



## Clinicopathological Profile of Lung Cancer Patients in a Teaching Hospital in South India

Srinath Dhandapani\*<sup>1</sup>, Aravind Srinivasan<sup>1</sup>, Rajalakshmi Rajagopalan<sup>1</sup>, Santhosh Chellamuthu<sup>1</sup>, Aishwarya Rajkumar<sup>1</sup>, Paramesh Palaniswamy<sup>1</sup>

*Pulmonologist, Department of Pulmonary Medicine, SRM Medical College Hospital and Research Centre, Kattankulathur, Kancheepuram District, India*

### ARTICLE INFO

*Article type:*  
Original Article

*Article history:*  
Received: 11 Nov 2015  
Revised: 26 Jan 2015  
Accepted: 23 Feb 2016

*Keywords:*  
Adenocarcinoma  
Image Guided Biopsy  
Lung Cancer

### ABSTRACT

**Introduction:** Lung cancer is one of the leading causes of cancer related deaths in the world. The incidence of lung cancer is increasing in India and there is a need to understand the natural history of this disease.

**Aim of the study:** To study the clinico- pathological- radiological profile of patients diagnosed with lung cancer from January 2013 to May 2015 at a tertiary care teaching hospital.

**Materials and Methods:** Inpatient records of all patients admitted during the study period were examined and all patients with a histologically proven diagnosis of bronchogenic carcinoma were recruited. Demographic characteristics, clinical, radiological and pathological details of each patient were recorded.

**Results:** Fifty four patients with lung cancer were identified. Forty three (79.6%) were male and 11 (20.4%) were female. Thirty two (59.7%) were smokers and 22 (40.7%) were non smokers. Cough and expectoration (61.1%) was the most common presenting symptom followed by breathlessness (59.3%). Mass lesion (81.5%) was the most common radiological presentation and adenocarcinoma (42.6%) was the most common histological subtype. When compared to fiber optic bronchoscopy, image guided percutaneous biopsy had a better yield for diagnosing lung cancer (51.9% vs 48.1%). But this difference was not statistically significant ( $p=0.892$ )

**Conclusion:** Adenocarcinoma is replacing squamous cell carcinoma as the most common type of lung cancer in India.

► Please cite this paper as:

Dhandapani S, Srinivasan A, Rajagopalan R, Chellamuthu S, Rajkumar A, Palaniswamy P. Clinicopathological Profile of Lung Cancer Patients in A Teaching Hospital in South India. *J Cardiothorac Med.* 2016; 4(2):440-443.

### Introduction

Lung cancer is the most commonly diagnosed cancer annually since 1985. Worldwide, there are 1.61 million new cases of lung cancer per year, with 1.38 million deaths, making lung cancer the leading cause of cancer-related mortality(1). In India, approximately 63,000 new lung cancer cases are reported each year (2). Lung cancer was initially thought to be infrequent in India (3). Lung cancer constituted 14.4% of all cancers in a review of 9210 consecutive autopsies by Banker(4). Sirsat (5) reported that lung cancer formed one per cent of all cancers in Tata Cancer Hospital.

Viswanathan et al (6) collected information from different hospitals of the country and found that the incidence of lung cancer in hospital population was 27.4 per million in 1950 and in 78.6 per million in 1959.

The presentations of lung cancer patients were determined in South India in years 1990 and 1993 (7,8). More recently, in a retrospective study conducted by Shankar et al., clinicopathological profile and immuno-histochemistry of 96 non small cell cancer patients were evaluated (9). In this retrospective study, we aimed to review the

\*Corresponding author: Srinath Dhandapani, Department of Pulmonary Medicine, SRM Medical College Hospital and Research Centre, Kattankulathur, Kancheepuram District, India. Email: dr\_srinath145@yahoo.com

© 2016 mums.ac.ir All rights reserved.

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/3.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

clinical, pathological and radiological profile of lung cancer patients, diagnosed in a teaching hospital over two years.

**Materials and Methods**

This is a retrospective study conducted in a tertiary care teaching hospital located in the outskirts of Chennai, which mainly provides services for the suburban population.

Hospital records of all inpatients admitted to the department of pulmonary medicine from January 2013 to May 2015 were evaluated. All the patients diagnosed with a histopathologically confirmed bronchogenic carcinoma within this period were enrolled in the study. The medical records of these patients were examined and information on demographic characteristics, smoking habits, clinical presentation, radiological findings, bronchoscopic results and histological subtype was recorded. These patients had undergone bronchoscopy and image guided biopsy (CT or Ultrasound guided) for confirming the diagnosis of bronchogenic carcinoma.

