

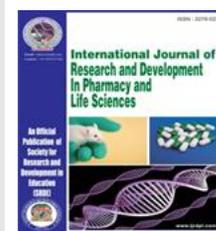


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### Original Article

# Clinico-pathological profile of lung cancer in North Indian population

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**ABSTRACT:** Lung cancer is the most common cancer representing approximately 12% of all new cancers. It is also the most frequent type of cancer in males and remains the most a common cause of cancer-related mortality in both sexes. An increasing incidence of lung cancer has been observed in India. We studied the clinical and pathological profile of patients with lung cancer in a tertiary care center. We performed a retrospective analysis of histopathologically proven cases of bronchogenic carcinoma admitted in our hospital. In our study we included 203 patients with confirmed cases of lung cancer. Male to female ratio was 8.2:1. The common age group being 40-60 years, 9.86% of the patients were less than 40 years old age. Smoking was found to be the main risk factor for 81.77% patients. The most frequent symptom was a cough (72.90%) followed by fever (58.12%). The most common radiological presentation was mass lesion (46.31%). The most common histopathological type was squamous cell carcinoma (SCC) (44.83%) followed by adenocarcinoma (19.78%) and small cell lung carcinoma (SCLC) (16.75%). The majority patients (73.29%) were diagnosed in the later stages of the disease (3b and 4). Squamous cell carcinoma was the most frequent histopathological form. Smoking remains the major risk factor for lung cancer.

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### INTRODUCTION

Lung cancer is believed to be the most common fatal neoplastic disease in the world today. It is responsible for 28% of all the cancer-related deaths [1]. In the developed countries, incidence and mortality from lung cancer in females is rising, whereas it is declining in males. Lung cancer is responsible for approximately one million deaths per year at present, and it is estimated to rise to three million per year by the year 2010. The major risk factor for developing lung cancer is tobacco use and this disease is often viewed solely as a smoker's disease. However, a significant number of patients with lung cancer have no history of smoking. Progressive survival extension and increasing cigarette smoking have led to a numerical rise of patients with primary lung cancer in India. It is in accordance with the epidemiological data from western countries, which shows rising prevalence of the disease

in Indian population [2]. Smoking is the cause of more than 85% of the bronchogenic carcinoma cases. Approximately 95% of all lung cancers are classified as either small cell lung cancer (SCLC) or non-small cell lung cancer (NSCLC). This distinction is essential for staging and management. Other histological types of lung cancer comprise 5% of all lung malignancies. Surgery is the treatment of choice for NSCLC, if a primary tumor is resectable and if there is no distant metastasis.

Chemotherapy and radiotherapy are used to treat tumors that are not resectable. Small cell lung cancer metastasizes early and has a worse prognosis than non-small cell carcinoma. According to the world health organization (WHO) classification formulated in 1999; there are six major types of malignant epithelial non-small cell lung carcinoma (NSCLC) and small cell lung carcinoma (SCLC) [3-5].

The proportions of histopathological cell types of lung cancer vary with changes in social and another environmental factor. We undertook this retrospective review of patients diagnosed with lung cancer at Career Institute of Medical Sciences (CIMS), Lucknow, Uttar Pradesh (India) to evaluate the clinical and histological profile of Lung cancer in North Indian population.

**MATERIALS AND METHODS**

This retrospective study was performed using a database with 203 patients of lung cancer who had been diagnosed at tertiary care teaching hospital, during January-August 2017. The clinical records of the patients were received for demographic data, smoking history, and duration of symptoms, symptoms, and signs, radiographic findings, histopathology, and clinical staging of lung cancer. Only patients with a confirmed pathological cell type and adequate medical records were included for the analysis. For confirmation of the diagnosis of lung cancer, the majority of patients were subjected to fiber-optic bronchoscopy and/or percutaneous fine needle aspiration biopsy (FNAB) under imaging guidance. The institutional Ethics committee of the Institute has approved the study.

**RESULTS**

Table 1: Demographic profile of the cases is shown. The study included n = 203 patients in which 181 males (89.16%) and 22 females (10.84%) patients. Age distribution of these patients is also shown. In less than 40 years of age, SCLC was the commonest type, while SCC was common (71.69%) after 60 years of age. The breakup of both sexes according to their smoking history is as follows 161 smoker male and 5 smokers' female, as well as 20 nonsmoker male and 17 nonsmoker female, were present.

