

Spectrum of Bronchogenic Carcinoma

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ABSTRACT

Introduction: The incidence of lung carcinoma has rapidly increased since the beginning of the 20th century and currently represents the main cause of cancer-related mortality. Diagnostic methods may adequately explain frequent recognition of the presence of neoplasm, but also a fact that histological findings have yielded a considerably higher percentage. More recently the emergence of combined PET CT imaging has greatly aided the investigation of lung carcinoma by allowing even better delineation of areas with increased tracer uptake and by improving staging and detection of metastatic disease, guiding therapy and allowing clinical outcome to be predicted. Study aimed to find the prevalence and associated symptoms of lung carcinoma.

Material and methods: The study included a 109 patients and was a retrospective study. The method was to note the presenting symptoms of bronchogenic carcinoma and to note the site of metastasis of bronchogenic carcinoma with PET CT. To note the variant of bronchogenic carcinoma with histologically proven.

Results: There were a total of 109 patients of which 77 were male and 32 were female. The presenting symptom of bronchogenic carcinoma was cough 75% preceded by weight loss 68%, dyspnea 60%, chest pain 49%, and hemoptysis 35%, bone pain 25%, clubbing 20%, fever 20%, weakness 10%, superior vena obstruction 4%, dysphagia 2%, wheeze and stridor 2%. Out of the 109 patients the frequent presentation of bronchogenic variant is adenocarcinoma 56%, followed by squamous cell carcinoma 34% and small cell carcinoma 15%.

Conclusion: The frequent symptom of bronchogenic carcinoma presentation was cough followed by weight loss and dyspnea. The frequent site of metastatic of bronchogenic carcinoma is supraclavicular node followed by contralateral lung, bone metastasis. Majority of bronchogenic carcinoma presentation were of adenocarcinoma followed by squamous cell carcinoma and small cell carcinoma

Keywords: Bronchogenic Carcinoma

the prevalence and associated symptoms of lung carcinoma.

MATERIAL AND METHODS

This retrospective study was carried out in the A.J. Institute of Medical College, Mangaluru, Karnataka, in which Hundred and nine (109 cases) histopathologically and/or cytologically confirmed cases of bronchogenic carcinoma were included in the study. These patients were admitted during one year (from 2017 to 2018). Data regarding demographics (age of the patients, sex), smoking status, histopathological type, clinical presentation and clinical stage of the disease were obtained from the files of confirmed cases of bronchogenic carcinoma. The diagnosis of bronchogenic carcinoma was based on positive histopathological or cytological examination. Patients without histopathological confirmation were excluded from this study. And to note the site of metastasis through PETCT Statistical analysis was performed using descriptive statistics of the collected data.

RESULTS

There were a total of 109 patients of which 77 were male and 32 were female (table-1). The presenting symptom of bronchogenic carcinoma was cough 75% preceded by weight loss 68%, dyspnea 60%, chest pain 49%, and hemoptysis 35%, bone pain 25%, clubbing 20%, fever 20%, weakness 10%, superior vena obstruction 4%, dysphagia 2%, wheeze and stridor 2% (table-2). Out of the 109 patients the frequent presentation of bronchogenic variant is adenocarcinoma 56%, followed by squamous cell carcinoma 34% and small cell carcinoma 15%. Out of the 100% the frequent site of metastasis is to supraclavicular 61.53%, followed by contralateral lung is 51%, bone metastasis 40%, abdominal node 30%, pleural metastasis 48%, liver 22%, adrenals 23%,

Sex	Frequency	Percentage	Ratio
Male	77	83.9	4.6
Female	32	34.8	1
Total	109	100	4.6:1

Table-1: Sex distribution of the bronchogenic carcinoma cases.

INTRODUCTION

At the end of the 20th century, Bronchogenic Carcinoma had become one of the leading causes of preventable death. It was a rare disease at the start of that century, but exposures to new etiologic agents and an increasing life span combined to make lung cancer a scourge of the 20th century. Lung cancer is the most common malignancy worldwide and is the leading cause of cancer deaths in men and women. Lung cancer was the most commonly diagnosed cancer as well as the leading cause of cancer death in males in 2008 globally. Among females, it was the fourth most common diagnosed cancer and the second leading cause of cancer death. Lung cancer accounted for 13% (1.6 million) of the total cases and 18% (1.4 million) of the death in 2008.^{1,2} Study aimed to find

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How to cite this article: Nithish M Bhandary, M.B.S.V.D Prasad, Aditya Mahajan, Katragadda Praveen Kumar. Spectrum of bronchogenic carcinoma. International Journal of Contemporary Medical Research 2019;6(3):C1-C3.

