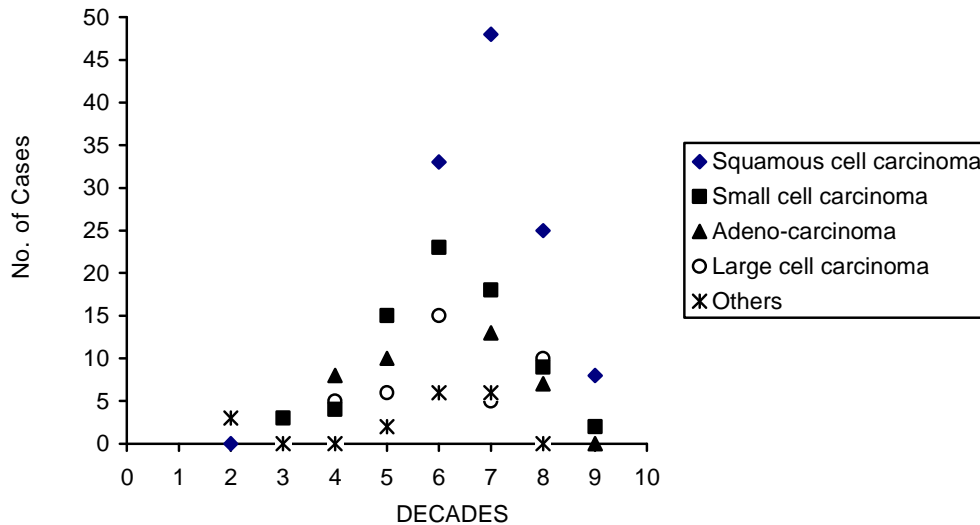


Fig. 2: Age distribution in 300 Cases of Malignancies of the Lung.

The age of patients in this study ranged from 10-90 years with a mean age of  $54.7 \pm 3.46$  years. (Fig. 1). This is in accordance with the study of Srivastava<sup>19</sup>; he reported a higher mean age, ranging from 61.8 to 71 years<sup>18,23,27</sup>. 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<sup>15,17,20</sup>.

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 tumours were significantly more ( $p < 0.001$ ) in males than in females (Table 2). Our results are similar to other studies<sup>17-20,23</sup>.

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 case of adenocarcinoma approached significant level ( $0.1 > P > 0.05$ ) as compared with small cell carcinoma. Similar results were seen in other studies<sup>24,28</sup>.

As a **conclusion** this study has highlighted the different aspects of age and sex distribution of primary malignancies of the lung.

## REFERENCES

1. Armstrong P, Vincent JM. Staging non-small cell lung cancer. *Clin Radiol* 1993; 48: 1-10.
2. Hammar SP. Common neoplasms. In: Dail DH, Hammar SP (eds). *Pulmonary pathology*. 2nd Ed. New York: Springer Verlag, 1994: 1123-78.
3. Parken DM, Pisani P, Ferlay J. Global Cancer statistics. *CA Cancer J Clin* 1999; 49: 33-64
4. Cancer Research UK. Statistics (On Line). Available from URL: [www.cancerrserchuk.org/about cancer/statistics](http://www.cancerrserchuk.org/about cancer/statistics) (cited 2002, August 15).
5. PMRc. Malignant tumours: Report of a multicentric study. Karachi: Pakistan Medical Research Council, 1982: 1-15.
6. Ahma I. A morphological evaluation of bronchial biopsy, washing and brushing using fiberoptic bronchoscope in ung disease [Thesis]. Lahore: University of the Punjab, 1986.
7. Ahma M, Khan AH, Mansoor A. the pattern of malignant tumours in Northern Pakistan – Rawalpindi: Armed Forces Institute of Pathology [AFIP Monograph] 1990: 1-62.
8. Weisbrod GL. Transthoracic Percutaneous Lung Biopsy [abstract]. *Radiol Clin Morth Am* 1990; 28: 647-55.
9. Mooi WJ, Addis BJ. Carcinoma of the lung. In: Corrin B (ed). *The Lungs*. 3rd Ed. Edinburgh: Churchill Livingstone, 1990; 5: 341-72.
10. Khan SA. A clinicomorphological study of malignancies of the breast. *Biomedica* 1988; 5: 69-75.
11. Cook HC. Carbohydrates, In: Bancroft JD, Stevens A (eds). *Theory and Practice of Histological Techniques*. 3<sup>rd</sup> Ed. Edinburgh: Churchill Living stone, 1990: 177-214.
12. WHO. *Histological Typing of Lung and Pleural Tumours*. 3<sup>rd</sup> Ed. Geneva: World Health Organization, 1999.
13. American Lung Association. Facts About Lung Cancer (On Line). Available from URL: [www.lungusa.org/diseases/lungcanc.html](http://www.lungusa.org/diseases/lungcanc.html) (cited 2002, Dec 10).