**Table 1: Demographic profile of cases included in the study (n = 203)**

S. no.	Age group	No. of patients	Percentage
1.	<40	20	9.86
2.	41-60	108	53.20
3.	>60	75	36.94
4.	Total	203	100
<b>Gender</b>			
1	Male	181	89.16
2	Female	22	10.84
	Total	203	100
<b>Smoking status</b>		Male	Female
1	Smoker	161	5
2	Nonsmoker	20	17
	Total	181	22

Table 2: it shows Clinico- radiological manifestations (n = 203), A Cough was the most common symptom found in (72.90%) patients, followed by fever (58.12%), chest pain (55.64%), and dyspnea (50.74%), Mass lesion (46.13%) was the commonest radiological feature followed by collapse-consolidation (40.89)

Table 3: shows the various diagnosis modalities, either singly or in combination, used for confirmation of lung cancer. Central Endobronchial tumors were seen in 99 (48.77%) patients, whereas peripheral tumors in 104 (51.23%). The adenocarcinoma most commonly manifested as peripheral mass (75%). The most common histopathological type was SCC (44.83%), followed by adenocarcinoma (19.70%), and SLCC (16.75%). Most patients (73.29%) were diagnosed in the later stages of the disease. The patients presented to their physician, on an average, 112 days (range 30-270), after the onset of symptoms.

**Table 2: Clinico- radiological manifestations (n = 203)**

S.NO.	Symptoms	No. of patients	Percentage
1	Dyspnea	103	50.74
2	Hoarseness of voice	38	18.72
3	SVC obstruction	24	11.82
4	Loss of weight and appetite	115	56.65
5	Cough	148	72.90
6	Fever	118	58.12
7	Hemoptysis	51	25.12
8	Chest pain	113	55.67

**Radiological presentation**

Site	Number	%
Bilateral	6	2.96
Right Lung	117	57.64
Left Lung	80	39.41
Mass	94	46.31
Collapse-consolidation	83	40.89
Pleural effusion	9	4.43
Combined presentation	17	8.37

**Table 3: Diagnostic yield of various investigative procedures**

Diagnostic procedure	NSCLC	SCLC	Diagnostic yield (%)
FOB	81	18	48.77
Lymph node biopsy	4	-	1.97
P/C TT FNAC	73	16	43.84
Pleural biopsy	9	-	4.43
Pleural fluid	2	-	0.99
Total	169	34	100

**Histological type of lung cancer**

Histology	No. of patients	%
Squamous cell carcinoma	91	44.83
Adenocarcinoma	40	19.70
Large cell carcinoma	17	8.37
Undifferentiated carcinoma	21	10.34
Small cell carcinoma	34	16.75
<b>Total</b>	<b>203</b>	<b>100</b>

Clinical manifestations of study group

## DISCUSSION

Most of our study belonged to the patients of age group between 40-60 years, with a male predominance (M: F ratio 8.2:1). Smoking was the most common predisposing factor, which included cigarettes, beedis, hookah, etc. Similar observation has been reported by other Indian studies also [6-9]. The prevalence of respiratory system malignancies is quite variable in different parts of India. In most studies, including reports of National Cancer Registry Program (NCRP) [10-11] from Bhopal, Delhi, and Mumbai; and other studies; laryngeal cancer was the most common site. The present study was in agreement with those where lung was the topmost site for malignancy in males. One important observation made in our study is the delay in presentation of patients to their attending physician. Majority of the cases were misdiagnosed as tuberculosis and treated at various other centers, thereby causing a delay in diagnosis.

In our study, the delay in seeking treatment was observed to vary from 4-6 months, which is similar to another study. The diagnosis of cancer in an individual not only affects the person physically but produces significant psychological disturbance too. A study from Tata Memorial Hospital, Mumbai, analyzing the psychological state of patients suffering from cancer, concluded that 89% of the patients used denial as a mental defense mechanism, leading to delay in seeking medical help for the confirmation and treatment of cancer. Psychological reasons such as denial of illness, fear of cancer, fear of its treatment, and domestic difficulties were the most common causes of delay in seeking treatment. This emphasizes the need for patient counseling as well as more effective methods for early detection of lung cancer cases by a general practitioner.

