EPIDEMIOLOGICAL TRENDS OF LUNG CANCER: A TERTIARY CARE HOSPITAL EXPERIENCE

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ABSTRACT

Objective: Objective was to determine epidemiological trends of lung cancer in patients presenting to a tertiary care hospital and its comparison with previous studies.

Material & Methods: 89 patients with suspicion of lung cancer on clinical and radiological examination, underwent bronchoscopy for histopathology and cytological sampling from Jinnah Hospital were enrolled. Demographic and histopathological characteristics were recorded and compared with the previous data to determine the epidemiological trends of lung cancer.

Results: Mean age of our patients was 56.8 ± 12.1 years. 59(66.3%) patients were male and 30 (33.7%) were female. Histological examination of samples from 14 individuals (15.7%) revealed small cell carcinoma while 52 (58.4%) were diagnosed as squamous cell carcinoma. Adenocarcinoma was found in 15 (16.9%) patients while squamous metaplasia was seen in 2 (2.2%) patients in 6(6.7%) histopathalogy result were inconclusive. Our results were inconsistent with previous local and international studies.

Conclusion: It was concluded that squamous cell carcinoma is the most common cancer in our population and the epidemiological trends of lung cancer are comparable with international trends.

Keywords: Lung Cancer, epidemiology of lung cancer, Squamous cell carcinoma, Small cell carcinoma**,** Carcinoid tumours, squamous metaplasia, Flexible Bronchoscopy

INTRODUCTION

Lung cancer is the leading cause of cancer-related death among men and women worldwide.[1, 2] Death toll secondary to lung cancer is increasing in epidemic proportions especially in developing countries, largely reflecting increased rates of smoking.[2, 3] Unfortunately, 75 percent of patients with lung cancer present with symptoms due to advanced local or metastatic disease that is not amenable to cure.[1, 4, 5] American Cancer Society predicted that approximately 228,190 new cases of lung cancer would be diagnosed with 159,480 lung cancer-associated deaths in the United States of America.[1] To Confirm diagnosis in suspected cases using fiber optic bronchoscope helped in subsequent decisions. [6-9] Flexible bronchoscopy is a procedure that visualizes the lumen and mucosa of the trachea, proximal airways, and segmental airways to the third generation of bronchi. It can be used to diagnose or treat abnormalities within or adjacent to these airways. [4, 6, 10]

Epidemiological trends of lung cancer can be predicted and overviewed besides all other diagnostic and therapeutic benefits.[3] Current study was undertaken to determine epidemiological trends of lung cancer in patients presenting to a tertiary care hospital and its comparison with previous local studies. Nation-wide representative data on prevalence of different types, age and gender distribution of lung cancer is scarce. Current study will help to achieve the above said goal.

MATERIAL & METHODS

A prospective observational study was carried out in department of pulmonology Jinnah Hospital Lahore from 1st January 2014 to 30th December 2014. After informed consent, using purposive, consecutive, non-probability sampling, all adult patients of either sex presenting with any of the following symptoms and signs were included i.e. weight loss in smokers, persistent cough, haemoptysis, parenchymal nodules, mediastinal lymphadenopathy, suspected airway obstruction, persistent infiltrate, and resolving pneumonia. Patients with history of chronic steroid use and comorbid conditions determined by history e.g. Diabetes mellitus were excluded. All patients underwent flexible bronchoscopy by single consultant by standard procedure. Forceps or needle biopsy for histopathology was taken and samples were preserved in Formalin. Bronchial washing and brushing for

cytology were also taken. All samples were sent immediately to pathology laboratory of Allama Iqbal Medical College, Lahore for detection of acid fast bacillus, malignant cells in bronchial brushings and washings and histopathology. Consultant histopathologist immediately reported the cytological findings of brushing and washing and presence of acid fast bacillus while histopathology report was reviewed by two consultants.

119 patients completed the follow up. Acid fast bacillus was detected in 27 patients while data of three patients was not sufficient, so they were excluded from the study. Completed data of 89 patients was entered and analyzed using Statistical Package for Social Sciences (SPSS) version 17. Results were projected using descriptive statistics e.g. mean with standard deviation in case of continuous variables like age and percentages in case of categorical variables like gender, type of carcinoma. Data was stratified for age groups and gender. Post stratification proportions were compared using chi square or Fischer exact test. A p value < 0.05 was taken as significant.

