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Correlation of smoking to various histological types of bronchogenic carcinoma

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Abstract
Introduction: Lung cancer is a major health problem worldwide. The incidence is increasing globally at a rate of 0.5% per year. Unlike many other malignancies, whose causes are largely unknown, the cause of lung cancer is tobacco smoking in as many as 90% of patients. Although the relationship between cigarette smoking and squamous cell carcinoma and small cell carcinoma has long been clear, the relationship between smoking and adenocarcinoma, large cell carcinoma has been more ambiguous.
Aim and Objectives: To assess the relationship of histological type of Bronchogenic Carcinoma to smoking.
Materials and Methods: This study is a prospective analysis of patients attending out patient, Department of Respiratory Medicine in Prathima Institute of Medical Sciences, Karimnagar conducted from January 2016 to June 2016. Patients who had histological or cytological confirmation of lung cancer determined through fiberoptic bronchoscopy, USG/ CT guided FNAC/biopsy will be selected. Informed oral consent obtained from all patients. Detailed history, clinical Examination, Basic Biochemical Investigations were done in all patients.
Results: In our study shows that out of 45 patients 41(91%) were male and 4(9%) were female. The male to female ratio is 14:1. Clubbing was present in 19 patients in the study. Out of 19 patients, 17 patients (89%) had squamous cell carcinoma and the remaining 2 had adenocarcinoma. Among 29 patients with squamous cell carcinoma 20 patients (69%) had centrally located tumor and 9 patients (31%) had peripheral tumor. Among 12 patients with adenocarcinoma, 9 patients (75%) had peripheral tumor and 3 patients (25%) had central tumor. Among 4 patients with small cell carcinoma 4 had centrally located tumor.
Conclusion: Cigarette smoking is strongly associated with bronchogenic carcinoma. Adeno carcinoma is associated with peripheral lesion while squamous and small cell carcinoma is associated with central lesion. Squamous cell carcinoma is the most frequent histological type followed by adenocarcinoma. The most common radiological pattern found is mass lesion with or without collapse followed by pleural effusion and obstructive pneumonia.

Keywords: Smoking histological types, bronchogenic carcinoma

1. Introduction
Lung cancer is a major health problem worldwide. The incidence is increasing globally at a rate of 0.5% per year [1]. The worldwide incidence is 14%. 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) [2]. The time trends of lung cancer show a significant rise in Delhi, Chennai and Bengaluru in both sexes [3].
Unlike many other malignancies, whose causes are largely unknown, the cause of lung cancer is tobacco smoking in as many as 90% of patients [4]. Although the relationship between cigarette smoking and squamous cell carcinoma and small cell carcinoma has long been clear, the relationship between smoking and adenocarcinoma, large cell carcinoma has been more ambiguous. While the older literature suggest that smoking is unrelated to adenocarcinoma more recent data indicates that all the major histopathological types are related to smoking [5].
Adenocarcinoma is the most frequent Non Small Cell Cancer in the United States. Patterns of lung cancer in India varies from the western population. Squamous cell carcinoma is the commonest variety in India as compared to adenocarcinoma in the west [6].

The type and location of cancer influences the presentation in clinical practice. Central or endobronchial growth of the primary tumor may cause cough, hemoptysis, wheeze and stridor, dyspnea, and post obstructive pneumonitis [7]. Peripheral growth of the primary tumor may cause pain from pleural or chest wall involvement, cough, dyspnea on a restrictive basis, and symptoms of lung abscess resulting from tumor cavitation [8].

Although there are a plenty of studies relating smoking to Bronchogenic Carcinoma, there is a paucity of studies relating smoking to histopathological type. This study was focus on relationship of smoking to histological type of bronchogenic carcinoma.

Aim and Objectives

To assess the relationship of histological type of Bronchogenic Carcinoma to smoking.

