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Original Research Article

Type and mode of diagnosis of carcinoma lung in a tertiary care centre: one year experience

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ABSTRACT

Background: Lung cancer is one of the commonest cancers and cause of cancer related deaths all over the world. The reported incidence of adenocarcinoma is increasing globally and now reported to be the most common type of lung cancer. A panel of investigations are used for the diagnosis of lung cancer. Hence a study was planned to find out the pattern of malignancy and the most appropriate investigation for diagnosis. Objective of present study was to find out the type of carcinoma lung and to find out the best and easy method for diagnosis of carcinoma lung in a tertiary care centre.
Methods: A hospital based cross sectional study was conducted in one unit of the Department of Pulmonary Medicine, Government Medical college, Thiruvananthapuram for a period of one year.148 diagnosed cases of carcinoma lung were enrolled. The type and the methods used for diagnosis were analysed.
Results: Adenocarcinoma was the commonest malignancy 57 (38.5%), followed by squamous cell carcinoma 44 (29.7%) and small cell carcinoma 10 (6.75%). Rest of the cases 37 (25%) include non small cell carcinoma, poorly differentiated carcinoma and lymphoma. Diagnosis was established by FNA Lung in 46 (31.1%) patients and bronchoscopy and biopsy in 41 (27.7%). Other methods include TBNA 12 (8.1%), lymph node FNA/biopsy 11 (7.4%), pleural fluid cytology 24 (16.2%), sputum cytology and tru cut biopsy 14 (9.5%).
Conclusions: The most common type of lung malignancy in present study was adenocarcinoma. Ultra sound guided FNAC lung and bronchoscopy biopsy were the best methods in present study to confirm the diagnosis.

Keywords: Adenocarcinoma, Diagnosis, Lung cancer

INTRODUCTION

Lung cancer is one of the most common malignant neoplasms worldwide and accounts for more deaths than any other cancer.[1] The clinicopathological profile of lung cancer has shown marked regional and geographical variation. Compared to the western population, the prevalence of lung cancer in India appears to be increasing.[2] Clinicopathological profile of lung cancer has undergone noticeable changes over the last four decades, especially the increase in adenocarcinoma incidence and their frequent presence in nonsmokers. Objective of present study was to find out the type of carcinoma lung and to find out the best and easy method for diagnosis of carcinoma lung in a tertiary care centre.

METHODS

All patients with diagnosis of carcinoma lung for a period of one year. Study period was June 2012 to May 2013. It was a cross sectional study carried out at Department of

Pulmonary Medicine, Second unit, Govt Medical College, Thiruvananthapuram, Kerala, India.

All patients attending the Department of Pulmonary Medicine RM2 Unit, Govt. Medical college, Thiruvananthapuram with a clinical diagnosis of carcinoma lung are included in this study. A detailed clinical history with specific importance to the symptoms, smoking habit and occupational exposure were taken. They were subjected to the most possible yielding and non invasive investigation to get a diagnosis. Bronchoscopy, FNAC lymphnode, pleural fluid cytology, Ultrasound/CT guided FNA or biopsy were done according to the clinical and radiological manifestations. A confirmatory histopathological or cytological diagnosis was taken for analysis. The data were analyzed using appropriate statistical methods.

RESULTS

148 diagnosed cases of carcinoma lung during a period of one year (June 2012 to May 2013) were included. Out of 148, 118 (79.7%) were males and 30 (20.3%) were females. 55 (37%) were between 51-60yrs and 46 (31%) were between 61 and 70 yrs (Table 1).

Table 1: Age distribution of patients with carcinoma lung.

Age group	Number (N)	Percentage (%)
<40	2	1.4
41-50	14	9.5
51-60	55	37
61-70	46	31
>70	31	21

88 (59.5%) of carcinoma lung patients are smokers (Table 2).

Table 2: Smoking history and carcinoma lung.

Sex	Smoker	Non smoker
Male	87 (58.8%)	31 (20.9)
Female	1 (.68%)	29 (19.6%)

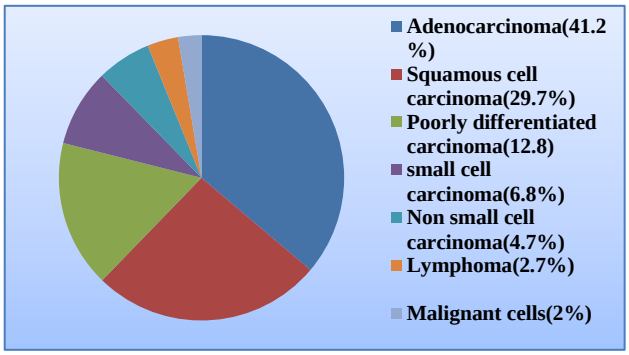
N=148; 58.8% of males are smokers

The most common clinical presentation was mass lesion 99 (66.8%) followed by pleural effusion 27 (18.2%), consolidation 9 (6%), medistinal mass 5 (3.3%), cavity 4 (2.7%) and multinodular disease 4 (2.7%) (Table 3).

Table 3: Clinical presentation of carcinoma lung.

Type of lesion	Number (n)	Percentage
Mass lesion	99	67
Pleural Efusion	27	18
Mediastinal mass	5	3.5
Others	17	11.5

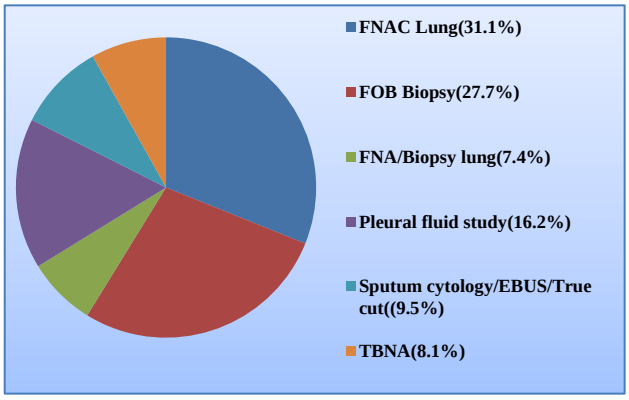
In present study adenocarcinoma was the commonest malignancy 57 (38.5%), which is concordant with the current literature. 44 (29,7%)were squamous cell carcinoma, 10 (6.75%) were small cell carcinoma and others came to about 37 (25%). Others include non small cell carcinoma, poorly differentiated carcinoma and lymphoma, (Figure 1).