**Statistical Analysis**

All the data were entered in Microsoft Excel (windows 7) and statistical analysis was done using SPSS version 13. 'Paired t' test was used for ascertaining statistical significance.

**Results**

A total of 54 patients with a diagnosis of bronchogenic carcinoma were recruited in this study. In total, 43 (79.6%)cases were male and 11 (20.4%) were female (male to female ratio of 3.9 : 1). Majority of the patients diagnosed with cancer were smokers (n=32, 59.3% vs n=22, 40.7%) and the smoker to non smoker ratio was 1.45 : 1; all the females were non smokers. The smokers included both bidi (hand rolled cigarettes in tendu leaves) and cigarette users (Table 1).

The average age of patients with lung cancer was 59.8 years. Overall, the male subjects (61.62 years) were older than the females (53.50

years). Cough, along with expectoration of mucus was the most common symptom (61.1%) followed closely by breathlessness (59.3%) and chest pain (38.9%). On chest x ray and CT, lung cancer most commonly presented as a mass (n=44, 81.5%) followed by nodules (n=20, 37%), pleural effusion (n=15, 27.8%) and consolidation (n=4, 7.4%) (Table 1).

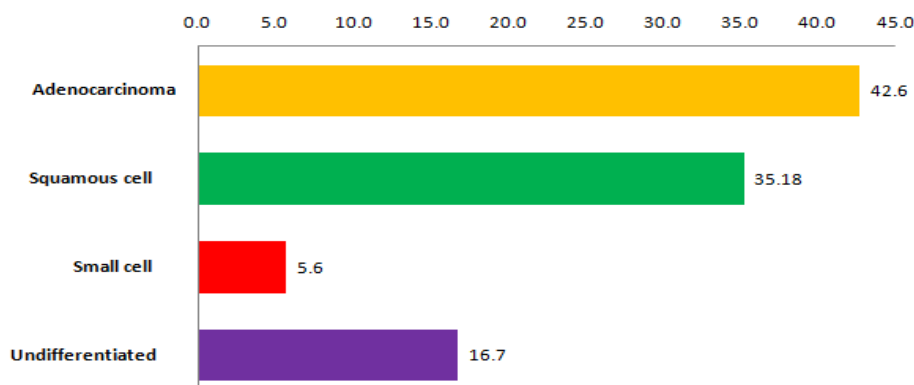
The various histological subtypes of cancer, diagnosed in the study are presented in Figure 1.

Analysis of histological subtypes in terms of smoking revealed that squamous cell carcinoma was the commonest histological subtype among smokers (40.62%), whereas adenocarcinoma was the most common subtype among non smokers(54.54%).

Bronchial wash cytology was positive in only 18.5% (n=10) of all lung cancer cases. Image guided percutaneous biopsy (both CT and ultrasonogram) was shown to be slightly

**Table 1.** Showing the sex distribution,clinical and radiological presentation of lung cancer patients

Gender		
Male	43	79.6%
Female	11	20.4%
Smoker		
Smoker	32	59.3%
Non smoker	22	40.7%
Symptoms		
Cough /expectoration	33	61.1%
Breathlessness	32	59.3%
Chest pain	21	38.9%
Hoarseness of voice	8	14.8%
Dysphagia	2	3.7%
Hemoptysis	1	1.9%
Radiological presentation		
Mass	44	81.5%
Nodules	20	37%
Pleural effusion	15	27.8%
Consolidation	4	7.4%



**Figure 1.** Bar diagram indicating the histological subtypes of diagnosed lung cancer patients

more efficient than fiberoptic bronchoscopy in lung cancer diagnosis (51.9% vs 48.1%); however the difference was not statistically significant ( $p=0.892$ ).

Comparison between diagnostic modalities and histological subtype of bronchogenic carcinoma revealed that 46.4% of adenocarcinoma patients were diagnosed via image-guided percutaneous biopsy, whereas 42.3% of squamous cell carcinoma patients were diagnosed, using fiberoptic bronchoscopy.

## Discussion

The aim of this study was to evaluate the clinicopathological profile of lung cancer patients in a tertiary care hospital. The average age of the patients in our study was 59.8 years (male 61.62 years, female 53.50 years) which is younger than the average age in developed countries (10). The majority of lung cancer patients were smokers (59.3% vs 40.7%); the smoker to non smoker ratio was 1.45: 1. This finding was similar to the results reported in previous research conducted in India (11-13).