Our data shows that an unexplained cough for several weeks is the commonest symptoms along with fever, weight loss, chest pain, and shortness of breath. This is similar to reports published in the literature from a different part of India [12-13].

The pattern of lung cancer has been changing in the West. Lung cancer is being increasingly diagnosed in women and adenocarcinoma has overtaken SCC as the most common histological cell type [14]. However, the pattern seen at our hospital was different. SCC was still the commonest cell type seen, followed by adenocarcinoma and SLCC. This is similar to reports from another part of India. This difference in histopathology may be due to the fact that smoking is less prevalent among women in India as opposed to the West, where it is rising; and urbanization, that exposes the patient to other carcinogens, risk factors or a complex interaction among gender, race, smoking status in West.

It is a well-known fact that not all patients with lung cancer are able to receive anticancer treatment. In our study, 28.57% patients (29.46% of NSCLC and 23.44% of SCLC) didn't receive any anticancer treatment. This figure varies from 19% in the USA, 33% in Australia, 37% in Scotland, and 50% in Ireland and New Zealand (Fry et al., 1999; Vinod et al., 2008; Erridge et al., 2008; Mahmud et al., 2003; Stevens et al., 2007). Vinod et al (2010) [15-20] have addressed this issue in their study and found that in actual practice 20% patients didn't receive any treatment; however, guideline recommendations for no treatment were there in only 4% patients.

On multivariate analysis, it was observed that main factors responsible for this discrepancy were older age, poor PS, NSCLC histology, and social reasons.

Bronchoscopy is the most useful investigation in the evaluation of the patient suspected of endobronchial lung cancer. Tumors that were beyond bronchoscopic vision are difficult to reach and require the other technique [21]. FNAB done under CT is the investigation of choice for peripherally situated lesions, which has very high complication rates as seen in various international and Indian studies. In our study, the overall yield with bronchoscopy was 48.77% and with FNAB was 43.84%.

The commonest radiological finding seen in the present study was mass followed by collapse consolidation with a slight predominance of right lung; similar to reports published in the literature. The adenocarcinoma commonly manifested as peripheral mass or a malignant pleural effusion. A similar finding was also reported in other studies. The SCLC presented commonly as a central lesion, which was in agreement with other studies [22-23].

## CONCLUSIONS

This study has shown smoking as the principal risk factor in the causation of lung cancer among men. Primary lung cancer should always be suspected in a person presenting with unexplained cough of several weeks with other symptoms such as weight loss and fever with resolving collapse-consolidation on chest radiograph, and further investigations should be carried out to rule lung cancer. Majority of the cases were misdiagnosed as tuberculosis and treated by antitubercular treatment, thereby causing a delay in diagnosis, this emphasized the need for more effective methods for early detection of lung cancer cases among the general population.

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**Conflict of Interest:** None declared.

## REFERENCES

1. Pinato, D.; Shiner, R.; Seckl, M.; Stebbing, J.; Sharma, R.; Mauri, F. Prognostic Performance of Inflammation-Based Prognostic Indices in Primary Operable Non-Small Cell Lung Cancer. *British Journal of Cancer* 2014, *110*, 1930-1935.
2. Shankar, S.; Thanasekaran, V.; Duvooru, P.; Dhanasekar, T. Clinicopathological And Immunohistochemical Profile of Non-Small Cell Lung Carcinoma in A Tertiary Care Medical Centre In South India. *Lung India* 2014, *31*, 23.
3. Khan, N.; Teli, M.; Haq, M.; Bhat, G.; Lone, M.; Afroz, F. A Survey of Risk Factors in Carcinoma Esophagus in The Valley of Kashmir, Northern India. *Journal of Cancer Research and Therapeutics* 2011, *7*, 15.
4. Mohan, A.; Latifi, A.; Guleria, R. Increasing Incidence of Adenocarcinoma Lung in India: Following the Global Trend. *Indian Journal of Cancer* 2016, *53*, 92.
5. Chacko, R.; Bhatt, A.; Pai, R.; Rebekah, G.; Nehru, G.; Dhananjayan, S.; Samuel, A.; Singh, A.; Joel, A.; Korula, A. Clinicopathologic Features of Non-Small Cell Lung Cancer in India And Correlation with