Materials and Methods

This study is a prospective analysis of patients attending outpatient Department of Respiratory Medicine in Prathima Institute of Medical Sciences, Karimnagar conducted from January 2016 to June 2016.

Inclusion Criteria

Patients who had histological or cytological confirmation of lung cancer determined through fiberoptic bronchoscopy, USG/ CT guided FNAC/biopsy will be selected. Informed oral consent obtained from all patients. Detailed history, clinical Examination, Basic Biochemical Investigations were done in all patients.

Exclusion criteria

- Patients with secondary lung cancer
- Lymphoproliferative disease
- Malignant pleural effusion of unknown primary or non pulmonary site
- Sarcoid tumors and other rare varieties were excluded from the study.

Results

Table 1: Table showing sex incidence

Sex	No of patients
Male	41
Female	4
Total	45

Table 1 shows that out of 45 patients 41 (91%) were male and 4(9%) were female. The male to female ratio is 14:1.

Table 2: Age incidence of bronchogenic carcinoma

Age	Male	Female
41 to 50	3	1
51 to 60	23	3
61 to 70	15	0

From the above table it is found that 26 patients were within the age group 51 to 60 years which constitutes 57% of the patients studied. Only 4 patients were below 50 years and the rest 41 patients (91%) were above 50 years. The mean age of incidence as per study is 59 years both in males and females.

Table 3: Relationship between svc obstruction and pathological type

SVC obstruction	Squamous cell carcinoma	Adeno carcinoma	Small cell carcinoma
Present	2	0	0
Absent	27	12	4

Superior venacava obstruction is seen in 2 patients in our study and they both were found to have squamous cell carcinoma.

Table 4: relationship of clubbing with pathological type of bronchogenic carcinoma

Clubbing	Present	Absent
Squamous cell carcinoma	17	12
Adeno carcinoma	2	10
Small cell carcinoma	0	4

Clubbing was present in 19 patients in the study. Out of 19 patients, 17 patients (89%) had squamous cell carcinoma and the remaining 2 had adenocarcinoma.

Table 5: Correlation between pathological type and location of tumor

Pathological type	Central	Peripheral	Total
Squamous cell carcinoma	20(69%)	9(31%)	29
Adeno carcinoma	3(25%)	9(75%)	12
Small cell carcinoma	4	0	4
Total	27(60%)	18(40%)	45

Among 29 patients with squamous cell carcinoma 20 patients (69%) had centrally located tumor and 9 patients (31%) had peripheral tumor. Among 12 patients with adenocarcinoma, 9 patients (75%) had peripheral tumor and 3 patients (25%) had central tumor. Among 4 patients with small cell carcinoma 4 had centrally located tumor.

Table 6: relationship between the radiological pattern and pathological type of bronchogenic carcinoma

Radiological pattern	Squamous cell carcinoma	Adeno carcinoma	Small cell carcinoma
Mass lesion	23	5	3
Pleural effusion	3	3	0
Obstructive pneumonia	2	3	1
Mediastinal invasion	1	2	1
Rib erosion	5	5	1
Calcification	1	1	0
Cavitation	1	0	0

Out of 45 patients, 31 patients (69%) presented as mass lesion in the lung, 7 patients (15%) presented as pleural effusion, 5 patients (11%) presented as obstructive pneumonia.

Among 29 patients with squamous cell carcinoma 23 patients (79%) presented as mass lesion, followed by pleural effusion and obstructive pneumonia. Among 12 patients with adeno carcinoma 5 patients (41%) presented as mass lesion, 3 patients (25%) as pleural effusion and 3(25%) patients as obstructive pneumonia. In the small cell carcinoma three patients presented as mass lesion and one patient as obstructive pneumonia.

