

Evaluation of Primary Pulmonary Malignancies in Central Punjab, Pakistan

M R HUSSAIN M H BUKHARI I U HASHMI S NIAZI S A KHAN M TAYYAB N A CHAUDRHY.

Department of Pathology, LGH, KEMU, PGMI, UHS, Lahore, Pakistan

Corresponding Muhammad Riaz Hussain, Assistant Professor Histopathology, E mail: armian20@hotmail.com

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 Haematoxyllin 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^{1,2,3}. 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^{4,5}.

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 date⁶. Smokers who quit remain at an increased though gradually declining risk of lung cancer over at least the next decade⁷.

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 years⁸.

Development of malignancies of the lung is multifactorial process. These factors include smoking⁹, ionizing radiation, metals, diffuse pulmonary fibrosis¹⁰ and asbestos exposure². 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 west¹¹. 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 core needle lung biopsy, open lung biopsy and/or regional lymph node biopsy

The sections of all the cases were stained with Haematoxyllin 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.

Fig. 1: Age distribution in 300 cases of malignancies of the lung

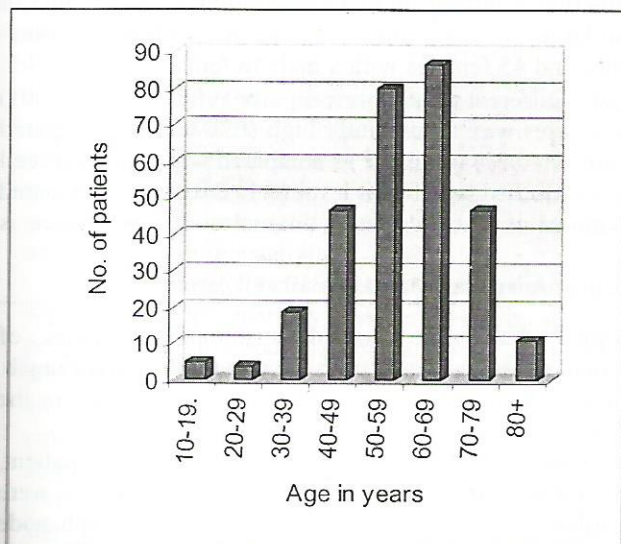


Table 2. Sex distribution in different histological types of 300 cases of malignancies of the lung

Histological type	Male	Female	Total
Squamous cell ca	120	10	130
Small cell carcinoma	61	7	68
Adenocarcinoma	38	16	54
Large cell carcinoma	25	8	33
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

Histological type	=n	Age	
		Range	Mean±SD
Squamous cell ca	130	25-85	58.77±11.08*
Small cell carcinoma	68	18-85	54.7±11.66**
Adenocarcinoma	54	16-75	50.68±13.55
Large cell carcinoma	33	15-90	55.88±17.47
Others	15	10-85	50.80±18.84

* $p<0.001$ when compared with Adenocarcinoma,

$p<0.002$ when compared with Small cell carcinoma

** $0.1>p>0.05$ 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 Srivastava¹⁹; 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 years¹⁸.

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

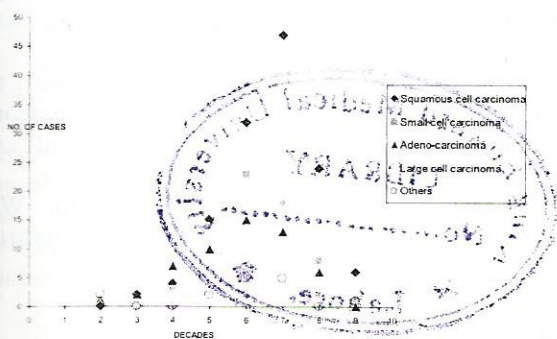


Fig. 2: Age distribution in 300 cases of malignancies of the lung

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

Histological type	Age	
	Below 40 Yrs	Above 40 Yrs
Squamous cell carcinoma	6	124*
Small cell carcinoma	4	64
Adenocarcinoma	10	44
Large cell carcinoma	6**	27
Others	2	13
Total	28	272

* $P<0.001$ as compared with adenocarcinoma

** $P<0.05$ as compared with squamous cell carcinoma

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^{16,19}.

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. Parkin DM, Pisani P, Ferlay J. Global Cancer Statistics. *CA Cancer J Clin* 1999; 49: 33-64.
4. Ahmad I. A morphological evaluation of bronchial biopsy, washing and brushing using fiberoptic bronchoscope in lung disease [Thesis]. Lahore: University of the Punjab, 1986.
5. Ahmad M, Khan AH, Mansoor A. The pattern of malignant tumors in Northern Pakistan - Rawalpindi: Armed Forces Institute of Pathology [AFIP Monograph] 1990: 1-62.
6. Resnicow K, Kabat G, Wynder E. Progress in decreasing cigarette smoking. *Important Adv Oncol*. 1991:205-213.
7. Halpern MT, Gillespie BW, Warner KE. Patterns of absolute risk of lung cancer mortality in former smokers. *J Natl Cancer Inst*. 1993; 85:457-464.
8. Manser RL, Irving LB, Byrnes G, Abramson MJ, Stone CA, Campbell DA. Screening for lung cancer: a systematic review and meta-analysis of controlled trials. *Thorax* 2003; 58:784-789
9. Weisbrod GL. Transthoracic Percutaneous Lung Biopsy [abstract]. *Radiol Clin North Am* 1990; 28: 647-55.
10. Mooi WJ, Addis BJ. Carcinoma of the lung. In: Corrin B (ed). *The Lungs*. 3rd Ed. Edinburgh: Churchill Livingstone, 1990; 5: 341-72.
11. Khan SA. A clinicomorphological study of malignancies of the breast. *Biomedica* 1988; 5:69-75.
12. Green PM, Davis MA. Lung cancer in African-Americans. *J Natl Black Nurses Assoc*. 2004; 15:54-60
13. Zochbauer S, Krajnik G, Huber H...Bronchial cancer--development, diagnosis, therapy, prognosis. *Wien Klin Wochenschr*. 1994; 106(14):431-47
14. Fergusson RJ, Gregor A, Dodds R, Kerr G. Management of lung cancer in South East Scotland. *Thorax* 1996; 51: 569-74.
15. Brown JS, Erant D, Trask C, Davison AG. Age and the treatment of lung cancer. *Thorax* 1996; 51: 564-68.
16. Jindal SK, Malik SK, Dhand R, Gujral JS, Malik AK, Datta BN. Bronchogenic carcinoma in Northern India. *Thorax* 1982; 37: 343-47.
17. Byrd RP Jr, Roy TM, Fields CL. Bronchogenic Carcinoma in Young Adults [abstract]. *J Ky Med Assoc* 1993; 91: 100-2
18. 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
19. 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