- Epidermal Growth Factor Receptor Mutational Status. *Indian Journal of Cancer* 2013, 50, 94.
6. Singh, R.; Rohtagi, N. Clinicopathological And Molecular Epidemiological Study of Lung Cancer Patients Seen at A Tertiary Care Hospital in Northern India. *South Asian Journal of Cancer* 2017, 6, 171.
  7. Bag, A.; Rawat, S.; Pant, N.; Jyala, N.; Singh, A.; Pandey, K. Cancer Patterns in Nainital And Adjoining Districts of Uttarakhand: A One Year Survey. *Journal of Natural Science, Biology and Medicine* 2012, 3, 186.
  8. Shankar, S.; Thanasekaran, V.; Duvoor, P.; Dhanasekar, T. Clinicopathological And Immunohistochemical Profile of Non-Small Cell Lung Carcinoma in A Tertiary Care Medical Centre In South India. *Lung India* 2014, 31, 23.
  9. Nigam, J.; Sood, N.; Yadav, P. A Retrospective Study of Clinico-Pathological Spectrum Of Carcinoma Breast In A West Delhi, India. *South Asian Journal of Cancer* 2014, 3, 179.
  10. Prabhash, K.; Noronha, V.; Pinninti, R.; Patil, V.; Joshi, A. Lung Cancer in The Indian Subcontinent. *South Asian Journal of Cancer* 2016, 5, 95.
  11. Bhaskarapillai, B.; Kumar, S.; Balasubramanian, S. Lung Cancer in Malabar Cancer Center In Kerala - A Descriptive Analysis. *Asian Pacific Journal of Cancer Prevention* 2012, 13, 4639-4643.
  12. Krishnamurthy, A.; Gadigi, V.; Sagar, T.; Vijayalakshmi, R.; Ranganathan, R. The Relevance Of "Nonsmoking-Associated Lung Cancer" In India: A Single-Centre Experience. *Indian Journal of Cancer* 2012, 49, 82.
  13. Raina, V.; Malik, P. Lung Cancer: Prevalent Trends & Emerging Concepts. *Indian Journal of Medical Research* 2015, 141, 5.
  14. Mandal, S.; Singh, T.; Sharma, T.; Amrithalingam, V. Clinico-Pathology of Lung Cancer in a Regional Cancer Center In Northeastern India. *Asian Pacific Journal of Cancer Prevention* 2013, 14, 7277-7281.
  15. Erridge SC, Murray B, Price A, et al (2008). Improved treatment and survival for lung cancer patients in South-East Scotland. *J Thorac Oncol*, 3, 491-8.
  16. Fry WA, Phillips JL, Menck HR. (1999). Ten-year survey of lung cancer treatment and survival in hospitals in the United States: a national cancer database report. *Cancer*, 86, 1867-76.
  17. Mahmud SM, Reilly M, Comber H (2003). Patterns of initial management of lung cancer in the Republic of Ireland: a population-based observational study. *Lung Cancer*, 41, 57-64.
  18. Stevens W, Stevens G, Kolbe J, et al (2007). Lung cancer in New Zealand: patterns of secondary care and implications
  19. Vinod SK, O'Connell DL, Simonella L, et al (2008). Gaps in optimal care for lung cancer. *J Thorac Oncol*, 3, 871-9.
  20. Vinod SK, Sidhom MA, Gabriel GS, et al (2010). Why do some lung cancer patients receive no anticancer treatment? *J Thorac Oncol*, 5, 1025-32.
  21. Panda, D. Clinico Pathological Profile of Male Breast Cancer Treated In A Regional Cancer Centre Of Eastern India. *Journal of Medical Science and Clinical Research* 2017, 05, 21264-21267.
  22. Malik, P.; Sharma, M.; Mohanti, B.; Shukla, N.; Deo, S.; Mohan, A.; Kumar, G.; Raina, V. Clinico-Pathological Profile of Lung Cancer At AIIMS: A Changing Paradigm in India. *Asian Pacific Journal of Cancer Prevention* 2013, 14, 489-494.
  23. Agrawal, A.; Singh, L.; Chawla, A.; Tandon, R. Clinico- Pathological Profile and Course Of Malignant Pleural Effusion In A Tertiary Care Teaching Hospital In Western U.P. With Special Reference To Lung Cancer. *Lung India* 2015, 32, 326.

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