



**ORIGINAL RESEARCH PAPER**

**Radio-Diagnosis**

**COMPUTED TOMOGRAPHY IN DIFFERENTIATION BETWEEN SMALL CELL AND NON SMALL CELL CARCINOMA LUNG**

**KEY WORDS:**

**Dr. Kalpana Pimoli**

Junior Resident, Department Of Radiodiagnosis SRMSIMS, Bareilly

**Dr. Sameer Rajeev Verma**

Professor & HOD, Department Of Radiodiagnosis SRMSIMS, Bareilly

**Dr. Eshita Yadav**

Junior Resident, Department Of Radiodiagnosis SRMSIMS, Bareilly

**Dr. Raghav Soni**

Junior Resident, Department Of Radiodiagnosis SRMSIMS, Bareilly

**ABSTRACT**

**Background:**-Lung carcinoma is common in the developed world as well as developing world with high morbidity and mortality. It is broadly classified into two categories as small cell and non small cell carcinoma, in which radiological imaging plays a critical role in diagnosing and staging of cancer. Multi Detector computed tomography (MDCT) is the investigation of choice for evaluation of lung carcinomas. **Objectives:-** The objectives of our study is radiological assessment of difference in size and location of primary and metastatic spread at presentation in histologically proven cases of small cell vs non small cell carcinoma of lung. **Material And Methods:** This study comprised of patients who presented to the department of radiodiagnosis Shri Ram Murti Smarak Institute Of Medical Science a tertiary care center of west Uttar Pradesh, for CT scan of thorax, with clinical symptoms and/ or radiographic suspicion of lung cancer and cytohistopathological diagnosis of lung cancer over the period of two years. **Observations And Results:** In the present study a total of 84 patients were included. The non small cell carcinoma patients were 66(78.5%) which included Squamous cell carcinoma(40%) and adenocarcinoma (38%) and 18(21.4%) patients were of small cell carcinoma. On CT imaging non small cell carcinoma had larger size at presentation as compared to small cell carcinoma. Small cell carcinoma was more frequently associated with distant metastasis (77% cases) and mediastinal lymphadenopathy (100% cases) as compared to non small cell carcinoma.

**INTRODUCTION**

In India, lung cancer accounts for 5.9% of all cancers and 8.1% of all cancer-related deaths [1]. In the absence of screening, most patients with lung cancer are not diagnosed until later stages, when the prognosis is poor. The most common symptoms are cough and shortness of breath, but the most specific symptom is hemoptysis. Clinicians should suspect lung cancer in symptomatic patients with risk factors [2].

CT of thorax is an important investigation which helps in detailed anatomical imaging of the primary tumor and its relationship with the other structures, and providing information with respect to size of mediastinal lymph nodes and the involvement of pleural space. CT can best be thought of as a technique that provides a roadmap for more accurate surgical staging [3].

Traditionally primary cancers of the lung are classified as either small cell lung cancer (SCLC) or non-small cell lung cancer (NSCLC). NSCLC constitutes majority of all primary lung cancers with adenocarcinoma, squamous cell carcinoma(SCC), and large cell carcinoma comprising of major histological types [4,5]. Since few studies have compared radiological features of small and non small cell carcinoma, the purpose of our study is to compare the morphological features.

**OBJECTIVE-**

Radiological assessment of primary tumor size, mediastinal lymphadenopathy and distant metastases in cyto-histologically proven cases of small cell carcinoma and non small cell carcinoma of lung.

**MATERIALS AND METHOD-**

This study comprised of patients who presented to the department of Radiodiagnosis Shri Ram Murti Smarak Institute of Medical Sciences a tertiary care center of west Uttar Pradesh, for CT scan of thorax, with clinical symptoms and/ or radiographic suspicion of lung cancer and cytohistopathological diagnosis of lung cancer over the

period of two years. Total 84 such patients were included in the study.

**RESULTS**

The study population included 60 male patients (71.4%) and 24 female patients (28.5 %). There was an overall male predominance with a male/female ratio of 2.5:1. Out of 84 patients, 18 (21.5%) subjects were less than 50 years of age, 42 (50%) were in the age group 50-70 years and 24 patients (28.5%) were more than 70 years of age. 55 (67%) subjects were smokers and 29 (33 %) were non smokers.

