CLINICOPATHOLOGICAL PROFILE OF LUNG CANCER IN A TERTIARY MEDICAL CENTRE IN TRIPURA, A NORTH-EAST STATE

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ABSTRACT

BACKGROUND

Lung cancer is presently the most common malignant disease and is the leading cause of cancer deaths in the world. An increase in incidence of lung cancer has been observed in India. The relative frequency and clinicopathological profile of different histological subtypes of lung cancer have shown marked regional and geographical variation.

The aim of this study was to evaluate the clinicopathological profile of lung cancer in patients of Tripura, India.

MATERIALS AND METHODS

This prospective study was conducted over a period of 4 years, in patients with clinically and radiologically suspected lung cancer, who attended our hospital from March, 2012 to February, 2016.

RESULTS

Out of 295 patients, 239 were male, 56 were female; 69.49% of patients were between 51 to 70 years, and 85.42% patients were smokers. The most common presenting symptom was cough (74.24%) followed by chest pain (66.78%). Mass lesion (43.39%) was the most common radiological presentation followed by pleural effusion (26.44%). The commonest mode of diagnosis was image-guided FNAC; confirmed diagnosis in 54.58% patients. The most common histopathological type was squamous cell carcinoma (40.00%) followed by adenocarcinoma (34.58%). Almost 75% patients were diagnosed at advanced stage of disease.

CONCLUSION

It was found that lung cancer, a disease of elderly people, predominantly affects the male with smoking still remains a major risk factor. CT-guided FNAC is an important diagnostic tool. Squamous cell carcinoma was the most common histopathological type. Majority of the patients were unaware about the ill effects of smoking.

KEYWORDS

Lung Cancer, Smoking, CT Thorax, Bronchoscopy, FNAC.

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BACKGROUND

Lung cancer is one of the most common malignant neoplasm worldwide, accounting for more deaths than any other cancer cause. Although it was considered to be uncommon at the beginning of the centuries, it has reached epidemic proportion and is currently the leading cause of cancer related deaths in the western countries and is rising in alarming rates in developing countries.¹ In 2008, the most commonly diagnosed cancers worldwide were lung cancers (1.61 million, 12.7% of the total) and is the leading (1.38 million, 18.2% of the total) cause of cancer related death.² In India, lung cancer was initially thought to be extremely rare. Banker in 1957 reported that lung cancer constituted 14.4% of all cancers in a review of 9210 consecutive autopsies.³

The National Cancer Registry Programme of ICMR, in 1989, reported that cancer of trachea, bronchus and lung was the most common type of malignancy in males from Bombay, Delhi and Bhopal and was the second most common in Madras and third in Bangalore and was most unusual in Barshi, a rural area.⁴ The Global burden of cancer continues to increase largely because of ageing and growth of the world population along with increasing adoption of risk behaviours, particularly smoking. Tobacco smoking is the most important modifiable risk factor for lung cancer. More than 80% of the lung cancers develop in smokers.⁵ There are two broad categories of lung cancer; Small cell lung cancer (SCLC) and Non-small cell lung cancer (NSCLC). NSCLC accounts for about 85% of lung cancer cases and SCLC accounts for remaining 15%. NSCLC is further divided into three major pathologic subtypes: Squamous cell carcinoma, Adenocarcinoma and Large cell carcinoma.⁶ Despite advances in surgical techniques and combined therapies, lung cancer remains a disease with a dismal prognosis and overall 5-year survival has remained relatively unchanged at 12 – 16% over the past 30 years.⁷ This study was designed to evaluate the clinico-pathological profile of lung cancer in patients with clinical and radiological suspicion of lung cancer, attended in the Department of Respiratory Medicine (OPD/or IPD), AGMC & GBP Hospital, Agartala, Tripura.

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MATERIALS AND METHODS

The present prospective study was conducted over a period of 4 years (from March, 2012 to February, 2016) on patients (n=327) with a high Clinical and/or Radiological suspicion of lung malignancy, attended in the Department of Respiratory Medicine (OPD and/or IPD), AGMC & GBP Hospital. Of these, 295 patients diagnosed with lung cancer were included in the study.