Adenocarcinoma most common type.

Figure 1: Type of malignancy.

The mode of diagnosis of lung cancer in our study was by FNA Lung in 46 (31.1%) patients. Most of the cases the FNA lung was under USG guidance. Bronchoscopy and biopsy yielded the diagnosis in 41 (27.7%). TBNA was diagnostic in 12(8.1%), lymph node FNA/biopsy in 11 (7.4%) and pleural fluid cytology in 24 (16.2%). The least yielding methods of diagnosis were sputum cytology and tru cut biopsy in 14 (9.5%) patients (Figure 2).



FNAC lung and FOB Biopsy has the maximum yield

Figure 2: Mode of diagnosis.

DISCUSSION

Lung cancer is one of the commonest cancers and cause of cancer related deaths all over the world. It is also a major healthcare problem in India.[1] 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.[2] Over the last 10

years the survival in lung cancer has increased from a median overall survival of 11 months to an overall 5-year survival rate of 17.8%. This benefit is mainly due to the availability of targeted therapy and the appropriate selection of the patients; in other words precision oncology and personalized medicine. The incidence and pattern of lung cancer differ as per geographic region and ethnicity and largely reflect the prevalence and pattern of smoking. Over the years, our understanding of disease biology has evolved a lot. The classification is now stretching to molecular classification. Newer molecular targets and driver mutations have been identified which play a major role in pathogenesis that can be addressed with therapeutic interventions.[3] In the Western countries and most of the Asian countries adenocarcinoma has surpassed squamous cell carcinoma. This shift might be attributable partly to the change in smoking habits, particularly filtered cigarettes; moreover, there is also increasing incidence of lung cancer in females and non smokers.[4,5] Adenocarcinoma has now become the commonest subtype provided a critical pathology review is done.[6] In present study also the commonest type was adenocarcinoma followed by squamous cell carcinoma.In India, approximately 63,000 new lung cancer cases are reported each year.[6] The major risk factor for developing lung cancer is tobacco use and this disease is often viewed solely as a smoker's disease. However, a significant number of patients with lung cancer have no history of smoking. 59.5% of our patients has history of smoking and 41.5% were non smokers. Only one female patient was smoker in our study group probably due to the low prevalence of smoking in females in Kerala.In a study of 975 patients with non-small-cell lung cancer (NSCLC) from Singapore, 31.5% of male and 68.5% of female patients were never-smokers, overall accounting for 32.4% of lung cancer patients.[7] Although smoking-related carcinogens act on both proximal and distal airways inducing all the major forms of lung cancer, cancers arising in never-smokers target the distal airways and favour adenocarcinoma histology. In non-smokers, various factors are thought to contribute to the risk of lung cancer, including environmental tobacco smoke (second-hand smoke), other environmental exposures including asbestos, arsenic and radon, viruses like human papilloma virus, benign lung diseases like idiopathic pulmonary fibrosis, estrogens and possibly genetic factors, especially in patients with a family history of early-onset cancer.[8-10] Incidence of the previously predominant squamous cell variety appears to be declining, with a corresponding increase in adenocarcinoma (ADC) variety in both genders.[11]

A battery of investigations is necessary to diagnose lung cancer. Detailed evaluation to identify the type and stage of the lung cancer is helpful to determine treatment options. A chest x-ray is usually the first investigation used to diagnose lung cancer. The other investigations done are bronchoscopy, pleural fluid analysis, USG guided FNA/biopsy, sputum cytology and lymph node FNAC/biopsy. During bronchoscopy the appropriate investigations like biopsy, TBNA and EBNA can be done. MRI, PET, PET CT, mediastinoscopy and thoracoscopy were done in selected cases. Sputum cytology is rarely indicated and should be reserved for the investigation of patients who have centrally placed nodules or masses and are unable to tolerate, or unwilling to undergo, bronchoscopy or other invasive tests. The sequence of investigations varies according to a variety of linked factors including the clinical and radiological information, patient fitness, intended treatment and patient preference.[12] Peripheral primary tumours are those within the lung parenchyma which may about the pleura. Where they occur without other features of more advanced malignancy such as mediastinal lymphadenopathy, specific diagnostic techniques apply, in particular transthoracic needle biopsy. Central primary tumours are those that are in close proximity to, or directly invading the mediastinum. There is usually endobronchial tumour and bronchoscopic procedrures will be ideal in that situation. The majority of patients with SCLC and around 40% of patients with NSCLC have distant metastases at presentation. Identification of distant metastases by clinical examination or radiological investigations may identify the most appropriate site for a biopsy and other investigations. When pleural effusion is present, two pleural fluid study followed by thoracoscopy is the recommendation for diagnosis of lung cancer.[13] In our study ultrasound guided FNAC has got the maximum diagnostic yield, stressing the importance and utility of ultrasound in the diagnosis of lung cancer.

CONCLUSION

The most common type of lung malignancy in our study was adenocarcinoma. The world wide data also shows adenocarcinoma is now the commonest histological type. Ultra sound guided FNAC lung and bronchoscopy biopsy are the investigations which gave maximum yield in our study to confirm the diagnosis.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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