

Original research article

## A study on Recent Trends of Lung Cancer

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### Abstract

**Background** : Lung cancer is presently one of the most common malignancies throughout the world. There has been an increase in incidence in the last 50 years. In India, lung cancer constitutes 6.9 per cent of all new cancer cases and 9.3 per cent of all cancer related deaths in both sexes.

**Aim and Objectives** : To know about trends and profile of Lung Cancer.

**Material and Methodology** : This was a prospective study of patients who attended Department of Pulmonology at Prathima Institute of Medical Sciences, Karimnagar, with clinical and/or radiological suspicion of lung cancer was studied over a period of 12 months. The study protocol included a detailed history regarding the onset and progress of the disease, smoking habits and other associated risk factors if any.

**Results** : In the study we have included total of 80 patients of lung cancer who has attended at department of pulmonary medicine, at our hospital. We have observed that maximum 36.25% of the patients from the age group of 60-69 years. Male dominance was observed in our study. 57.1% of the patients were of Squamous cell carcinoma followed by Adenocarcinoma which is more common now a days.

**Conclusion** : The most common pathological cell type in this study was squamous cell carcinoma followed by adenocarcinoma in the study, male, age more than 50 years smoking hobbit were the risk factors for lung cancer.

**Keywords** : Lung Cancer, Adenocarcinoma, Squamous cell carcinoma

### Introduction

Lung cancer is presently one of the most common malignancies throughout the world. There has been an increase in incidence in the last 50 years. All histological types of lung cancer increasing incidence but different degrees. During a period of refinement of thoracic departmental lung cancer tumour registry, it became apparent that along with an increasing incidence of lung cancer among women there was also an increasing prevalence of adenocarcinoma among lung cancer patients of both sexes.

Lung Cancer accounts for 13 per cent of all new cancer cases and 19 per cent of cancer related deaths worldwide. There were 1.8 million new lung cancer cases estimated to occur in 2012[1]. Cigarette smoking is the primary risk factor for lung cancer, accounting for about 90% of the cases in men and 70% of the cases in women [2–4].

In India, lung cancer constitutes 6.9 per cent of all new cancer cases and 9.3 per cent of all cancer related deaths in both sexes, it is the commonest cancer and cause of cancer related mortality in men, with the highest reported incidences from Mizoram in both males and females (Age adjusted rate 28.3 and 28.7 per 100,000 population in males and females, respectively) [5].

The evolution in lung cancer incidence has also been accompanied by changes in the relevance of different histological types. In one comparative analysis, trends in adenocarcinoma were shown to be increasing in women but stabilizing in men across many high-income countries [6]. The overall decrease in lung cancer incidence was mainly driven by reductions in squamous cell carcinoma in men and by the decline in the prevalence of smoking[7].

Primary studies in India show an increasing trend in lung cancer compared to a quarter of century ago. Studies from India have emphasized significant epidemiological and cell type difference that exist in the country compared to that reported in the west. The increase in incidence of bronchogenic carcinoma is not only due to better diagnostic facilities like flexible fiberoptic bronchoscopy but also other factors like increase in number of smokers, increasing environmental pollution and increase in number of people living in higher age groups.

The time trends of lung cancer show a significant rise in Delhi, Chennai and Bengaluru in both sexes. The incidence and pattern of lung cancer differ as per geographic region and ethnicity and largely reflect the prevalence and pattern of smoking. The overall 5-year survival rate of lung cancer is dismal with approximately 15 per cent in developed countries and 5 per cent in developing countries.

Indeed, targeted systemic therapies for lung cancer are increasingly being developed for different histologies, which are usually characterized by specific biomarkers [9,10]. Data on biomarker prevalence at the population level are not available, posing challenges for planning the provision of the most appropriate therapeutic approaches in coming years. A better understanding of the trends in lung cancer incidence could help predict changes in the age and histological profile in a given population, which is relevant for health services organization and treatment resource planning[11,12]. In light of the changes in histology by sex and the resulting implications for evaluating treatment needs, so this study has undertaken to know profile of lung cancer.

### **Materials and Method:**

This was a prospective study of patients who attended Department of Pulmonology at Prathima Institute of Medical Sciences, Karimnagar, with clinical and/or radiological suspicion of lung cancer was studied over a period of 12 months. The study protocol included a detailed history regarding the onset and progress of the disease, smoking habits and other associated risk factors if any.

### **Inclusion criteria**

- All the patients who had clinical features and radiological abnormalities suggestive of lung cancer have been included.

### **Exclusion criteria:**

- Among the patients included in this study those did not have histopathological proof have been excluded and the remaining were analyzed.

