

Original Research Article

A study of radiological presentation in bronchogenic carcinoma along with prevalence of pulmonary TB in a tertiary center

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ABSTRACT

Background: Lung cancer is most common cause of cancer related death in men and women world wise responsible for over 1 million death annually. Lung cancer is leading cause of cancer death in united states and worldwide. Lung cancer is the most common neoplasm contributing more frequent among males causing cancer related mortality in both sexes. Objective of this study was to radiological presentation in bronchogenic carcinoma along with prevalence of pulmonary TB in a tertiary center.

Methods: Total of 100 patients with histologically proven lung cancer, from July 2018 to June 2019 at a tertiary center Kota Rajasthan. Data of participants regarding demographics, history of smoking habit, clinical presentation, histopathological type, radiographic findings on chest radiograph, ultrasonography, computed tomography (CT) scan, Statistical analysis was performed using descriptive statistics of the collected data.

Results: Most common age group of bronchogenic carcinomas was seen between 60-69 years of age (37%) with male predominance (82%). smoking history present in about (80%) patients. Most common radiological presentation was a mass lesion present in 91% patients (n=91) followed by unilateral hilar prominence present in 44% of patients (n=44). Other common finding includes mediastinal widening (38%), collapse (26%), pleural effusion (22%), metastasis (22%), cavitation (13%), consolidation (12%), bony erosion (11%), pneumothorax (5%), and pancost tumor (4%). prevalence of pulmonary TB in bronchogenic carcinoma is 9% and this is due to high burden of pulmonary TB in India.

Conclusions: In this study adenocarcinoma was found to be most common type of lung cancer. Smoking is most common risk factor. Pulmonary TB coexistence with bronchogenic carcinoma was more common. The local immunity is deteriorated in cancer cases.

Keywords: Bronchogenic carcinoma, CT scan, Pulmonary TB, Radiological evaluation

INTRODUCTION

Lung cancer is leading cause of cancer death in united states and worldwide. Lung cancer is the most common neoplasm contributing more frequent among males causing cancer related mortality in both sexes.¹ Most patients present with advanced disease at the time of presentation.² Worldwide, lung cancer remains the leading cause of cancer incidence and mortality, with 2.1

million new lung cancer cases and 1.8 million deaths predicted in 2018, representing close to 1 in 5 (18.4%) cancer deaths. No small cell lung cancers accounts for about 85% and small cell lung cancer accounts for 15-20% cases. Smoking is the cause of >85% cases of Lung cancer (Carr et al).

There are significant differences in clinico- pathological features of Bronchogenic carcinoma, observed in various

parts of our country. The incidence of pulmonary TB is reported to be higher in patients with lung cancer. The association between bronchogenic carcinoma and pulmonary TB may be related to increased susceptibility to opportunistic infections, which can lead to the reactivation of TB in cancer patients.

METHODS

This is a cross-sectional study. Study will be conducted in the Department of Respiratory medicine, New Medical College, Kota on indoor patients of CA LUNG irrespective of their sex who presented from July 2018 to June 2019 with large space occupying lesion in the thorax, large nodular shadow, consolidation and large pleural effusion which were histologically or cytologically confirmed as malignancy. The study comprised of a total of 100 patients.

Inclusion criteria

- All the patients with histologically or cytologically confirmed as malignancy.
- Age criteria above the 35 years.

Exclusion criteria

- Patients without complete records.
- Patient not willing for FNAC or any invasive procedures.
- Patients with HIV positive status.
- Patients with missing data or files.
- Patients with secondary lung cancer.
- Lymph proliferative disease (lymphoma).
- Primary lung sarcoma.

Data collection

After obtaining informed and written consent, demography, history, radiological findings of the patients and relevant investigations were recorded. Demography of the patient includes age, sex, BMI, occupation. History of smoking, clinical symptoms and signs of patients like cough, chest pain, loss of weight, loss of appetite, hemoptysis, hoarseness of voice, fever, dysphagia, face and neck swelling, dyspnea, pallor and clubbing and comorbid conditions were obtained.

Radiological findings such as type of lesions, site of lesion, and other findings like mass, collapse, consolidation, cavitation, bony erosion, pneumothorax, pleural effusion, metastasis, mediastinal LAP, and hilar prominence were noted investigations like complete blood count, sugar, urea, serum creatinine HIV were done. Physical examination and necessary laboratory investigations will be done to rule out other comorbidities. The Patient will be evaluated radiologically with chest x-ray postero-anterior view and contrast enhanced tomography scan (CECT) of Chest. The

diagnosis was established by CT/USG guided FNAC from palpable significant lymphnodes and Lung mass.

Sputum smear for acid fast bacilli (AFB), Sputum for CBNAAT.

RESULTS

This study was conducted in the Department of Respiratory Medicine, Government Medical College Kota (Rajasthan) from July 2018 to June 2019. The study comprised of a total of 100 patients. Out of total 100 cases, 82% (n=82) were male and 18% (n=18) were female. There was an overall male predominance with male/female ratio of 4.55. Pulmonary TB present with lung cancer in 9 (9%) patients Out of total 9 cases, 77.78% (n=7) were male and 22.22 (n=2) were female. There was an overall male predominance with male/female ratio of 3.5.

The distribution of age from 35-87 years with a mean age of 61.6 years. We have observed that Bronchogenic carcinoma is more common in the age group of 60-69 years and secondly in age group of 50-59 years and age group of 40-49 years; pulmonary TB with Bronchogenic carcinoma is more common in the age group of 60-69 years and secondly in age group of 50-59 years and age group of 40-49 years.

