ORIGINAL ARTICLE

One year experience of lung carcinoma at tertiary care center, RMCH, Bareilly

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Introduction: The demographic profile of lung cancer has been changed over the past few years. Some of the studies (across India) like Mohan A *et al*., Malik PS *et al*., Noronha V *et al*. and Krishnamurthy *et al*. stated adenocarcinoma more common than squamous cell carcinoma. While, studies like Singh N *et al*., Dey A *et al*. and an unpublished study conducted at our center in 2012 stated squamous cell carcinoma is more common than adenocarcinoma. **Objective:** To study the occurrence of histological types of lung cancer at our center. **Methods:** A retrospective study was conducted in Rohilkhand Medical College, Bareilly from January 2019 to December 2019. Total 57 confirmed cases of lung cancer were included in the study. **Results:** Out of total 57 confirmed cases of lung cancer, 66.6% were detected by biopsy, 24% by pleural fluid analysis and 9% by FNAC. Histopathology (FNAC and biopsy) showed 60% as squamous cell carcinoma, 20% as adenocarcinoma, 2.3% as large cell carcinoma, 4.7% as small cell carcinoma and 21% as poorly differentiated. Among the smokers, squamous cell carcinoma was the commonest (64.5%). **Conclusion:** Squamous cell carcinoma is found predominant at our centre than adenocarcinoma and is attributed to higher number of smokers. Due to small sample size, a multicentric study is needed to support our result.

KEY WORDS: Adenocarcinoma, dyspnoea, hemoptysis, smoking, histological types, male predominant, lung carcinoma, one year, squamous cell carcinoma

INTRODUCTION

Lung cancer has been an important cause of deaths due to cancer in the world as well as in India. According to the GLOBOCON report 2018, lung cancer has affected approximately 2.1 million persons (11.6% of all the cancers) and caused 1.8 million deaths (18.4% of all the deaths due to cancer) worldwide.[1] In India, lung cancer accounts for 5.9% of all the newly diagnosed cases of cancer and 8.1% of all deaths due to cancer in both the sexes.[2]

The most important modifiable risk factor for lung cancer is tobacco smoking. It has been seen that by tobacco smoking elimination prevents up to 20% of all cancer worldwide.[3] Cessation of smoking, especially in young adults, has been associated with several benefits to health which includes lower risk of lung cancer and cessation before 40 years of age decreases the risk of death associated with continuation of smoking by approximately 90%.[4] The lung cancer risk is directly proportional to the number of cigarette consumed, as factors such as the number of packs of smoking per day, the age at the onset of smoking, the degree of the content of tar and nicotine in cigarettes, and the use of unfiltered cigarettes are considered important.[5,6] Cigarette smoke is a complex aerosol, comprising approximately 4000 gaseous or particulate compounds. Smoke that is produced by inhalation of air through cigarette, which is the primary source of exposure to smoke for the smoker, is the MAINSTREAM SMOKE. Smoke that is produced from smoldering of the cigarette in between the puffs

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that are the main source of environmental tobacco smoke (ETS) is called SIDESTREAM SMOKE.[7]

In non-smokers, multiple risk factors are implicated including ETS ("secondhand smoke"); environmental exposure to the carcinogens such as radon, indoor and outdoor air pollution, arsenic, or asbestos; any history of existing lung disease including interstitial lung disease and chronic obstructive pulmonary disease (COPD); and genetic factors.[8]

The lung cancer incidence is increasing in females in the past few years worldwide. While in non-smoking females, incidence is more common than in non-smoking males. It is seen that up to 80% of cases of lung cancer among females are associated with smoking.[9] This scenario is less common in India due to less number of female smokers and less number of females seeking medical attention. An Indian study Mohan *et al.*[2] states 83% of males and 17% of females diagnosed as lung cancer.