Table 7: correlation between radiological pattern and location of lesion

Radiological pattern	Central	Peripheral
Mass lesion	22	9
Pleural effusion	2	5
Obstructive pneumonia	2	3
Mediastinal invasion	2	2
Rib erosion	4	7
Calcification	1	1
Cavitation	0	1

Among 45 patients with bronchogenic carcinoma 27 patients (60%) presented as a mass lesion, 7 patients (15%) presented as pleural effusion and 5 patients (11%) presented as obstructive pneumonia. Among the central tumors, 22 patients (81%) presented as mass lesion, 2 patients (7%) as pleural effusion and 2 patients (7%) as obstructive pneumonia.

Discussion

In a study conducted in northern India in Chandigarh in 2005[1], the overall male to female ratio is 5.2:1, which is much low when compared to our study. In a study conducted in Pakistan in the year 2002 [9] the male to female ratio is 6: 1. In western countries the sex ratio is in the range of 3to 4: 1. The recent increase in incidence among women in the West, which has been associated with a great increase in their smoking, may now give rise to the fall in sex ratio which Ochsner and De Bakey anticipated [10]. The low incidence in south Indians is attributed to less incidence of smoking in women.

The average age incidence in our study is 59 years, which is similar to the study conducted in Chandigarh in 2005 [11]. In the study done in western Nepal [12] in 2001 the median age of the male and female patients was 67 and 66 years respectively. Increased smoking, urbanisation, and the introduction of new industries has probably led to a rise in the incidence of bronchogenic carcinoma in India at an earlier age.

Out of 29 patients with squamous cell carcinoma 17 patients had clubbing. Among 11 patients with adenocarcinoma only 2 patients had clubbing. The correlation between clubbing and squamous cell carcinoma is found to be statistically significant p value < 0.05 in our study.

In a study conducted by CM shetty *et al*. in manipal [13], clubbing was present more commonly in squamous cell carcinoma followed by adeno and small cell carcinoma. Even though clubbing has been associated with squamous cell carcinoma, there are not much of studies to correlate clubbing with various pathological types of bronchogenic carcinoma. Our study shows a definite correlation between clubbing and squamous cell carcinoma.

Out of 45 patients only 2 patient had SVC obstruction and they both turned out to be squamous cell carcinoma. The most common cause of SVC obstruction is squamous cell carcinoma and small cell carcinoma. Since our study population is less we couldn't derive a statistically relevant correlation between SVC obstruction and bronchogenic carcinoma.

The most common type of bronchogenic carcinoma as per our study is squamous cell carcinoma which constitutes 64% of the total. Adenocarcinoma ranks the second forming 27%, followed by small cell carcinoma constituting 9 percent.

In a study conducted by Kashyap *et al.*, 2001 [14] done in northwestern region of India squamous cell carcinoma constitutes 58.3%, adeno carcinoma 10.8% and remaining formed by other cell types.

In a study conducted in Rajasthan by Gupta, squamous cell carcinoma is the most common pathological type. In a study conducted by Gupta *et al*. 2001 [15] in Chandigarh, the most common malignancy is squamous cell carcinoma forming 60% and adenocarcinoma forming 16.2 percent. The both studies correlates with our study.

Out of 29 patients with squamous cell carcinoma, 20(69%) patients had central tumor and remaining 9(31%) had peripheral tumor. Among 12 patients with adenocarcinoma 9(75%) had peripheral and 3(25%) had centrally placed tumor. The four patients with small cell carcinoma had their lesion located centrally. Chi square was done and t score analysed. P value is <0.05 which is found to be statistically significant.

In an review article presented by D. Behera and T. Balamugesh [16] in February 2004 from PGI Chandigarh who analysed the various studies in bronchogenic carcinoma in India, concluded that Adenocarcinoma presents as a peripheral mass in 61% of cases and in 38.3% as a central lesion. Presentation as a central mass (72.2% cases) is more common among squamous cell carcinoma than as a peripheral lesion (27.8%). Small cell cancer also presents more commonly as a central lesion (83.6%) than as a peripheral lesion (16.4%). This review coincides with our study and adenocarcinoma presenting as peripheral lesion, squamous cell carcinoma presenting as central lesion was proved to be statistically significant.