**Methodology:**

The complaints which were evaluated in detail included cough, sputum, chest pain, dyspnea, fever, weight loss, hoarseness of voice, dysphagia and symptoms suggestive of SVC obstruction, paraneoplastic syndromes and systematic metastasis. A detailed general and systematic examination was performed. All patients were subjected to baseline blood investigations, chest x ray PA and lateral view, ultrasound abdomen and chest. Computerized Tomography of chest was done to characterize the lesion further and to help to arrive at tissue diagnosis. FOB was done in some patients to detect and aid in getting at histopathological diagnosis.

**Results:**

In the study we have included total of 80 patients of lung cancer who has attended at department of pulmonary medicine, at our hospital. We have observed that 36.25% of the patients from the age group of 60-69 years, 26.25% of the patients from age group of 50-59 years, 17.5% of the patients from age group of 40-49 years of age respectively. We had 87.5% of the patients were male and 12.5% of the patients were female, so it was observed that male dominance was present in the study. We have observed 57.1% of the patients were of Squamous cell carcinoma followed by Adenocarcinoma which is more common now a days, 3.6% of the patients were small cell carcinoma and each of 1.8% of the patients were of Large cell carcinoma and Mucoepidermoid Carcinoma. Out of 80 patients 67 patients showed the symptoms of cough while 57 patients showed symptoms of Dyspnea, shown in the bellow table.

**Table 1 : Distribution of Basic Characteristics**

| Parameters                  | Frequency | Percentage |
|-----------------------------|-----------|------------|
| <b>Age</b>                  |           |            |
| <39                         | 5         | 6.25       |
| 40-49                       | 14        | 17.5       |
| 50-59                       | 21        | 26.25      |
| 60-69                       | 29        | 36.25      |
| >70                         | 11        | 13.75      |
| <b>Gender</b>               |           |            |
| Male                        | 70        | 87.5       |
| Female                      | 10        | 12.5       |
| <b>Types of Lung Cancer</b> |           |            |
| Squamous Cell Carcinoma     | 46        | 57.1       |
| Adenocarcinoma              | 29        | 36.6       |
| Small Cell Carcinoma        | 3         | 3.6        |
| Large Cell Carcinoma        | 1         | 1.8        |
| Mucoepidermoid Carcinoma    | 1         | 1.8        |
| <b>Symptoms</b>             |           |            |

|            |    |
|------------|----|
| Cough      | 68 |
| Dyspnea    | 51 |
| Chest pain | 47 |
| Hemoptysis | 30 |

**Table 2: Distribution of Modalities to prove Carcinoma**

| Modality                | Number | Percentage |
|-------------------------|--------|------------|
| Fiberoptic bronchoscope | 27     | 33.75      |
| Ultrasonogram           | 19     | 23.75      |
| Computerised tomogram   | 17     | 21.25      |
| Node biopsy             | 8      | 10         |
| Pleural fluid cytology  | 9      | 11.25      |
| Total                   | 80     | 100        |

**Table 3 : Distribution of Modalities to prove Carcinoma**

| Type of Lesion       | Squamous Cell | Adeno carcinoma | Small cell carcinoma | Large cell carcinoma | Muco epidermoid | Total    |
|----------------------|---------------|-----------------|----------------------|----------------------|-----------------|----------|
| Right side           | 22(48.9%)     | 18(40.0%)       | 2(4.4%)              | 2(4.4%)              | 1(2.2%)         | 45(100%) |
| Left side            | 20(64.5%)     | 10(32.3%)       | 1(3.2%)              | 0(0%)                | 0(0%)           | 31(100%) |
| Hilar mass           | 7(50.0%)      | 5(35.7%)        | 1(7.1%)              | 0(0%)                | 1(7.1%)         | 14(100%) |
| Pulmonary mass       | 29(69.0%)     | 10(23.8%)       | 1(2.4%)              | 2(4.8%)              | 0(0%)           | 42(100%) |
| Cavitory mass        | 1(100.0%)     | 0(0%)           | 0(0%)                | 0(0%)                | 0(0%)           | 1(100%)  |
| Mediastinal Widening | 4(80%)        | 0(0%)           | 1(20%)               | 0(0%)                | 0(0%)           | 5(100%)  |
| Consolidation        | 2(66.7%)      | 1(33.3%)        | 0(0%)                | 0(0%)                | 0(0%)           | 3(100%)  |
| Collapse             | 7(100%)       | 0(0%)           | 0(0%)                | 0(0%)                | 0(0%)           | 7(100%)  |
| Coin lesion          | 0(0%)         | 2(100%)         | 0(0%)                | 0(0%)                | 0(0%)           | 2(100%)  |
| Rib erosion          | 4(100%)       | 0(0%)           | 0(0%)                | 0(0%)                | 0(0%)           | 4(100%)  |
| Pleural Effusion     | 10(45.5%)     | 12(54.5%)       | 0(0%)                | 0(0%)                | 0(0%)           | 22(100%) |
| Pericardial effusion | 10(100%)      | 0(0%)           | 0(0%)                | 0(0%)                | 0(0%)           | 10(100%) |
| Diaphragm elevation  | 1(100%)       | 0(0%)           | 0(0%)                | 0(0%)                | 0(0%)           | 1(100%)  |

In our study we have used different modalities to know about carcinoma in that, 33.75% of the carcinoma observed by using Fiberoptic bronchoscope followed by 23.75% of the patients by

using Ultrasonogram, 21.25% of the patients by using CT and so on shown in the table 2.