RESULTS

89 patients with mean age (± standard deviation)56.8 ± 12.1 years were included in the study. 59(66.3%) persons were male and 30 (33.7%) were female. In our sampled population, frequency distribution in different age groups is as following (Table I). 10 patients have age less than 40 years (11.2%), 21 (23.6%) have age ranged from 41 to 50 years. 25 (28.1%) has age range from 51 to 60 years while 33 (37.1%) has age greater than 60 years.

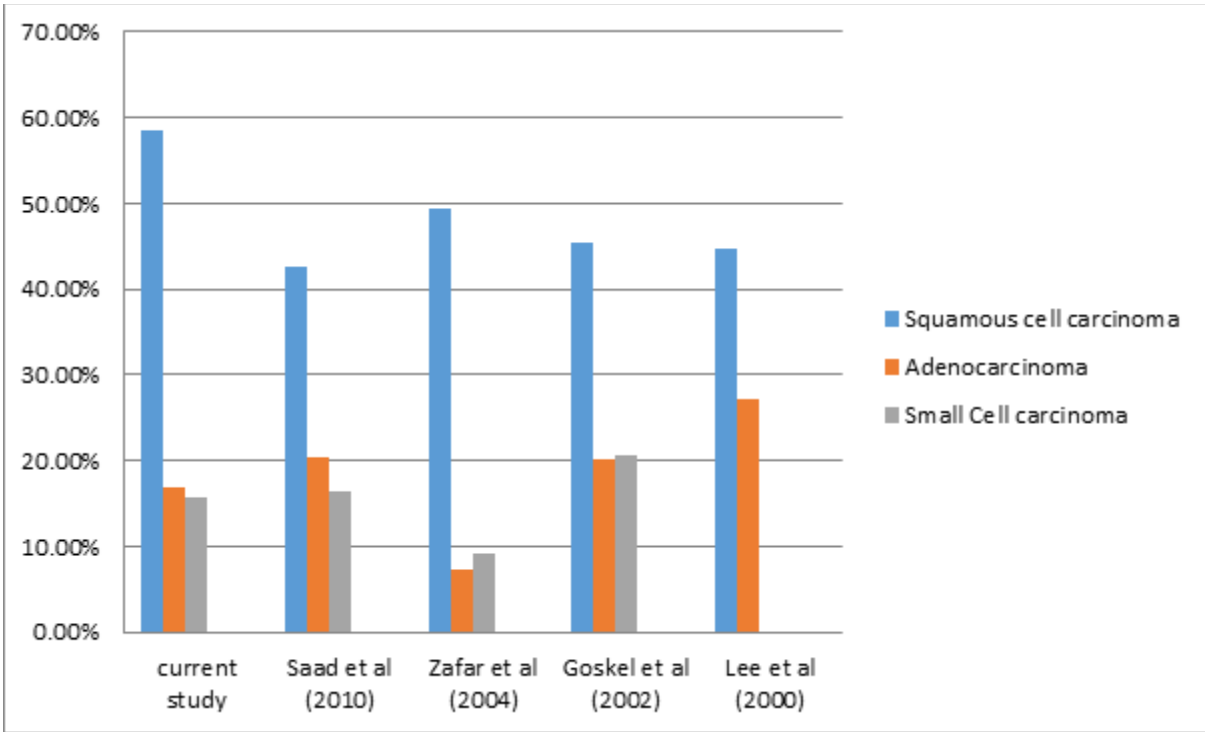
Table I: Descriptive Statistics of sampled population (n=89)

Characteristics		Count (Percentage)
Gender distribution	Male	59 (66.3%)
	Female	30 (33.7%)
Age distribution	< 40	10 (11.2%)
	41-50	21 (23.6%)
	51-60	25 (28.1%)
	> 60	33 (37.1%)
Distribution of types of lung cancers	Small cell carcinoma	14(15.7%)
	Squamous cell carcinoma	52 (58.4%)
	Adenocarcinoma	15 (16.9%)
	Squamous metaplasia	2 (2.2%)
	Inconclusive	6 (6.7%)

Table II: Gender & Age distribution and Histological types of Lung Carcinoma in sampled population (n=89)

Characteristics		Small Cell Carcinoma	Adenocarcinoma	Squamous Cell Carcinoma	Other
Gender distribution	Male	11(12.4%)	6(6.7%)	36(40.4%)	6(6.7%)
	Female	3(3.4%)	9(10.1%)	16(10.0%)	2(2.2%)
Age distribution in years	< 40	0	1 (1.1%)	7 (7.9%)	2(2.2%)
	41-50	3(3.4%)	3(3.4%)	14(15.7%)	1(1.1%)
	50-60	4(4.0%)	4(4.5%)	16(18.0%)	`1(1.1%)
	>60	7(7.9%)	7(7.9%)	15(16.9%)	4(4.5%)