DOI: <http://dx.doi.org/10.21276/ijcmr.2019.6.3.9>

Age group	Squamous cell carcinoma	Small cell carcinoma	Adenocarcinoma	Undifferentiated ca
26-40	2(3.3%)	1(5.0%)	3(6.7%)	0(0.0%)
41-50	5(12.6%)	5(36.7%)	16(28.6%)	1(25%)
51-60	9(27.8%)	5(33.3%)	20(35.3%)	2(50%)
61-70	15(46.4%)	4(25%)	12(21.8%)	1(25%)
>70	3(9.9%)	0(0.0%)	5(7.6%)	0(0.0%)
Total	34(100%)	15(100%)	56(100%)	4(100%)

Table-2: Incidence of different histopathologic cell types

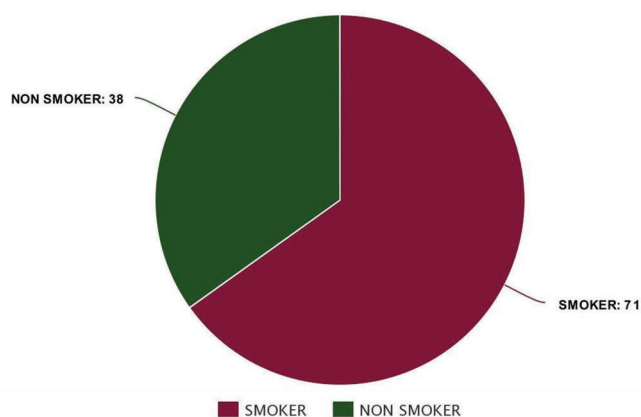


Figure-1: Incidence of bronchogenic carcinoma in smokers and non smokers

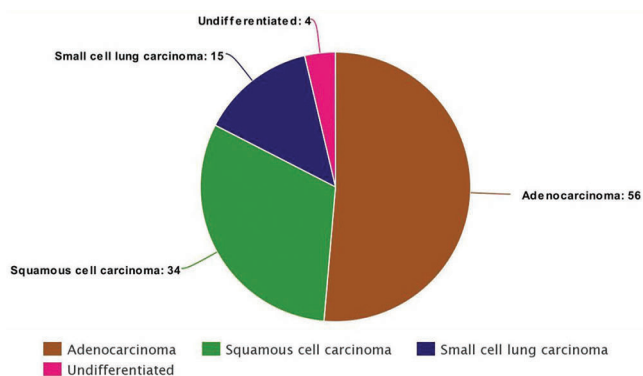


Figure-2: Distribution of histopathologic cell type in bronchogenic carcinoma

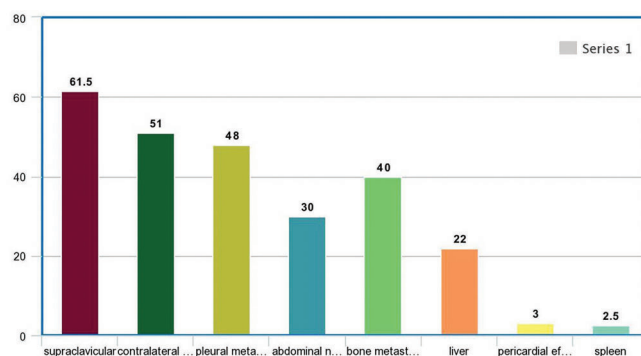


Figure-3: Distribution of bronchogenic carcinoma metastasis

pericardial effusion 3%, spleen 2.5% (figure 1-3).

DISCUSSION

Lung cancer is most common cause of cancer related death worldwide. Approximately 50% of lung cancer cases are metastatic at the time of diagnosis.¹ According to Devesa et

al., male:female rate ratios varied from less than 2 in Iceland, US whites, Canada, Denmark and Sweden to more than 6 in Slovenia, Italy, and France and more than 10 in Spain.² Generally, lung cancer trends among females lag behind the males lung cancer rates in females are increasing in many countries.³

Studying the age distribution in this work shows that, the highest incidence of bronchogenic carcinoma was in the sixth and seventh decades of life with 33.03% of the cases found in these two decades of life (figure 1). Similarly, a study carried out by Karlikaya and Cakir Edis⁴ and another study by Suliman et al.⁵ also proved that maximum patients were in their sixth and seventh decade at the time of diagnosis of bronchogenic carcinoma.