**Table 4: Distribution of Smokers among patients**

| Type of Carcinoma       | Smoking | Percentage |
|-------------------------|---------|------------|
| Squamous cell carcinoma | 36      | 63.2       |
| Adeno carcinoma         | 16      | 28.1       |
| Small cell carcinoma    | 3       | 5.3        |
| Large cell carcinoma    | 1       | 1.8        |
| Mucoepidermoid          | 1       | 1.8        |

We have observed that 36 patients from all the patients with Squamous Cell Carcinoma were smoker, while in Adeno Carcinoma 16 patients were smokers shown in above tables

#### **Discussion:**

Lung cancer is becoming the most common cause of cancer death for both men and women and it is a growing world wide problem, especially, in developing countries like India. In the recent past there has been many advances in the early detection, staging, prevention and treatment of lung cancer. The histopathologic appearance of lung carcinoma remains an important guide to prognosis and treatment.

The mean age range was from 28 to 82 years. The maximum number of patients in this study was between 50-69 years. This is in corroboration with the studies conducted in India and abroad.

The most common Histopathological type among males was squamous cell carcinoma and the most common type among female was adenocarcinoma. This is in corroboration with other studies conducted in India.

The most common pulmonary symptom in this study was cough 68 patients followed by dyspnea 51 patients and chest pain 47 patients and hemoptysis 30 patients. The pulmonary symptoms were more common with squamous cell carcinoma. This is consistent with the study conducted in India in 1999 by PN Chhajed et al., at Mumbai[12].

Smoking had been established beyond doubt as one of the definite risk factors for Bronchogenic carcinoma. In this study 57 patients were smokers, 23 patients were non smokers. None of the female in this study was smokers. The most common cell type among smokers was squamous cell carcinoma followed by Adenocarcinoma. All 3 patients who had small cell carcinoma were smokers. All the patients who had large cell and anaplastic carcinoma were smokers. This is consistent with the studies conducted by PN Chhajed et al[12]at Mumbai in 1999 and also in studies conducted by Samet JM and published in chest 1993.

Chest x-ray analysis revealed that the commonest presentation was mass lesion which was seen in 56 patients (70%). This is in corroboration with the studies conducted in India and in the west.

Computerized tomography study was done in 64 patients. Computerized tomography guided needle biopsy of suspected mass lesion was done in 39 patients, positive results were obtained in 36(92%) patients. this is slightly less in shanker-s et al at PGIMER(july 1998)

Fiberoptic bronchope was done in 36 cases. The positive yield was 75%.this is high compared to study conducted by Vattana Thum A et a at Bangkok in Thailand whose yield was only 50% with out transbronchial needle aspiration(August 1999)

We have done USG guided biopsy among the patients we have found 29 patients were diagnosed, these results were similar to study done by by Knudsen DV et al. at Denmark(1996 may) in 3 patients it was done twice to get a definite cell type[13].

Histopathological analysis revealed that the commonest cell type in this study was squamous cell carcinoma 42(52.5%) patients, followed by adenocarcinoma followed by 27(33.75%), 3(3.75%) patients had small cell carcinoma.1(1.25%) patients each obtained of large cell carcinoma and mucoepidermoid carcinoma. Squamous cell carcinoma still remained the leading cause of lung cancer in this study. Adenocarcinoma remains the second most common histological subtype of lung cancer in this study.

P. N chajed et al[12] showed that Adeno carcinoma was predominant cell type which was not correlate with the study. Other studies by Samet J. M ad Beckett W, S, of lung cancer had shown adeno carcinoma was the common lung cancer, because of change in the smoking pattern and increased in female smokers.[14, 15]

### **Conclusion:**

Above observation taken into consideration we can conclude that, the most common pathological cell type in this study was squamous cell carcinoma followed by adenocarcinoma in the study, male, age more than 50 years smoking hobbit were the risk factors for lung cancer. Adenocarcinoma was found to be the commonest cell type of cancer among females and non smokers. Fiberoptic bronchoscope biopsy ,computerized tomography/ ultra sonogram core needle biopsy were valuable tools to get at tissue diagnosis in maximum number of patients.

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