

# To study the prevalence of squamous cell carcinoma at our tertiary care center

Rajat Agarwal<sup>1</sup>, Rishi Kumar Saini<sup>1</sup>, Piyali Sarkar<sup>2</sup>

<sup>1</sup>Department of Chest and TB, Rohilkhand Medical College and Hospital, Bareilly, Uttar Pradesh, India, <sup>2</sup>Department of Respiratory Medicine, Rohilkhand Medical College and Hospital, Bareilly, Uttar Pradesh, India

**Corresponding Author:**

Dr. Piyali Sarkar, Department of Respiratory Medicine, Rohilkhand Medical College and Hospital, Bareilly, Uttar Pradesh, India.  
E-mail: mdchest.sarkar@gmail.com

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**Introduction:** Lung cancer is most common worldwide both in terms of incidence and mortality. In India, lung cancer constitutes 6.9% of all new cases and 9.3% of all cancer related deaths in both sexes. **Objective:** A retrograde study to study the prevalence of squamous cell cancer in smokers. and to assess the most common presenting symptom in squamous cell carcinoma. **Method:** 33 confirmed lung cancer cases (2012-2013) were incorporated. Demographic information, smoking index, sputum for AFB, Chest X-ray, CT scan and fiberoptic bronchoscopic biopsy were taken. **Results:** 33 confirmed cases of lung carcinoma on CT/ bronchoscopic biopsy revealed growth with obstruction in 63.6% and growth without obstruction 24.24%. On histopathology, most common was Squamous cell carcinoma confirmed in 22 cases(66.7%) among them 19 (86.3%) were smokers. Adenocarcinoma seen in 3 cases (9%) among them 2 (66.7%) were smokers, Small cell carcinoma seen in 5 cases (15.2%) in which 3 (60%) were smokers. Among non-smokers 8 cases (12.1%) of lung cancer were observed and most common was atypical cell type. 4 cases (50%) of large cell carcinoma were found in non-smokers. Adenocarcinoma was found in 2 cases (25%), Squamous cell carcinoma 1(12.5%) and Small Cell Carcinoma in 1(12.5%). **Conclusion:** Squamous cell carcinoma is the commonest variant of Bronchogenic carcinoma accounting upto 66.7% out of which 86.3% cases were smokers. Large cell carcinoma was observed in 50% cases who were non-smokers. Due to small sample size ,it's difficult to reach a conclusion.

**KEY WORDS:** lung cancer, carcinoma, bronchogenic, smokers, histopathology, smoker, bronchoscopy, squamous cell carcinoma, small cell carcinoma, adenocarcinoma, growth, biopsy, cough, hemoptysis, CECT, non-smokers, male predominance

**INTRODUCTION**

Lung cancer has been the most common cancer worldwide since 1985, both in terms of incidence and mortality.<sup>[1]</sup>

In India, lung cancer comprises 6.9% of all new cancer cases and 9.3% of all cancer-related mortality in both sexes.<sup>[2]</sup> In India, there is lower mean age of presentation with advanced disease at the time of diagnosis with 52% patients having evidence of metastasis.

Lung cancer develops through many stages of histologically defined epithelial changes. The earliest changes include squamous metaplasia, followed by dysplasia, carcinoma *in situ*, and microinvasive and invasive cancer. Non-small cell lung carcinoma (NSCLC) comprises about 80% of all lung cancers. In the modified 2004 WHO classification, squamous cell

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carcinoma, adenocarcinoma, and large cell carcinoma have been grouped as NSCLC. The prevalence of squamous cell carcinoma stated by different studies is – 49.1% in Mandal *et al.*<sup>[3]</sup> 48.14% in A. Agarwal *et al.*,<sup>[4]</sup> 38.2% in Singh *et al.*,<sup>[5]</sup> and 35.1% in Dey *et al.*<sup>[6]</sup>

Hemoptysis is the expectoration of blood from the respiratory tract. Hemoptysis can arise from anywhere in the respiratory tract; from the glottis to the alveolus. Most commonly, bleeding arises from the bronchi or medium sized airway. It can be classified as MILD (<50 ml/day or streaks/flecks of blood in the sputum) MODERATE (50–600 ml/day of blood in sputum) MASSIVE (>600 ml of blood within 24 h or Single episode of >150 ml leading to hemodynamic instability or any amount leading to hemodynamic instability). According to Fidan *et al.* among 108 cases, 77 cases presented with first episode of hemoptysis and 31 with recurrent hemoptysis, in which 34.4% hemoptysis cases were due to lung cancer.<sup>[7]</sup>