Among 29 patients with squamous cell carcinoma 23 patients (79%) presented as mass lesion, followed by pleural effusion and obstructive pneumonia. Among 12 patients with adeno carcinoma 5 patients (41%) presented as mass lesion, 3 patients (25%) as pleural effusion and 3(25%) patients as obstructive pneumonia. In the small cell carcinoma three patients presented as mass lesion and one patient as obstructive pneumonia.

Conclusion

The incidence of bronchogenic carcinoma is more common in males compared to females, partly attributed to the low incidence of smoking in south Indian people. Cigarette smoking is strongly associated with bronchogenic carcinoma. Adeno carcinoma is associated with peripheral lesion while squamous and small cell carcinoma is associated with central lesion. Squamous cell carcinoma is the most frequent histological type followed by adenocarcinoma. The most common radiological pattern found is mass lesion with or without collapse followed by pleural effusion and obstructive pneumonia.

References

1. Jindal Sk, Malik Sk, Dhand R, Gujral JS, Malik AK, Datta BN. Bronchogenic carcinoma in Northern India. Thorax. 1982;37:343-347.
2. Muhammad Imran Suliman, Rushd Jibran. Muhammad Zafar Majeed Demographics of bronchogenic carcinoma patients and frequency of cell types. Gomal Journal of Medical Sciences. 2006;4:1-6.
3. Gupta RC, Purohit SD, Sharma MP, Bhardwaj S. Primary bronchogenic carcinoma: Clinical profile of

279 cases from mid- west Rajasthan. Indian J Chest Dis Allied Sci. 1998;40:109-16.
4. Seung Bong, Byung Sook. Choi Observation of primary carcinoma of lung. Younesi medical journal. 1964;5:77-79
5. Richarhd Hoo, Daniel Campbel C. Bronchogenic carcinoma in young people. Chest. 1965;48;469-470.
6. Leung JSM. Broinchogenic Carcinoma A Surgical Revlew Of 260 Cases. The bulletin of the Hong Kong medical association. 1973;23:36-39.
7. Thippanna G, Venu K, Gopalkrishnaiah V, Reddy PNS, Sai Charan BG. A profile of lung cancer patients in Hyderabad. J Indian Med Assoc. 1999;97:357-59.
8. Jindal SK, Behera D. Clinical spectrum of primary lung cancer: Review of Chandigarh experience of 10 years. Lung India. 1990;8:94-98.
9. Arora VK, Seetharaman ML, Ramkumar S, *et al*. Bronchogenic carcinoma: Clinicopathological patten in south Indian population. Lung India. 1990;7:133-38.
10. Ochsner A, De Bakey M. Carcinoma of the lung. Arch Surg. 1941;42:209-8.
11. Rao S, Rau PVP, Sahoo RC. Bronchogenic carcinoma in the young. Lung India. 1992;10:101-02.
12. Rajasekaran S, Manickam TG, Vasanthan PJ, *et al*. Pattern of primary lung cancer: A Madras study. Lung India. 1993;9:7-11.
13. Cm Shetty, Lakhar BN, Ganghadhar VSS, Ramachandran NR. Changing pattern of bronchogenic carcinoma a statistical variation or reality. Ind J Radiol Imag. 2005;15(1):233-238.
14. Kashyap S, Mohapatra PR, Negi RS. Pattern of primary lung cancer among bidi smokers in North-Western Himalayan region of India. Lung Cancer. 2003;41(2):S111.
15. Gupta D, Boffetta P, Gaborieau V, Jindal SK. Risk factors of lung cancer in Chandigarh, India. Indian J Med Res. 2001;113:142-50.
16. Behera D, Balamugesh T. Lung Cancer in India. The Indian Journal of Chest Diseases & Allied Sciences. 2004;46:269-281.