The two major types of lung cancer are non-small cell lung carcinoma and small cell lung carcinoma. The non-small cell carcinoma is further classified into adenocarcinoma, squamous cell carcinoma, and large cell carcinoma. The demographic profile of lung cancer has been changed over the past few years. Some of the studies [Figure 1] (across India) like Mohan *et al.*,[2] Malik *et al.*,[10] Noronha *et al.*,[11] and Krishnamurthy *et al.*[12] stated that adenocarcinoma has been more common than squamous cell carcinoma, that is, 34%, 41%, 43.8%, and 42.6% of cases of adenocarcinoma and 28.6%, 25.1%, 26.2%, and 15.9% of cases of squamous cell carcinoma, respectively. While, studies such as Singh *et al.*,[13] Dey *et al.*,[14] and a study conducted at our center in 2012 stated that squamous cell carcinoma has been more common than adenocarcinoma, that is, 38.10%, 35.10%, and 66.7% of cases of squamous cell carcinoma and 27.5%, 30.8%, and 9% of cases of adenocarcinoma, respectively.

Recently, lung carcinoma therapy has undergone revolution by discovery of several biomarkers. The driver mutations and passenger mutations are involved in lung cancer. The driver mutations and passenger mutations are involved in lung cancer, for example- KRAS, EGFR gene, p53 genes, RTK that regulates cell growth[15,16] and ALK gene and EML4 which results in EML4-ALK fusion gene[17]. We have not assessed these markers in our study as they were not part of study.

Objective

The objective of the study was to study the occurrence of histological types of lung cancer at our center.

MATERIALS AND METHODS

Study Type

This was a retrospective study.

Place of Study

This study was conducted at Rohilkhand Medical College, Bareilly.

Period

This study was from January 2019 to December 2019.

Selection Criteria

Patients with confirmed diagnosis by biopsy or cytology or FNAC were included in the study.

Procedure

The routine history taking and examination were done before making the diagnosis of carcinoma by different investigations. All the patients with confirmed diagnosis of lung carcinoma were included in the study.

Sample size: 57.

Ethical Approval

The ethical committee approval from the institution was taken for conducting this study.

Statistical Analysis

The data were coded and entered, its clearing and compiling were done on a Microsoft Excel spreadsheet and then it was imported into Statistical Package for the Social Sciences version 23 for statistical analysis. Data were analyzed by applying frequency, percentage, mean, and standard deviation.
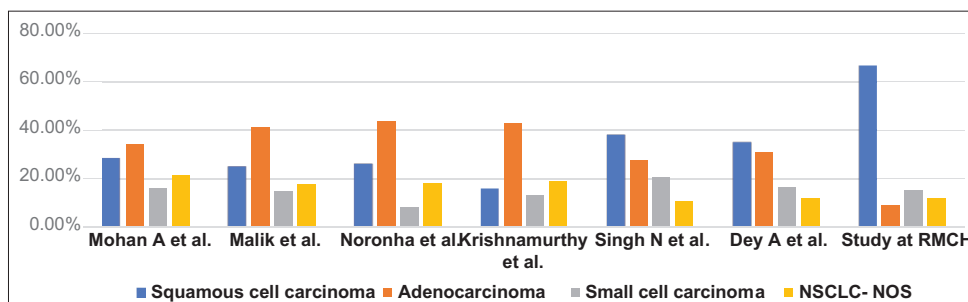

Figure 1: Histopathological distribution of lung cancer in different studies across India

OBSERVATIONS AND RESULTS

Among all the patients (57) – 84% (48) were male and 16% (9) were female [Figure 2]. While correlating the age-wise distribution [Figure 3], we found that the number of cases with ≤45 years was 14% (8), 46–55 years was 21% (12), 56–65 years was 43.8% (25), 66–75 years was 19.2% (11), and ≥76 years was 2% (1).

