A clinico-pathological profile of primary lung cancer patients presenting in a rural medical college of Central India

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Abstract:
A study of the clinico-pathological profile of cases of lung cancer coming to a rural medical college in the central India. To study the risk factors, the time taken to diagnose and the investigations useful in the diagnosis of lungcancer patients. A prospective, observational and descriptive study was conducted in a rural medical College and hospital for duration of 1 year. Statistics analysis was done using the SPSS version 16. Out of 62 cases suspected of lung cancer presented to the medical college, only 47 could be included in the study. Out of which 38(80.8%) were males and 9(19.1%) were females, 37(78.7%) were smokers including 34(72.3%) current smokers, 3 (6.3%) ex-smoker and 10 (21.2%) non-smoker. 11 (23.4%) cases of lung malignancy had been misdiagnosed as pulmonary tuberculosis. The onset of symptoms to the confirmation of diagnosis of lung cancer was 5.7 months. Maximum diagnostic yield was with FNAC 22/30 (73.3%) while results with endobronchial biopsy were 23(63.8%) and percutaneous lung biopsy was 7(63.6%). There were 44 (93.7%) cases of non-small cell lung cancer(NSCLC) and 3 (6.3%) of small cell lung cancer (SCLC). Squamous cell cancer was the predominant cell type 18(38.2%). Maximum were diagnosed in the advanced stages of disease. Lung cancer remains a male predominant disease with smoking as the most common implicating agent. It continues to be diagnosed very late and presents in very advanced stages of the disease. More needs to be done to educate patients on ill effects of tobacco and to train doctors on early diagnosis especially in the rural areas.

Keywords: Lung, Cancer, Smoking, Cough.

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Introduction

Lung cancer is one of the commonest malignant neoplasms all over the world (1). This is the leading cause of cancer death in developed countries and is rising rapidly in developing countries(2-3). It is the most commonly diagnosed cancer worldwide accounting for 1.61 million (12.7%) of the total cancer patient sand is also the most common cause of cancer death that is 1.38 million(18.2%) of the total(3). In India too, it is the commonest and most lethal cancer among males accounting for 10.9% of all cancer cases and 13% of cancer related mortality (4).Majority of the patients have locally advanced or disseminated disease at presentation and are not candidates for surgery.5-year survival rate for lung cancer has improved only minimally from 5% in the late 1950s to 14% by 1994. This is in sharp contrast to the 5 years survival of 52% in some other type of cancers (1).

It is seen that there is an significant increase in the incidence of bronchogenic carcinoma cases seen after the analysis of the records of 15 teaching institutions in India over a period of 10 years. From 16.1 in 1950, it had increased to 26.9 in 1961 per 1000 malignancies(5). The survey conducted in Uttar Pradesh in 1966 by Misra and others showed that the incidence was 4.2 per 10,000 hospital admissions and was 2.1% of all malignancies. According to Wig et al (1961), lung carcinoma is a frequent finding amongst all the chest diseases(3). Smoking is very rampant in India especially the rural areas. As around 80% of lung cancer patients come from the rural areas(1) there is difficulty in getting proper medical care and diagnosis thereby gets delayed. Once diagnosis is made there are monetary constraints as well as inaccessibility of cancer management facilities nearby adding to the problem.

This study was designed to evaluate the social, clinico-pathological aspects of lung cancer patients coming to the rural medical college. The aim was also to study the time duration for confirming the diagnosis, the relative yield of the investigations in diagnosis of lung cancer and the lung cancer stage in which patients are presenting.

Materials and Methods

A prospective, observational and descriptive study was conducted in a Rural Medical College and Hospital (R. D. Gardi Medical College, Ujjain, M. P.) for duration of 1 year(2012-2013) after approval by hospital ethics and research committee. Informed consent of all patients was taken. The patients of primary lung cancer

diagnosed and evaluated in our hospital were included in the study. Patients with malignant metastasis in lung from other sites, primary mediastinal masses, primary pleural malignancy and those cases of lung carcinoma diagnosed elsewhere and those already under treatment were excluded from the study.