Patients with malignant metastases in lung from other sites, primary mediastinal masses, primary pleural malignancy and those cases of lung cancer diagnosed elsewhere and those already under treatment were excluded from study. Written informed consent was taken from all patients. A detailed medical history of the patients regarding their clinical symptoms, past medical or surgical history and personal history was taken. Thorough clinical examination was done for all patients. The cases of suspected lung cancer were then subjected to the routine laboratory and radiological investigations. Computed tomography (CT) of the chest and upper abdomen, including adrenal glands was done in 224 patients; and computed tomography (CT) of the brain was done in 25 patients. In all patients with pleural effusion, fluid was aspirated and sent for analysis, and pleural biopsy was done in 18 of these patients. Fibreoptic bronchoscopy under local anaesthesia was performed in 196 (66.44%) Patients. Whole tracheobronchial tree was examined and wherever possible either bronchoalveolar lavage (BAL) or bronchial brushing, and Transbronchial needle aspiration (TBNA) and/or biopsy from endobronchial lesions (n=58) were collected and sent to pathology for cytological and histopathological examination. TBNA from extraluminal lesion (mass/lymph node) was performed in 10 patients. CT-guided FNAC was done in 215 (72.88%) patients with pulmonary lesions (such as mass, cavity, SPN). Further investigations such as unguided FNAC was done in 52 patients with peripheral mass. FNAC of lymph nodes were performed, wherever indicated.

RESULTS

Initially, a total of 327 patients were selected for the study. Diagnosis other than lung cancer in 18 patients were excluded from the study group; and attendants of 14 patients were unwilling for further evaluation after being told about the suspicion of malignancy. Finally, a total of 295 patients were included in the study. Out of 295 patients, 239 were male and 56 were female. Male to female ratio was 4.27: 1. The mean age of the patients was 60.46 years. Only 7 cases were up to the age of 40 years, and youngest being 21 years old. Majority of the cases (205) were between 51 to 70 years and remaining 53 cases were 71 years and above (Table-1).

Gender	No. of Patients	Percentage (%)
Male	239	81.02%
Female	56	18.98%
Age Group		
20 to 30 years	01	0.34%
31 to 40 years	06	2.03%
41 to 50 years	30	10.17%
51 to 60 years	90	30.51%
61 to 70 years	115	38.98%
71 years & above	53	17.97%
Table 1. Demographic Profile of patients included in the Study (n =295)		

252 (85.42%) patients were smokers and 43 (14.58%) were non-smokers; majority (66.44%) smoked bidi. The smoker to non-smoker ratio was 5.86: 1. Significant smoking history of ≥ 20 pack-years was present in 148 (50.17%) cases. Among female patients, 15 gave a history of exposure to passive smoking. 18 (8.03%) out of 295 patients were initially misdiagnosed as pulmonary tuberculosis. Most common presenting symptom was cough (n=219), followed by chest pain (n=197), dyspnoea- (n=165), haemoptysis (n=146), decreased appetite and weight loss (n=106), fever (n=82), and hoarseness of voice (n=58), etc. (Table-2).

Symptoms	No. of Patients	Percentage (%)
Cough	219	74.24%
Chest pain	197	66.78%
Dyspnoea	165	55.93%
Haemoptysis	146	49.49%
Decreased appetite and weight loss	106	35.93%
Fever	82	27.80%
Hoarseness of voice	58	19.66%
SVC obstruction	32	10.85%
Weakness	28	9.49%
Headache and/or convulsion	10	3.39%
Dysphagia	6	2.03%
Horner's syndrome	4	1.35%
Table 2. Clinical Presentation (n =295)		

Out of 32 patients with superior vena cava (SVC) obstruction, cases of small cell carcinoma were 18, Squamous- cell carcinoma were 10 and Adenocarcinoma were 4. Average duration of symptom in our study was 4.5 months. Pancoast tumour was diagnosed in 8 (2.71%) cases, all of whom were later found to have squamous cell carcinoma. Mass lesion (n=128) was the most common radiological presentation followed by pleural effusion- (n=78), collapse-consolidation (n=60), cavitory lesion (n=19) and solitary pulmonary nodule (n=12). Right lung was more involved (Table- 3).

Site	No. of Patients	Percentage (%)
Mass	128	43.39%
Pleural effusion	78	26.44%
Collapse-consolidation	60	20.34%
Cavity	17	5.76%
Solitary pulmonary nodule	12	4.07%
Right lung	162	54.91%
Left lung	115	38.98%
Bilateral	18	6.10%
Table 3. Commonest Radiological Presentation		

Local infiltration to the mediastinal structures (one or more) was found in 56(18.98%) patients. Bony erosion of ribs and/or vertebra was present in 26 (8.81%) cases. Extrathoracic Metastases to the liver was found in 45 (15.25%) cases while adrenal gland in 24 (8.13%) and brain in 10 (3.39%) cases. Pleural biopsy confirmed diagnosis in 10 cases; malignant cell was found in pleural fluid of 11 cases. Out of 78 patients with pleural effusion, 48 had adenocarcinoma (n=48) followed by squamous cell carcinoma (n=22), small cell carcinoma (n=6) and large cell carcinoma (n=2).

Bronchoscopy was performed in 196 patients. Most common findings were normal airways (n= 80), followed by intrabronchial growth (n=58) associated with airway obstruction (partial/complete); and vocal cord palsy was found in 45 cases (Table- 4).