Out of total 57 confirmed cases of lung cancer, 66.6% (38) were detected by biopsy, 24% (14) by pleural fluid analysis, and 9% (5) by FNAC [Figure 4].
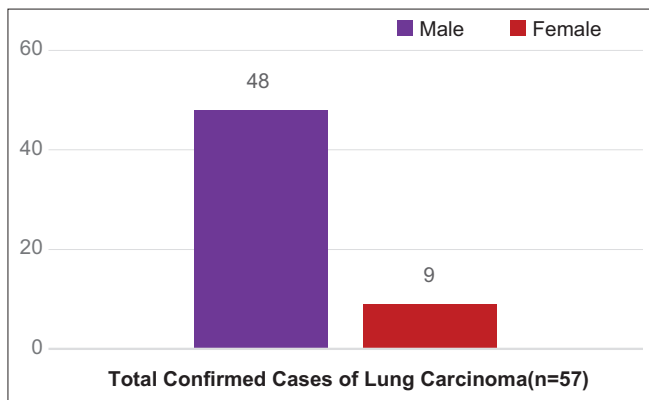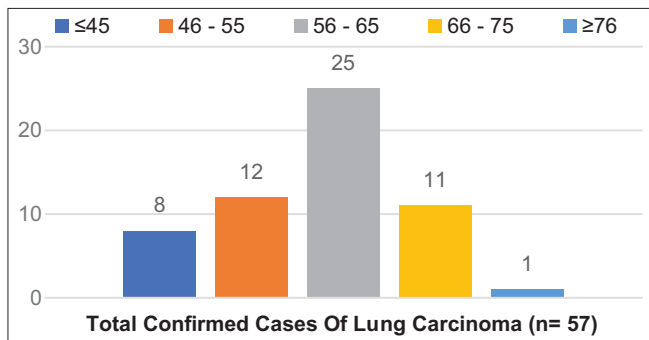
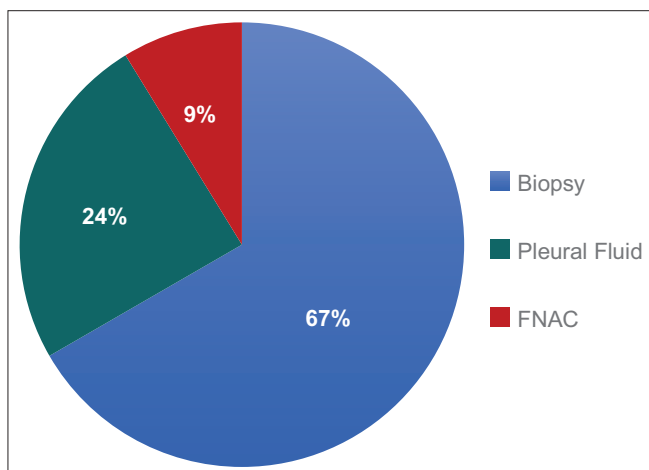**Figure 2:** Gender distribution

Figure 3: Age distribution

Figure 4: Different methods of diagnosis
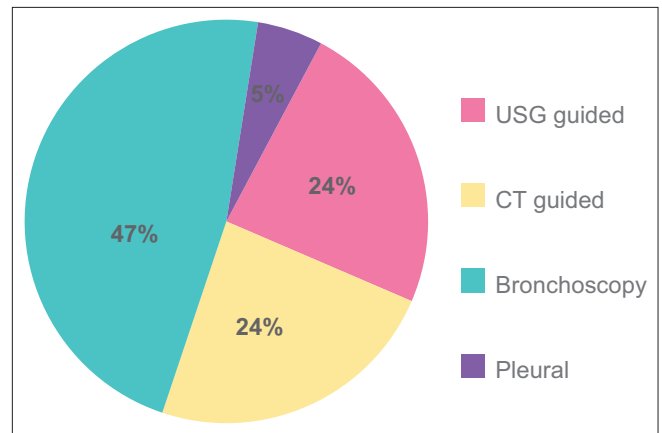
Figure 5: Case detection by different methods of biopsy (*n*=38)
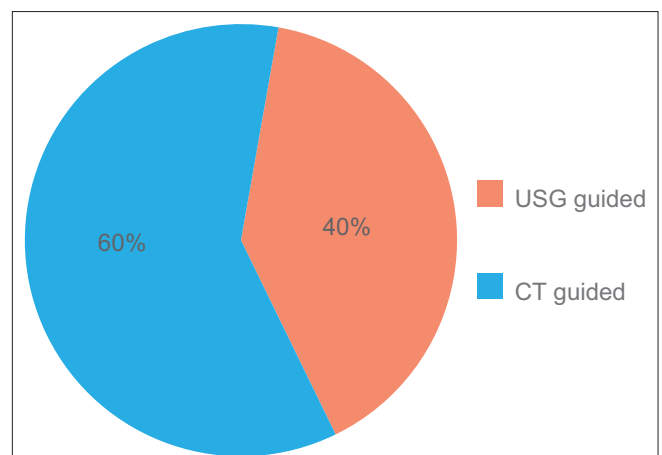
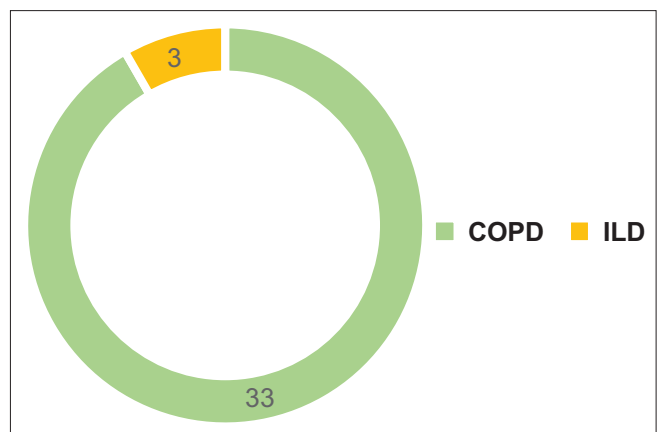**Figure 6:** Case detection by different methods of FNAC (*n*=5)