The relation between age groups and histological cell type (Table 2) shows that the squamous cell carcinoma was common after the age of 60 years (46.4%) while the small cell carcinoma was common in the age period between 40 and 60 years (66%) and also adenocarcinoma cell type was common in the age period between 40 and 60 years (64.28%). In our study of 32 females with bronchogenic carcinoma, a high percentage of them were non-smokers (97.25% non-smokers versus 3.8% smokers).

In male cases, the percentage of smokers was 91.2% while the percentage of non-smokers was 8.8% of male (figure 2). In our study, the percentage of non-smoking females was 97.2% versus only 3.8% of smoking females, so other risk factors other than smoking, should be considered that include exposure to environmental tobacco smoke, fumes and smoke from certain cooking fuels and environmental pollution.

The different clinical presentations of the patients revealed that cough was the most frequent symptom in the whole group, as 81 patients (75%) had this complaint. According to Rawat et al. study cough was the common symptom (72.90%).⁶ Cough is present in >65% of patients at the time lung cancer is diagnosed.⁷ Followed by dyspnea (65 patients; 60%), chest pain (53 patients; 49%), hemoptysis (38 patients; 35.8%) weight loss (74 patients; 68.5%), and hoarseness of voice (2 patients; 2%). Other symptoms, as fever (20.3%), dysphagia (2.2%) were not so frequent clinical presentations. PETCT has better sensitivity and specificity for staging bronchogenic cancer and in distant metastasis. PET can detect metastasis in 6% to 37% of unsuspected cases.⁸ Most common sites of metastasis in bronchogenic carcinoma as per previous studies are the lung, bone, brain, liver and adrenal gland.^{9,10} In a large study on metastatic locations, 18% of patients had lung metastasis, 16% bone metastases, 12% brain metastases, 7% liver metastases, and 6% adrenal

gland metastases at diagnosis.¹¹ In our study majority had lymph node metastasis to supraclavicular nodes (61.5%) followed by contralateral lung (51%), bone metastasis (40%), abdominal nodes (30%), pleural metastasis (48%), adrenals (23.1%), Liver (22%), pericardial effusion (3%), spleen (2.5%)(figure 4). PET CT being more sensitive in detection of lymph node metastasis in bronchogenic carcinoma. This might be the reason for higher frequency of lymph node metastasis in the study.¹²

Bronchogenic carcinoma is the third most common form of cancer to spread to bone. In a study on non small-cell lung cancer patients, the most common site of skeletal metastases was the spine in 50% of patients, followed by the ribs (27.1%), ilium (10%), sacrum (7.1%), femur (5.7%) and humerus, scapula and sternum (2.9%).¹³ In our study 40% cases showed bone metastasis (58%).

In our study the most common histopathological cell type was adenocarcinoma (56%), followed by squamous cell carcinoma (34%), small cell carcinoma (15%) and undifferentiated carcinoma (4%) (figure 3). In the cell type distribution reported by Radzikowska, squamous cell carcinoma had the highest cell type incidence (52.1%) followed by small cell carcinoma (20.8%) while adenocarcinoma represented only 11.3% of the cases.¹⁴ According to Shetty et al., study, squamous cell carcinoma also presented 44.5% of cases followed by adenocarcinoma (18.5%) and small cell carcinoma (17.2%).¹⁵ In our study the incidence of squamous cell carcinoma (34%) is less than that reported in a previous study and close to percentage reported in study by Lam et al., (39%).¹⁶

The incidence of adenocarcinoma in our study (56%) is higher than that reported in other studies 11.3%, 18.5% and 19.7% by Radzikowska et al.¹⁴, Shetty et al.¹⁵ and Rawat et al.⁶, respectively. There was a shift in the incidence of squamous cell carcinoma and adenocarcinoma, up to the late 1980s, squamous cell carcinoma was the most common subtype, which was then surpassed by adenocarcinoma. The shift in the incidence of squamous cell carcinoma and adenocarcinoma may be associated with the switch from non-filtered to filtered cigarettes, the depth of inhalation had been altered.¹⁷

CONCLUSION

In this work, the highest incidence of bronchogenic carcinoma was in the sixth and seventh decades of life. The incidence declined before the age of 40 years and after the age of 70 years. Smoking still remains the major risk factor in the pathogenesis of bronchogenic carcinoma. On histological examination, adenocarcinoma was relatively more frequent than any other tumor type followed by squamous cell carcinoma and then by small cell carcinoma. In all cell types of bronchogenic carcinoma, the most common site of metastasis is supraclavicular node followed by contralateral lung and bone metastasis.

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Source of Support: Nil; **Conflict of Interest:** None

Submitted: 01-02-2019; **Accepted:** 05-03-2019; **Published:** 16-03-2019