Findings	No. of Patients	Percentage (%)
Vocal cord palsy	45	22.96%
Normal	80	40.82%
Wide main carina	14	7.14%
Compression of airway wall	20	10.20%
Unhealthy mucosa	24	12.24%
Intrabronchial growth	58	29.59%

Table 4. Bronchoscopy Findings (n =196)

Malignant cell was found in BAL fluid (4 cases) and bronchial brushing specimens (7 cases). TBNA and biopsy, alone/combination confirmed diagnosis in 25 (8.47%) endobronchial lesions, with an accuracy of 43.10%. In extraluminal lesion, TBNA confirmed lung cancer in 3 cases. CT-guided FNAC confirmed diagnosis in 161 (54.58%) patients, with an accuracy of 74.88%. Unguided FNAC confirmed diagnosis in 20 (6.78%) patients. The most common histopathological type was squamous cell carcinoma (n=118), followed by adenocarcinoma (n=102), small cell carcinoma (n=52) and large cell carcinoma (n= 19); and undifferentiated carcinoma was detected in 4 patients (Table-5). 219 (74.24%) patients were diagnosed in advanced stages of disease.

Type of Lung Cancer	No. of Patients	Percentage (%)
Squamous cell carcinoma	118	40.00%
Adenocarcinoma	102	34.58%
Small cell carcinoma	52	17.63%
Large cell carcinoma	19	6.44%
Undifferentiated carcinoma	4	1.35%

Table 5. Histological type of Lung Cancer (n=295)

DISCUSSION

The mean age of patients with lung cancer has remained relatively constant over the years. The mean age in this study was 60.46 years, which is comparable to that reported by Guleria et al, 1971 and Dey A et al, 2012. In this study, majority of the patients (69.49%) were between 51 to 70 years, which is similar to the previous studies.⁽⁸⁻¹⁰⁾ The gender distribution of lung cancer has varied in different studies, with male predominance. The sex ratio reported in various Indian studies ranged from 2.7: 1 to 6.6: 1.^(9,11-13) The sex ratio in our study was 4.27: 1, with male predominance. In this study, most of the patients (85.42%) were smokers (current/ex-smokers), and smoking was the important risk factor found in this study; findings are similar to earlier studies.^(9,14,15) In our study, Cough(74.24%) was the most common symptom, followed by chest pain (66.78%) as was reported in most of the previous studies.^(7,9,16,15,17) In this study, 18 (8.03%) patients were initially misdiagnosed as Pulmonary tuberculosis. Dubey N et al, 2015 and Gupta R et al, 2015 reported that number of patients (23.4% and 42.5% respectively) of lung malignancy were initially misdiagnosed

as pulmonary tuberculosis. Mass lesion (43.39%) was the most common radiological presentation found in the present study followed by pleural effusion (26.44%). Some of the major Indian studies also reported similar findings.^(9,11,16,18) In this study, CT-guided FNAC had the highest diagnostic yield (74.88%) leading to diagnosis in 54.58% patients, which is comparable to the reports of some other authors (Bhattacharyya SK et al, Mukherjee S et al and Dubey N et al) and they also reported that CT-guided FNAC had the maximum diagnostic yield. In the present study, Squamous cell carcinoma (40.00%) was the most common histopathological type, followed by Adenocarcinoma (34.58%), Small cell carcinoma (17.63%), and Large cell carcinoma (6.44%); a large number of previous studies also reported similar findings.^(9,11,16,14,19-22) In the present study, majority (74.24%) of the patients were diagnosed in advanced stages, which is comparable to the study reports of previous authors.^(9,21,23) The incidence of lung cancer has risen. The pattern of lung cancer has been changing in the West, with increasingly being diagnosed in women and Adenocarcinoma has overtaken Squamous cell carcinoma as the commonest histopathological type.²⁴ But in India, squamous cell carcinoma is still the most common with smoking as predominant risk factor found.^(9,11,16,14,19-22) In our study, Squamous cell carcinoma is the predominant histopathological type; the cause is most likely due to the fact that majority of the patients in our study are smokers. Almost three quarters of patients were diagnosed at advanced stage, which is also seen in other studies.^(9,21,23) This suggests an urgent need of some diagnostic modality for screening and early diagnosis of patients of lung cancer.

CONCLUSION

This study has identified smoking as the important risk factor in causation of lung cancer. People should be aware of the ill effects of smoking and importance of quitting. Our study has also found that majority of the patients were diagnosed at advanced stage, whereby only palliation can be planned. Primary lung cancer should always be suspected in a person presenting with unexplained cough for several weeks with other symptoms such as weight loss, fever with non-resolving collapse-consolidation on chest radiograph. The study indicates a need to create an awareness about lung cancer, its presenting features, risk factors and radiological pattern among general practitioners for early detection of lung cancer and also to avoid misdiagnosis, so that further mortality and morbidity can be minimised.

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