In western and some Asian countries, adenocarcinoma has surpassed squamous cell carcinoma as the most common histological subtype (14, 15). However, previous studies in India have introduced squamous cell carcinoma as the most common histological subtype (11, 16, 17). In a recent retrospective study on 434 patients, adenocarcinoma was found to be the most common type of lung cancer in India (12). This finding was in line with a study by Sundaram V et al. on 60 patients which introduced adenocarcinoma as the most common histological subtype (13).

In the present study, adenocarcinoma (42.6%) was the most common histological subtype, and the majority of patients were non smokers (54.54%). Among the smokers, squamous cell carcinoma (40.62%) was the predominant cell type. This shift in histopathological cell type could be due to increasing urbanization, which exposes individuals to different carcinogens other than cigarette/bidi smoke.

The present study revealed that overall yield of bronchoscopy in diagnosing lung cancer was low compared to image guided biopsy (51.9% vs 48.1%). This could be due to the fact that the majority of lung cancer in our series suffered from peripherally located adenocarcinomas, which are better accessed by image guided biopsy. This is a limitation of our study and a larger study with more number of patients needs to be conducted to verify these findings.

## Conclusion

Lung cancer occurs at an earlier age in Indian

men and women, compared to other populations. Adenocarcinoma has become the most common histological subtype of lung cancer, even in India, which might be attributed to the rapid urbanization in this area.

## Conflict of Interest

The authors declare no conflict of interest.

## References

1. Ferlay J, Shin HR, Bray F, Forman D, Mathers C, Parkin DM. Estimates of worldwide burden of cancer in 2008: Globocan 2008. *Int J Cancer*. 2010; 127:2893-917.
2. Ganesh B, Sushama S, Monika S, Suvarna P. A Case-control study of risk factors for lung cancer in Mumbai, India. *Asian Pac J Cancer Prev*. 2011; 12:357-62.
3. Parkin DM, Bray F, Ferlay J, Pisani P. Estimating the world cancer burden: Globocan 2000. *Int J Cancer*. 2001; 94:153-6.
4. Nagrath SP, Hazra DK, Lahiri B, Kishore B, Kumar R. Primary carcinoma of the lung: clinico-pathological study of 35 cases. *Indian J Chest Dis*. 1970; 12:15-24.
5. Sirsat MV. Some aspects of the pathology of primary carcinoma of the lung. *J Post Grad Med*. 1958; 4:6-14.
6. Viswanathan R, Gupta S, Iyer PV. Incidence of primary lung cancer in India. *Thorax*. 1962; 17:73-6.
7. Arora VK, Seetharaman ML, Ramkumar S, Mamatha TV, Subbarao KK, Banerjee A, et al. Bronchogenic carcinoma-Clinico-pathological pattern in south Indian population. *Lung India*. 1990; 7:133-8.
8. Rajasekaran S, Manickam TG, Vasanthan PJ, Jayachandran CS, Subbaraman R, Bhanumathy V, et al. Pattern of primary lung cancer: a Madras study. *Lung India*. 1993; 9:7-11.
9. Shanmugapriya S, Thanasekaran V, Dhanasekar T, Duvooru P. Clinicopathological and immunohistochemical profile of non-small cell lung carcinoma in a tertiary care medical centre in South India. *Lung India*. 2014; 31:23-8.
10. American Cancer Society. *Cancer facts & figures*. Atlanta, GA: American Cancer Society; 1996.
11. Rawat J, Sindhwani G, Gaur D, Dua R, Saini S. Clinico-pathological profile of lung cancer in Uttarakhand. *Lung India*. 2009; 26:74-6.
12. Malik PS, Sharma MC, Mohanti BK, Shukla NK, Deo S, Mohan A, et al. Clinico-pathological profile of lung cancer at AIIMS: a changing paradigm in India. *Asian Pac J Cancer Prev*. 2013; 14:489-94.
13. Sundaram V, Sanyal N. Clinicopathological profile of bronchogenic carcinoma in a tertiary care hospital in eastern part of India. *Clin Cancer Invest J*. 2014; 3:220-4.
14. Valaitis J, Warren S, Gamble D. Increasing incidence of adenocarcinoma of the lung. *Cancer*. 1981; 47:1042-6.
15. Janssen-Heijnen ML, Coebergh JW. The changing epidemiology of lung cancer in Europe. *Lung Cancer*. 2003; 41:245-58.

16. Behera D, Balamugesh T. Lung cancer in India. Indian J Chest Dis Allied Sci. 2004; 46:269-81.
17. Singh N, Aggarwal AN, Gupta D, Behera D, Jindal SK.

Unchanging clinico-epidemiological profile of lung cancer in North India over three decades. Cancer Epidemiol. 2010; 34:101-4.