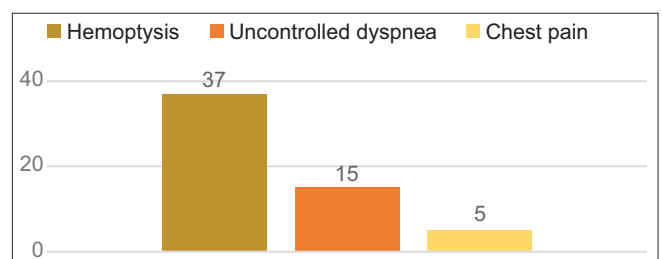**Figure 7:** Number of patients with lung diseases
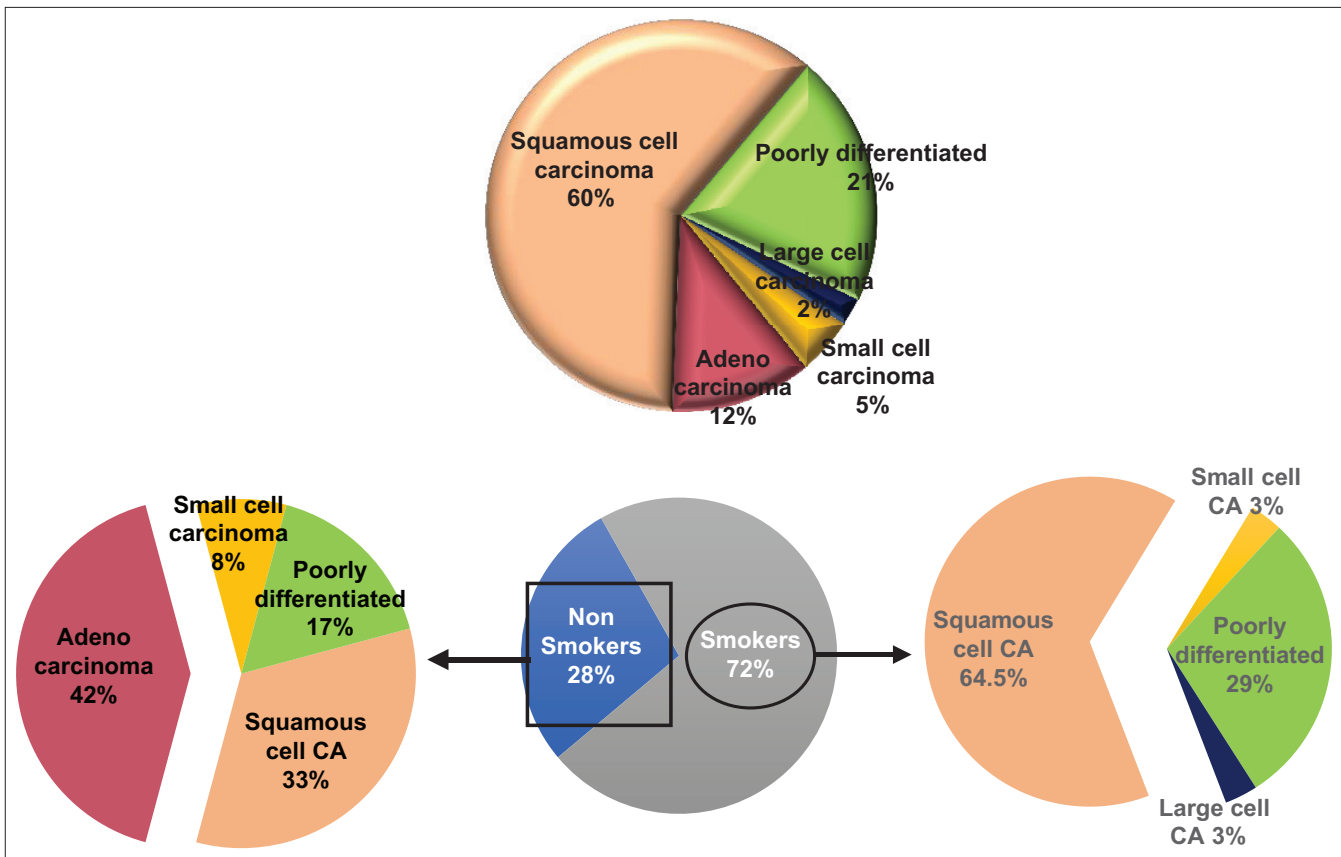
Figure 8: Clinical presentation