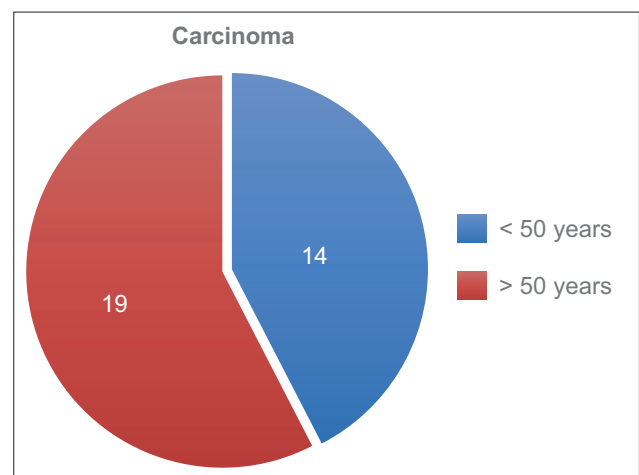
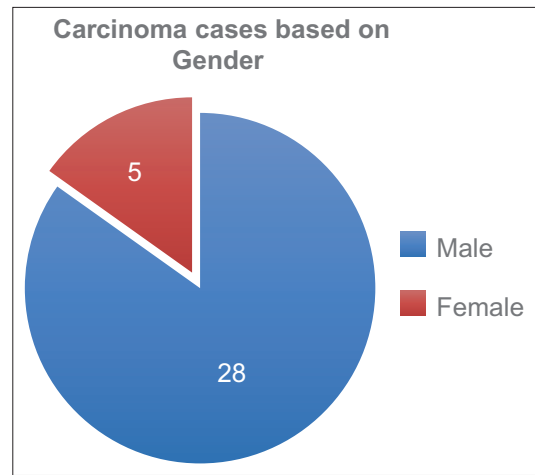
Smoking is the major cause of lung cancer in both the genders. According to Brownson *et al.*, the risk of lung cancer is more in male smokers than female smokers. Smoking induces lung cancer of all histologic type, squamous cell carcinoma being most common among all,<sup>[8]</sup> followed by adenocarcinoma. Tobacco is rich in carcinogens which are toxic to the respiratory system and causes many genetic changes by inducing DNA mutation.<sup>[9,10]</sup> Tobacco-specific nitrosamines induce DNA methylation 18; levels of DNA adduct such as methylated DNA used as an index of human tobacco exposure. Tobacco causes methylation of tumor suppressor genes.<sup>[11]</sup>

Lung cancer in smokers is preceded by an accumulation of genetic, epigenetic, and post-translational abnormalities in the entire bronchial epithelium. Lung cancer in never-smokers is less well understood. The most common genes altered in lung cancer are TP53 and KRAS, and some genetic lesions, particularly driver mutations or translocations in EGFR, ALK, and ROS1, targeted therapies exist and striking clinical effectiveness has been observed.

**Objective**

The objectives of this study were as follows:

1. To study the prevalence of squamous cell cancer in smokers.
2. To assess the most common presenting symptom in squamous cell carcinoma.