Among 100 patients, 80% (n=80) were smokers and 20% (n=20) were non-smoker Squamous cell carcinoma was the most common carcinoma in smokers (32/80 smokers, 40%). Adenocarcinoma was most common carcinoma in females (11/18 females, 61.11%) and in non-smokers (18/20 non-smoker, 90%). Among 9 patients of pulmonary TB with lung cancer, 78% (n=7) were smokers and 22% (n=2) were non-smoker.

The most common symptom was cough (87%) followed by loss of appetite (63%), weight loss (61%), chest pain (56%), dyspnea (52%) and hemoptysis (23%) less common symptoms include dysphagia, fever and hoarseness of voice.

Pulmonary TB patients in lung cancer present with symptoms of cough with expectoration in 88.88% (n = 8), loss of appetite in 77.77% (n=7), weight loss in 77.77% (n=7), chest pain in 55.55% (n = 5), dyspnea in 44.44% (n = 4), hemoptysis in 55.55% (n = 5), and fever in 66.66 % (n= 6).

Majority of the patients were having their disease in right lung (67%). Left lung was involved in 33% patients. Radiologically most common radiological presentation was a mass lesion present in 91% patients (n=91) followed by unilateral hilar prominence present in 44% of patients (n=44). Other common finding includes mediastinal widening (38%), collapse (26%). Pleural effusion (22%), metastasis (22%), cavitation (13%),

consolidation (12%), bony erosion (11%), pneumothorax (5%), and pan cost tumor (4%).

In this study of hundred patients with bronchogenic carcinoma, the distribution of various histological types of bronchogenic carcinoma is as follows; 49% of patients had adenocarcinoma (n = 49), 33% patients had squamous cell carcinoma (n = 33), 13% patients had small cell carcinoma (n=13), 5% patients had large cell carcinoma (n=5). Thus, in this study it indicates that adenocarcinoma is most common type of Bronchogenic carcinoma.

In this study, the commonest lung cancer among female (61.11%, n=11) and non-smoker males (35%, n=7) was adenocarcinoma. Authors found that adenocarcinoma was common among females and while squamous cell carcinoma was common in smokers (40%, n=32).

In this study 54% lesions were peripheral in location (n = 54) and 46% of lesions were central in location (n= 46). Among the central lesions, 39.1% was squamous cell carcinoma (n=18),34.7% was adenocarcinoma (n =16) and 21.7% cases of small cell carcinoma (n=10) and 4% was large cell carcinoma (n=2) Thus it can be concluded that squamous cell carcinoma and adenocarcinoma are both are located.

In this study of hundred patients with bronchogenic carcinoma, pulmonary TB present with various histological types of bronchogenic carcinoma is as follows; 33.33% patients of TB in adenocarcinoma (n =3), 44.45% patients in squamous cell carcinoma (n = 4), 11.11% patients in small cell carcinoma (n = 1), 11.11% patients in large cell carcinoma (n = 1). Thus, in this study it indicates that pulmonary TB is most common with squamous cell carcinoma.

DISCUSSION

The mean age of patients with lung carcinoma has remained relatively constant over the years. The mean age in this study was 61.6 years which is similar to that reported by Guleria et al.³

The sex ratio in our study was 4.55:1 with a clear male preponderance. This is mainly due to increased prevalence of smoking habit among men. which is similar to the study of Malik PS et al.⁴

In this study observed that maximum patients were in the 60 to 69 years age group followed by age group 50 to 59 years and 70 to 79 years of patients. This is similar to study by Saket RK et al, and Hathila N et al.^{5,6} And pulmonary TB with lung cancer is more common in age group of 60 to 69 year.

Bronchogenic carcinoma is seen more commonly in smokers (80 %) than nonsmokers (20 %). Similar to reported by Rawat J et al.⁷ Cough is the most common

presenting complaint among patients in our study (87%) followed by loss of appetite (63%), loss of weight (61 %) and chest pain (56 %) This is similar to study by Hathila N et al.⁶

Pulmonary TB patient with lung cancer present cough followed by loss of appetite and weight loss and fever.

In this study it was found that the lesions were slightly more peripherally located (54%) and the rest were found in a central location (46%). This is in concordance with the study done by Dr. Adaikkalavan C et al, where peripheral lesions are found to be more common than central lesions.⁸

Lung cancers present more often on the right than the left side, and in the upper than in the lower lobes according to many studies.⁷

The most common radiological presentation seen in our study was mass lesion (91%) which was almost similar to that reported by various studies.⁷ This may be because most of the patients presented to us at advanced stage. Next common radiological finding was hilar prominence seen in (44%) of patients and mediastinal LAP in (38%). Chhajed et al, and Nipa Hathila et al, study reported mediastinal LAP 34% and 35.38 respectively.⁶ Other common finding in our study collapse (26%), pleural effusion (22%), cavity (13%), bony erosion (11%), consolidation (12%). Metastasis (22%) Pneumothorax (5%) and pancoast tumor 4% A study by Prasad et al, and Gupta R et al, which is similar to this study.^{9,10}

In this study prevalence of pulmonary TB in bronchogenic carcinoma is 9% and this is due to high burden of pulmonary TB in India.¹¹

CONCLUSION

Smoking is the principle risk factor for the causation of lung cancer, so implementation of the smoking cessation programmed is required to reduce the incidence of lung cancer.

In this study adenocarcinoma was found to be most common type of lung cancer. Smoking is most common risk factor. Pulmonary TB coexistence with bronchogenic carcinoma was more common. The local immunity is deteriorated in cancer cases.

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