Figure 9: Histopathological distribution in FNAC+biopsy cases – total and in non-smokers

The number of cases detected by different methods of biopsy [Figure 5] is – 47% (18) by bronchoscopy, 24% (9) by CT-guided biopsy, 24% (9) by USG-guided biopsy, and 5% (2) by pleural biopsy. The number of cases detected by different methods of FNAC is – 60% (3) by CT-guided FNAC and 40% (2) by USG-guided FNAC [Figure 6].

Out of all the patients, 57.8% (33) patients had COPD and 5.2% (3) patients had interstitial lung disease. Important observation was that 24.5% (14) of patients were misdiagnosed as pulmonary tuberculosis [Figure 7].

Clinical presentation of our patients was [Figure 8] – 64.9% (37) of patients presented with hemoptysis, 26.3% (15) of patients presented with uncontrolled dyspnea, and 8.7% (5) of patients complained of chest pain.

Histopathology [Figure 9] (FNAC and biopsy, *n* = 43) showed 60% (26) of squamous cell carcinoma, 16.2% (5) of adenocarcinoma, 2.3% (1) of large cell carcinoma, 4.7% (2) of small cell carcinoma, and 21% (9) of poorly differentiated. Out of all the patients, 72% (31) were smokers and 28% (12) were non-smokers. Among the smokers, squamous cell carcinoma was the most common, 64.5% (20). Among non-smokers, adenocarcinoma was the most common, 42% (5).

DISCUSSION

Over the few years, there has been rising trend of adenocarcinoma due to increase in secondhand smoke, occupational exposure of minerals and gases as seen in some studies.[2,10-12] We found at our center that squamous cell carcinoma (56%) is predominant than adenocarcinoma (21%) as reported in other Indian studies[13,14] and attribute these findings to higher number of smokers.

Our study showed predominance of males (84%) as reported in other Indian studies.[12,18] This might be due to the fact that males seek medical attention more often than the females and less number of females smoke in our society. Smoking habits included – cigarettes, bidis, and hookah.

The mean age of the patient was 57 years as seen in Krishnamurthy *et al.*[12] There was significant number of patients with previous lung disease, that is, COPD and interstitial lung disease who developed lung cancer.

About 24.5% (14) of patients were being misdiagnosed as pulmonary tuberculosis and lead to delay in proper diagnosis.[19] This delay in diagnosing lung carcinoma was also seen in Rawat *et al.*[20] and Guleria *et al.*[21]

We also found that the most useful investigation was bronchoscopy (47%) after CT was done to confirm the diagnosis and site of the lesion as per Arroliga *et al.*[22] CT-guided biopsy (24%) was used to make the diagnosis of the tumors which were beyond the scope of bronchoscopy.

CONCLUSION

The predominant type of histology of lung carcinoma had been squamous cell carcinoma 56%.

Among the smokers, squamous cell carcinoma had been more common.

Among the non-smokers, adenocarcinoma had been more common.

There was male predominance 84%.

The mean age was 57 years.

The most common presentation was hemoptysis 64.9% and second most common was uncontrolled dyspnea 26.3%.

About 57.8% of patients presented with COPD, 24.5% of patients had a history of pulmonary tuberculosis, and interstitial lung disease was present in 5.2% of patients.