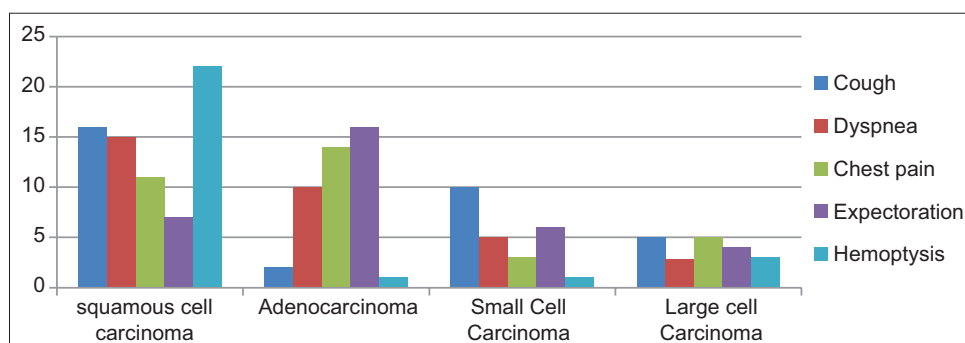


**MATERIALS AND METHODS**

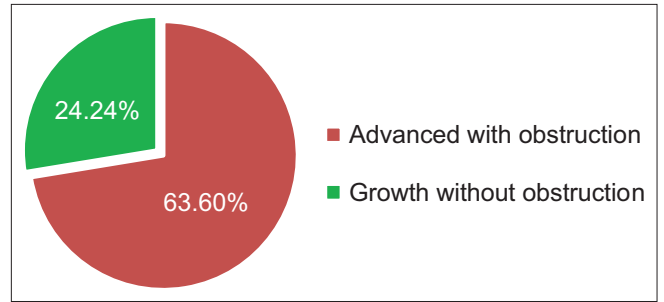
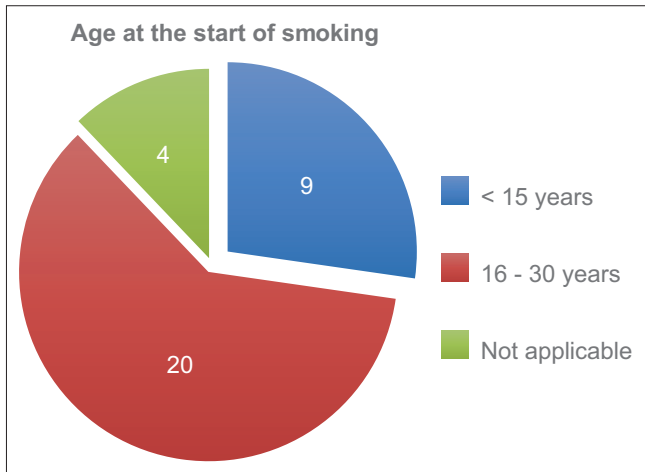
A retrospective study was conducted from the medical records of patients in Rohilkhand Medical College and Hospital from 2012 to 2013. The routine history taking, CECT, and fiberoptic bronchoscopic biopsy confirmed cases were included in the study; hence, the sample size is 33 of our study.

**OBSERVATIONS AND RESULTS**

Among all the patients 84.8% (28) were male and 15% (5) were female. While correlating the age-wise distribution, we found



patients <50 years with confirmed that lung cancer was 42.4% (14) and >50 years were 57.5% (19).



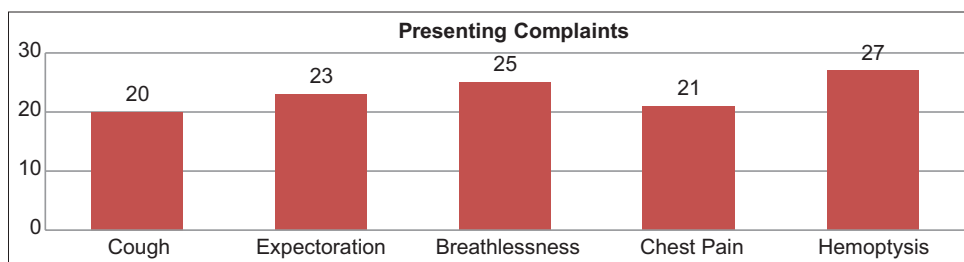
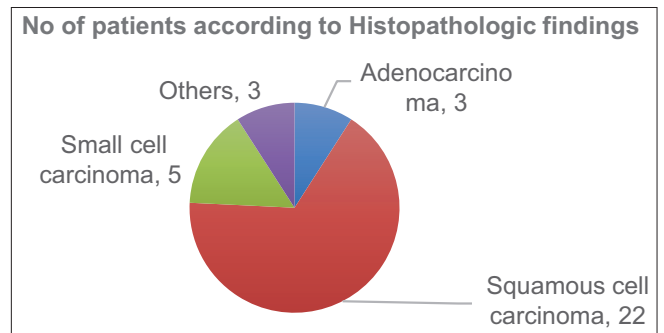
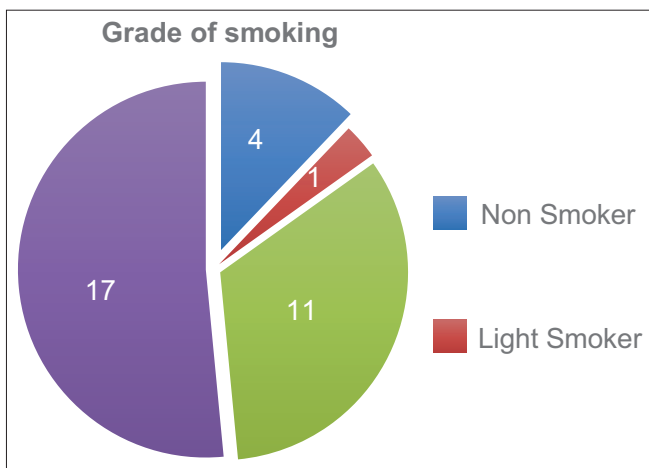
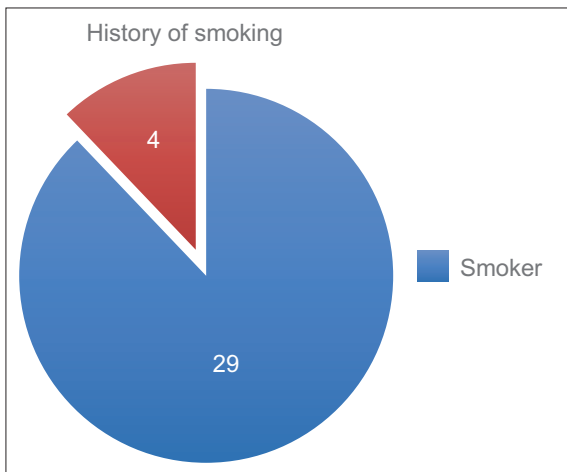
History of smoking was taken, among confirmed lung cancer patient 87.8% (29) were smokers, and 12.1% (4) were non-smokers. Grade of smoking was also taken into