A detailed medical history of the patients regarding their clinical symptoms, past medical or surgical history, occupational history was taken. The smoking history included the current status, the mode of smoking, and any other mode of tobacco intake. ECOG(Eastern Co-operative Oncology Group)/WHO (World Health Organisation) performance status was also evaluated. A detailed clinical examination of the patient was carried out. The cases of suspected lung cancer were then subjected to the basic haematological, radiological and microbiological investigations. Patients who were clinically and radiologically suggestive of primary lung cancer were subjected to fiberoptic bronchoscopy under local anaesthesia. Whole tracheobronchial tree was examined and broncho-alveolar lavage (BAL) and endobronchial biopsy was collected and evaluated. Further relevant investigations like pleural fluid cytology, FNAC of lymphnodes / lung mass and trucut biopsy of lung were performed depending upon the lesion. CT head was done in few cases depending as per requirement.

Results

There were 62 clinical and radiological suspects of lung malignancy who presented in our institute during the study period. They were evaluated and 47 pathologically proven patients were finally included in our study. Only 47 could be included in the study as the attendants of 15 patients were unwilling for further evaluation on being told about the suspicion of the malignancy and preferred to take the patient home. Out of 47 patients, 38 (80.8%) were males and 9 (19.1%) were females. Male to female ratio was 4.2:1.Patients were in age range of 20-80 years, maximum 22 (46.8%) patients were in age group of 41-60 years and the mean age was 58.6 year. Mean age was lower in patients of SCLC (51.6 year) than NSCLC(59 year). Most of our patients were illiterate 34 (72.3%) and farming was the commonest occupation.

The commonest risk factor for development of lung cancer found in our study was smoking. Majority of the patients i.e. 37 (78.7%) were smokers including 34 (72.3%) current smokers, 3 (6.3%) ex-smoker and 10 (21.2%) non-smoker. Most common mode of tobacco intake was bidi in 30(63.8%) cases. Significant smoking history of ≥ 20 pack years was present in 29 (78.8%) cases (Fig. 1). 11 (23.4%) cases of lung malignancy had been misdiagnosed as pulmonary tuberculosis and were wrongly started on anti-tubercular treatment(ATT) by treating physician prior to reporting to the college. The study also revealed that the average duration from the onset of symptoms to the confirmation of diagnosis of lung cancer was 5.7 months.

Most common symptom of the patients was cough in 38 (80.5%) patients, which was productive in about 35 (74.4%) patients. Chest pain was seen in 35(74.4%), dyspnoea in 29(61.7%), decreased appetite in 21 (44.6%), haemoptysis in 17 (36.1%), weight loss in 11(23.4%) and hoarseness of voice in 5(10.6%) patients. Other clinical symptoms were fever in 10 (22.2%), swelling over the face in 5(10.6%), dysphagia in 4 (8.5%), vomiting in 2 (4.2%), body ache in 6(12.7%) and weakness in 3 (6.3%) patients (Fig. 2).

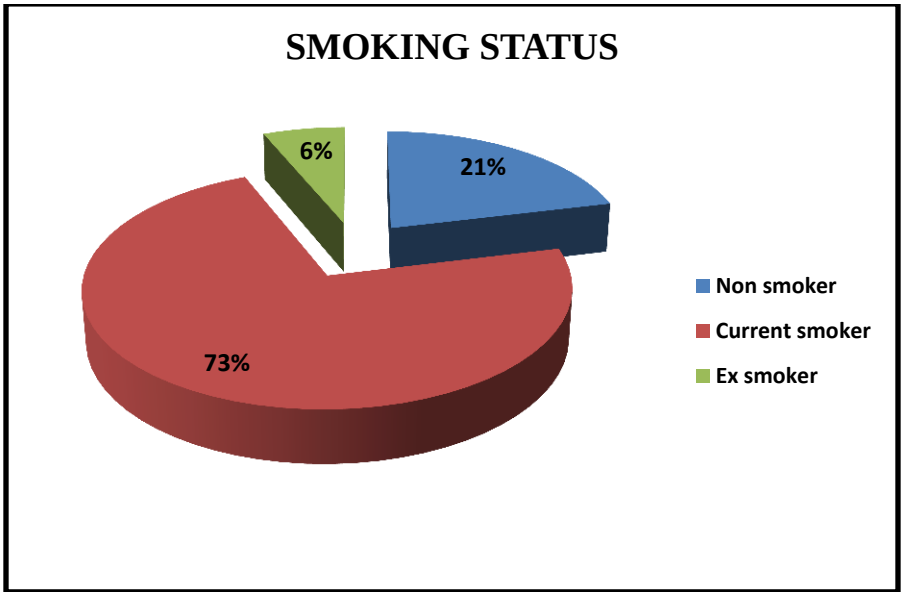

Fig. 1: Smoking status of patients of lung cancer.