REFERENCES

1. Bray F, Ferlay J, Soerjomataram I, Siegel RL, Torre LA, Jemal A. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA Cancer J Clin 2018;68:394-424.
2. Mohan A, Garg A, Gupta A, Sahu S, Choudhari C, Vashistha V, *et al*. Clinical profile of lung cancer in North India: A 10-year analysis of 1862 patients from a tertiary care center. Lung India 2020;37:190-7.
3. Pisani P, Bray F, Parkin DM. Estimates of the world-wide prevalence of cancer for 25 sites in the adult population. Int J Cancer 2002;97:72-81.
4. Jha P, Ramasundarahettige C, Landsman V, Rostron B, Thun M, Anderson RN, *et al*. 21st-century hazards of smoking and benefits of cessation in the United States. N Engl J Med 2013;368:341-50.
5. Harris JE, Thun MJ, Mondul AM, Calle EE. Cigarette tar yields in relation to mortality from lung cancer in the cancer prevention study II prospective cohort, 1982-8. BMJ 2004;328:72.
6. Loeb LA, Ernster VL, Warner KE, Abbotts J, Laszlo J. Smoking and lung cancer: An overview. Cancer Res 1984;44:5940-58.
7. Grippi MA. Fishman's Pulmonary Diseases and Disorders. New York: McGraw Hill; 2015.
8. Yang P. Lung cancer in never smokers. Semin Respir Crit Care Med 2011;32:10-21.
9. Alberg AJ, Ford JG, Samet JM. Epidemiology of lung cancer: ACCP evidence-based clinical practice guidelines. Chest 2007;132:29S-55.
10. Malik PS, Sharma MC, Mohanti BK, Shukla NK, Deo SV, 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.
11. Noronha V, Dikshit R, Raut N, Joshi A, Pramesh CS, George K, *et al*. Epidemiology of lung cancer in India: Focus on the differences between non-smokers and smokers: A single-centre experience. Indian J Cancer 2012;49:74-81.
12. Krishnamurthy A, Vijayalakshmi R, Gadigi V, Ranganathan R, Sagar TG. The relevance of "nonsmoking-associated lung cancer" in India: A single-centre experience. Indian J Cancer 2012;49:82-8.
13. Singh N, Aggarwal A, Gupta D, Behera D, Jindal S. Unchanging clinico-epidemiological profile of lung cancer in North India over three decades. Cancer Epidemiol 2010;34:101-4.
14. Dey A, Biswas D, Saha SK, Kundu S, Sengupta A. Comparison study of clinicoradiological profile of primary lung cancer cases: An Eastern India experience. Indian J Cancer 2012;49:89-95.
15. Paez JG, Jänne PA, Lee JC, Tracy S, Greulich H, Gabriel S, *et al*. EGFR mutations in lung cancer: Correlation with clinical response to gefitinib therapy. Science 2004;304:1497-500.
16. Pao W, Miller V, Zakowski M, Doherty J, Politi K, Sarkaria I, *et al*. EGF receptor gene mutations are common in lung cancers from "never smokers" and are associated with sensitivity of tumors to gefitinib and erlotinib. Proc Natl Acad Sci U S A 2004;101:13306-11.
17. Soda M, Choi YL, Enomoto M, Takada S, Yamashita Y, Ishikawa S, *et al*. Identification of the transforming EML4-ALK fusion gene in non-small-cell lung cancer. Nature 2007;448:561-6.
18. Khan NA, Afroz F, Lone MM, Teli MA, Muzaffar M, Jan N. Profile of lung cancer in Kashmir, India: A five-year study. Indian J Chest Dis Allied Sci 2006;48:187-90.
19. Singh VK, Chandra S, Kumar S, Pangtey G, Mohan A, Guleria R. A common medical error: Lung cancer misdiagnosed as sputum negative tuberculosis. Asian Pac J Cancer Prev 2009;10:335-8.
20. Rawat J, Sindhwani G, Gaur D, Dua R, Saini S. Clinico-pathological profile of lung cancer in Uttarakhand. Lung India 2009;26:74-6.
21. Guleria JS, Gopinath N, Talwar JR, Bhargave S, Pande JN, Gupta RG. Bronchial carcinoma--an analysis of 120 cases. J Assoc Physicians India 1971;19:251-5.
22. Arroliga AC, Matthay RA. The role of bronchoscopy in lung cancer. Clin Chest Med 1993;14:87-98.