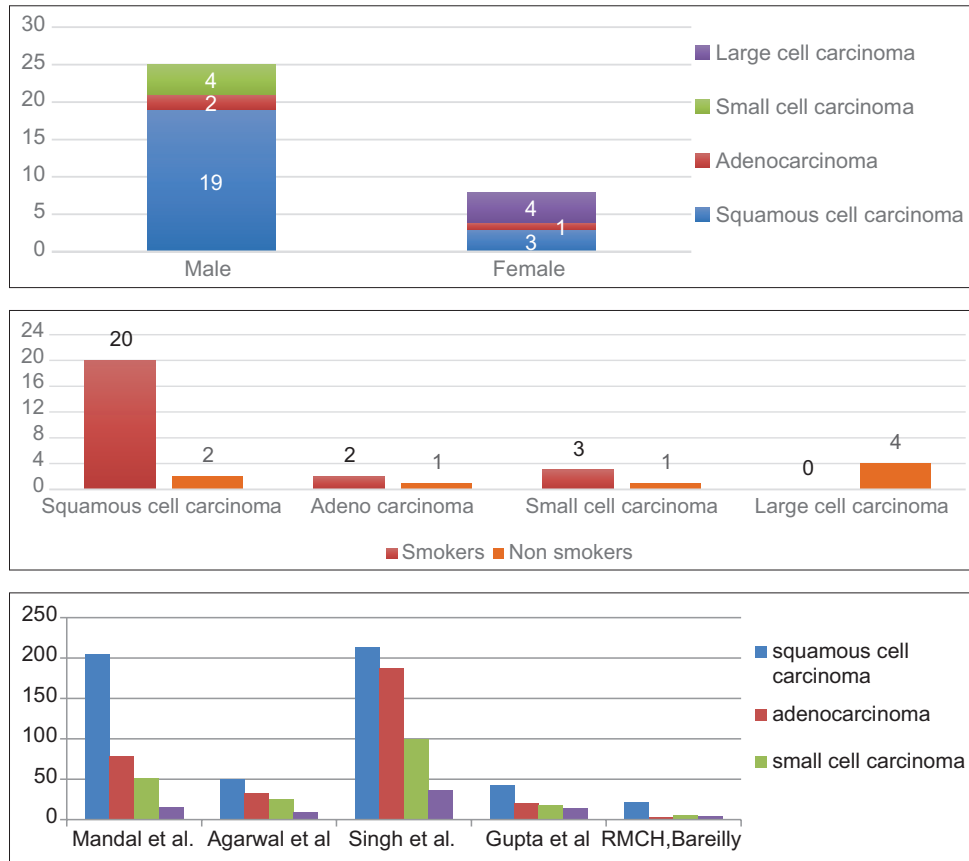
consideration in confirmed lung cancer patients 51.5% (17) that were heavy smokers, 33.33% (11) cases were moderate smokers, 3% (1) was light smoker, and 12.12% (4) were non-smokers. Age of onset of smoking plays a very important role in the development of lung cancer, in <15 years, 27.3% (9) were having confirmed lung cancer. Between 16 and 30 years, 60.6% (20) were having confirmed lung cancer and 12.1% (4) were not applicable.