14. Fretz PC, Petterson MW. Lung Tumors: A multi-disciplinary Data base: Diagnosis (On Line). Available from URL: [www.vh.org/adult/provider/radiology/LungTumors./ClinicalPresentation/Text/](http://www.vh.org/adult/provider/radiology/LungTumors./ClinicalPresentation/Text/) (cited 2002, Nov 11).
15. Rolfe M, Tockman MS. Lung Cancer (On Line). Available from URL: [www.merch.com/pubs/mmgeriatrics/sec10/ch81.htm](http://www.merch.com/pubs/mmgeriatrics/sec10/ch81.htm) (cited 2002, Nov 29).
16. Lung cancer. org. Lung Cancer101About Lung Cancer (On Line). Available form URL: [www.lungcancer.org/patients/fs/patientabout.htm](http://www.lungcancer.org/patients/fs/patientabout.htm) (cited 2002, Nov 10).
34. Ashley DJB, editor. *Evan's Histological Appearances of Tumours*. 4<sup>th</sup> Ed. Edinburgh: Churchill Livingstone; 1990.
17. Tanaka I, Matsubara O, Kasuga T, Takemura T, Inoue M. Increasing incidence and changing histopathology of primary lung cancer in japan – A review of 282 autopsied cases. *Cancer* 1988; 62: 1035-39.
18. Fergusson RJ, Gregor A, Dodds R, Kerr G. Management of lung cancer in South East Scotland. *Thorax* 1996; 51: 569- 74.
19. Srivastava R. Lung Caner Rises Sharply (On Line). Available from URL: [www.healthlibrary.com/news/1924\\_fed/times\\_lung\\_cancer\\_rises\\_sharply\\_20.htm](http://www.healthlibrary.com/news/1924_fed/times_lung_cancer_rises_sharply_20.htm) (cited 2002, Nov 29).
20. Kejing Y, Enguo C, Chen Z, Fadden DM. Comparison between Young and old patients with Lung Cancer (On Line). Available form URL: [www.cmj.org/3wl/3wy/yingkejing2.htm](http://www.cmj.org/3wl/3wy/yingkejing2.htm) (cited 2002, Nov29).
21. Canadian Cancer society. Cancer Statistics (On line). Available from URL: [www.cancer.ab.ca/stats/index.htm](http://www.cancer.ab.ca/stats/index.htm) (cited 2002, July 27).
22. Fikree FF. Reproductive Health in Pakistan: Evidence and Future Directions. *JPMA* 2002; 52: 1-12.
23. Brown JS, Erant D, Trask C, Davison AG. Age and the treatment of lung cancer. *Thorax* 1996; 51: 564-68.
24. Jindal SK, Malik Sk, Dhand R, Gujral JS, Malik Ak, Datta BN. Bronhogenic carcinoma in Northern India. *Thorax* 1982; 37: 343-47.
25. Al-Tamimi TM, AL-Bar A, Al-Suhaimi S, Ibrahim E, Ibrahim A, Wosrnu L, et al .Lung Cancer In the Eastern Region of Saudi Arabia\_A Population Based Study. *Ann Saudi Med* 1996; 16: 3\_11.
26. Jubelirer SJ, Wilson RA. Lung cancer in patients youngers than 40 years of age. *Cancer* 1991; 67: 1436-38.
27. Byrd Rp Jr, Roy TM, Fields CL. Bronchogenic Carcinoma in young Adults (abstract). *J Ky Med Assoc* 1993; 91: 100-2.
28. Huhti E, Sutinen S, Reinila A, Poukkula A, Saloheimo M. Lung cancer in a defined geographical area: History and histological types. *Thorax* 1980; 35: 660-67.