The most common cyto-histological diagnosis was non small cell carcinoma in 66(78.5%) patients which included squamous cell carcinoma (40%) and adenocarcinoma (38%) while small cell carcinoma was found in 18 cases (21.4%). Small cell neoplasms had smaller size at presentation as compared to non small cell carcinoma. Mean size of small cell carcinoma was around 3.18 +/- 0.7 cm and mean size of non small cell carcinoma was around 7.5 +/- 1.8 cm. Small cell carcinoma was associated with mediastinal lymphadenopathy in all the cases (100%) and distant metastases in 14 cases (78%), whereas mediastinal lymphadenopathy was seen in 17(75%) and distant metastases in 20 (30%) of non small cell carcinoma cases.

**DISCUSSION-**

Lung cancer kills more patients than any other malignancy in the world [6]. The gold standard for diagnosing lung cancer is histopathological analysis which defines the cancer subtypes. It is crucial to delineate lung malignancy from its morphologic mimic as specific treatment modalities (including surgical resection, chemotherapy, radiotherapy, and targeted therapy) can halt the progression of disease, thereby improving the survival outcomes of patients [7].

In this study the mean age at presentation was 58.1 years. This is comparable to the study conducted by Gharraf H S et [8] al in which the age of the study population ranged from 38 to 71 years with a mean of 55 +/- 9.2 years. There is

predominance of male patients in our study which is in agreement with various Indian studies.[1]

In our study, we found non small cell carcinoma to be more common (78.5%) as compared to small cell carcinoma (21.4%), out of which squamous cell carcinoma was the most common histological subtype, accounting for 40% of all lung cancer cases. Similarly in a study conducted by Ganti A K et al[10] NSCLC accounted for most cases (82.9), followed by SCLC (13.9). Studies conducted by various Indian authors have also found non small cell carcinoma to be more common with Squamous cell carcinoma the most common histological type.[1]

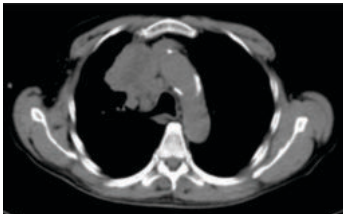
In our study small cell carcinomas had smaller mean size as compared to non small cell carcinomas which is comparable to the study by Gharraf H S et al [8] in which size of the lesion ranged from 1.6 to 25cm, squamous cell carcinoma lesions had larger size compared to adenocarcinoma lesions with a mean size of 7.7+/-2.7cm versus 5.5+/-2.3 cm respectively. Another study conducted by Lee D et al found that small cell carcinoma ranged from 1.4 to 6.7 cm in size. [9]

In this study mediastinal lymphadenopathy as present in all cases of small cell carcinomas which is comparable with the study conducted by Perlberg et al[11] showing 92% mediastinal lymphadenopathy in small cell carcinomas.

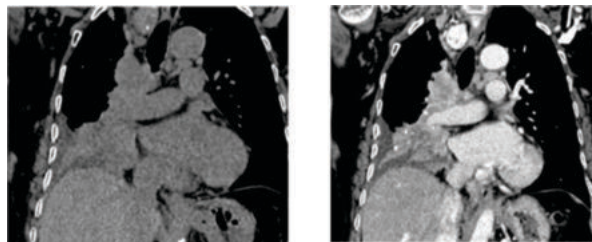
In our study, it was found that small cell carcinoma was frequently associated with distant metastasis (78% cases) which is in agreement with the study conducted by Wang P et al in which 88 out of 108 patients (81.5%) with small cell cancer had distant metastasis. [12].

**CONCLUSION**

The present study explores the radiological differences in the small versus non small cell types of carcinoma of lung which may help in predicting patient prognosis and management.



**Figure 1.** Axial section of CECT thorax mediastinal window shows poorly defined spiculated mass lesion located medially within the right upper lobe of lung in a biopsy proven case of squamous cell carcinoma

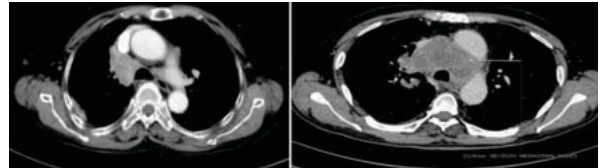


**Figure 2.** Biopsy proven case of Adenocarcinoma. Coronal reformat of NCCT and CECT thorax mediastinal window show a heterogeneously enhancing mass in right lower lobe with pleural effusion.



**Figure 3.** Biopsy proven case of small cell carcinoma. Axial

section CECT thorax shows an ill defined small central mass invading mediastinum on right side.



**Figure 4.** CECT thorax mediastinal window show extensive lymphadenopathy in small cell carcinoma.

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