Based on clinical symptoms, hemoptysis was seen in 100% (33) cases of lung carcinoma, cough 90.9% (30) cases, breathlessness was observed in 75.8% (25) cases, expectoration 69.7% (23) cases, and chest pain in 63.6% (21) cases of confirmed lung carcinoma cases.

CECT and fiberoptic bronchoscopy were done in all patients showed advanced cases with obstruction in 63.6% (21), non-advanced without obstruction 24.2% (8), and normal in 12.1% (4).

Fiberoptic bronchoscopic biopsy and histopathologically confirmed cases showed squamous cell carcinoma 66.67% (22) cases, small cell carcinoma 15.15% (5) cases, adenocarcinoma 9.09% (3) cases, and atypical cells in 9.09% (3) cases.





Among the confirmed lung carcinoma cases, males were more prone to squamous cell carcinoma than females. Males 57.6% (19) and females 9% (3) with squamous cell carcinoma, males 12.12% (4) small cell carcinoma was observed, but none were observed in females. Adenocarcinoma was observed in males 6% (2) and female 3% (1) observed. Large cell carcinoma was observed in 12.12% (4) females.

Based on smoking and non-smoking history, squamous cell carcinoma was predominant among smokers 60.6% (20) than non-smokers 6.06% (2). Only few cases of squamous cell carcinoma 6.06% (2), adenocarcinoma 3.03% (1) was observed among non-smoker, due to small sample size it's difficult to reach a conclusion in non-smokers.

Patients with hemoptysis and lung cancer tend to have a higher stage of malignancy with a predominance of squamous cell carcinoma. Mandal *et al.* concluded out of 454 study that sample hemoptysis was seen in 77.4 % (24) squamous cell carcinoma, 6.5% (2) adenocarcinoma, and 6.5% (2) small cell carcinoma. In our study, hemoptysis was observed in 81.4% (22) with squamous cell carcinoma, 3.7% (1) with adenocarcinoma, 3.7% (1) small cell carcinoma, and 11.1% (3) large cell carcinoma.

Cough was observed in 80% (16) with squamous cell carcinoma, breathlessness was observed in 45.5% (15) squamous cell carcinoma, chest pain was observed in 33.33% (11), and expectoration in 21.21% (7) in cases with squamous cell carcinoma.

## DISCUSSION

In our study, we found that the most common histological variant of lung cancer is squamous cell carcinoma which is similar to other Indian studies such as in Mandal *et al.*,<sup>[3]</sup> Agarwal *et al.*,<sup>[4]</sup> Singh *et al.*,<sup>[5]</sup> and Dey *et al.*<sup>[6]</sup>

In our study, we found that squamous cell carcinoma was predominant among smokers compared to non-smokers which are similar in studies as Mandal *et al.* <sup>[3]</sup> and Ganesh *et al.*<sup>[12]</sup>

In our study, we found that squamous cell carcinoma was predominant in males compared to females.

We also observed that there is an age predilection in squamous cell carcinoma cases in >50 years.

Onset of smoking had a great impact in patients with squamous cell carcinoma, cases with history of onset of smoking at age between 16 and 30 years are more susceptible to lung cancer.

In our study, we also observed that the most common symptom was hemoptysis in squamous cell carcinoma cases.

## CONCLUSION

The predominant histological variant of lung cancer was squamous cell carcinoma 66.67%.

There was male predominance, 84.4% were prone to squamous cell carcinoma than females.

Cases >50 years of age are more prone to lung cancer based on our study.

Smoking has a strong correlation with squamous cell carcinoma, 60.6% smokers showed squamous cell carcinoma.

Adenocarcinoma was observed among non-smokers.

Hemoptysis was the most common clinical symptom observed in 100% cases with squamous cell carcinoma.

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