Author	Year	Country	Squamous cell carcinoma	Adeno carcinoma	Small cell carcinoma
Current study	2013	Pakistan	58.4%	16.9%	15.7%
Saad et al(3)	2010	Pakistan	42.7%	20.3%	16.4%
Zafar et al(13)	2004	Pakistan	49.5%	7.4%	9.21%
Goksel et al(11)	2002	Turkey	45.4%	20.2%	20.5%
Lee et al(12)	2000	Korea	44.7%	27.1%	-------



14 individuals (15.7%) had small cell carcinoma while 52 (15.4%) were of squamous cell carcinoma. Adenocarcinoma was found in 15 (16.9%) patients while squamous metaplasia was seen in 2 (2.2%) patients. The biopsy showed inconclusive fibrous and haemorrhage in 6 (6.7%) patients. Gender distribution of three types of carcinoma were described in (Table II).

We have 16 (18%) female patients being diagnosed who have squamous cell carcinoma while 36 male (40.4%) have squamous cell carcinoma. Adenocarcinoma have comparable rates i.e. 6.7% male had adenocarcinoma while 10.1% female had adenocarcinoma. The age distribution of different types of lung cancers are described in Table II. We have the highest percentage of CA lung patients above the age of fifty year. The increasing trend in squamous cell carcinoma in female patients is alarming.

DISCUSSION

Lung cancer being a leading cause of death in men and women have led to different screening programs and preventive strategies in developing countries like ours. Diagnostic facilities are comparable with developed one. Epidemiological trends of lung cancer are changing secondary to increased emphasis on smoking cessation on part of treating physicians and ban on its public advertising.

Our study has shown that squamous cell carcinoma is the most prevalent type of lung cancer in our sample population. Almost 60% of the individuals in our non-representative sample had squamous cell carcinoma which is associated with smoking. Effect of second hand smoke can also be postulated in presenting data as 16 female patients were diagnosed having squamous cell carcinoma. Squamous cell carcinoma has a significant co-relation with duration of smoking years as described by previous studies.[1, 2] Saad et al. found that Squamous Cell carcinoma was the most frequent type in both males and females; in contrast many other studies have shown Adenocarcinoma to be the most frequent type in females. Similarly a number of studies have shown an increase in prevalence of Adenocarcinoma and a decrease in prevalence of Squamous Cell carcinoma with time which was in contrary to the results shown by their study . In this regard, their data suggests that changes in trend vary across different geographical regions.[3]

Similarly, detection of lung carcinoma in younger age group i.e. less than 40 is quite alarming. We had 10 patients who are too young who had CA lung. The results of our study are quite in line with those presented by others. [3, 11, 12]. Saad et al. presented that 42.7% have squamous cell carcinoma in their local study, 20.3% had adenocarcinoma and 16.4% had small cell carcinoma.[3]

Similarly, in our patients, the highest percentage was of squamous cell carcinoma about 58.4%, with adenocarcinoma with 16.9% on second and small cell

carcinoma on third with 15.7%. Reasons behind squamous cell carcinoma being the most common presentation may be effect of environmental smoke, second hand smoke and polluted environment of urban area. In Turkish and Korean studies almost similar results were presented. Similar were the epidemiological trends in both studies. [11, 12] In a previous paper presented by our department in Biennial International Chest Con 2004[13] showed that squamous cell carcinoma was present in 49.5% individuals, adenocarcinoma in 7.4% and small cell carcinoma in 9.21%. There is a non-significant change in the epidemiological trends as previously reported by Zafar et al. the comparison is presented in Table III.

CONCLUSION

It is concluded that the histological pattern shown in our study is almost similar to the available literature. Although sample size is not large enough and population representative but can be used to strengthen the ongoing preventive strategies and screening programs. As squamous cell carcinoma has highest proportion among the included patients so, we should focus on preventive strategies for first hand and second hand tobacco smoke along with the new modalities of chewable tobacco to reduce the effects in our population. Pakistan is currently at the verge of epidemiological transition where it is fighting with communicable diseases like tuberculosis, the increased in risk of lung cancer may over burden our already over-burdened health care system. Our preventive strategies will may help may reduce lung cancer and may enable us for healthy and prosperous nation.

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