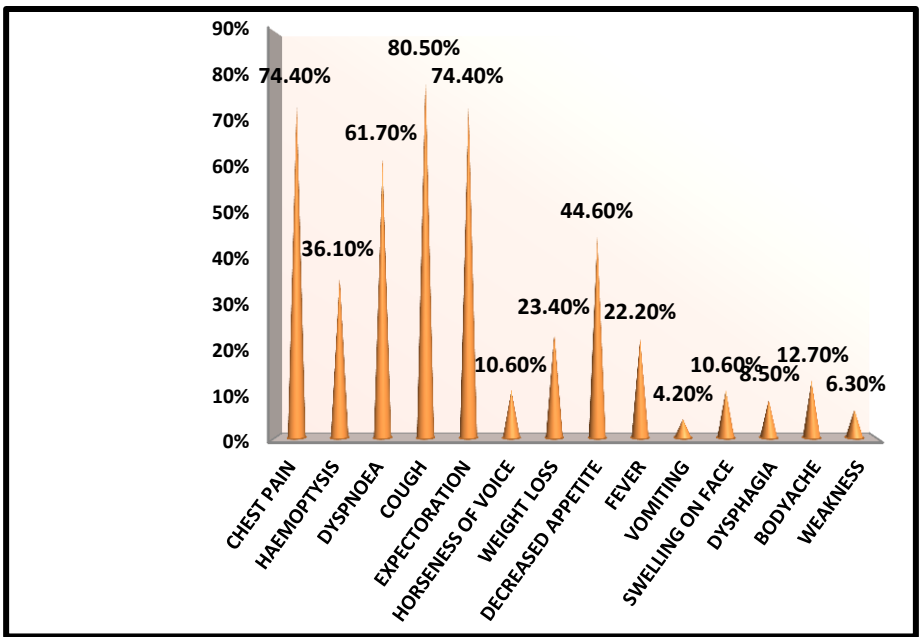

Fig. 2: Symptoms of patients of lung cancer

Most common clinical presentation was mass lesion in 22 (43.1%) cases. Associated clinical manifestations were lymphadenopathy in 16(34%), superior vena cava syndrome in 7 (14.8%), Pan coast tumor in 3 (6.3%) and Horner's syndrome in 1(2.1%) case. Other co-morbid conditions present in our patients were COPD in 27 (57.4%), hypertension in 4(8.5%), pulmonary tuberculosis in 2 (4.2%) and 1(2.1%) patient had associated interstitial lung disease, optic glioma and inguinal hernia each. Most common site of metastases was the lymphnodes and the most common site for extrathoracic organ metastasis was the liver. Amongst the paraneoplastic syndromes the hematological findings were of leucocytosis in 18 (38.2%), anemia in 13 (27.6%), monocytosis in 12 (25.5%), eosinophilia in 3 (6.3%) and thrombocytosis in 2 (4.2%). Other paraneoplastic syndromes includes clubbing in 13 (27.6%), gynaecomastia in 2 (4.2%) and hypercalcemia in 1 (2.1%) case.

Maximum diagnostic yield was with FNAC 22(73.3%) while results with endobronchial biopsy were 23(63.8%) and percutaneous lung biopsy was 7(63.6%). Sputum cell cytology however was not useful in diagnosis of malignancy in our study. The commonest bronchoscopic finding was intrabronchial growth in 25/45 (53.1%) cases out of these in 16 (34%) patients it was associated with intrabronchial obstruction. Others findings were stenosis in 19(40.4%), irregular mucosa in 7 (14.8%), vocal cord palsy in 5 (10.6%), pressure effects in 4 (8.5%) and blunt carina in 3 (6.3%) cases. There were 44 (93.7%) cases of NSCLC and 3 (6.3%) of SCLC. There were 18 (38.2%) cases of squamous cell carcinoma, 15 (31.9%) were adenocarcinoma, 1 (2.1%) was large cell carcinoma, 3 (6.3%) were small cell carcinoma and 10 (21.2%) were 'not otherwise specified'. Thus NSCLC was the predominant histopathological type of lung malignancy in our study (Fig. 3).

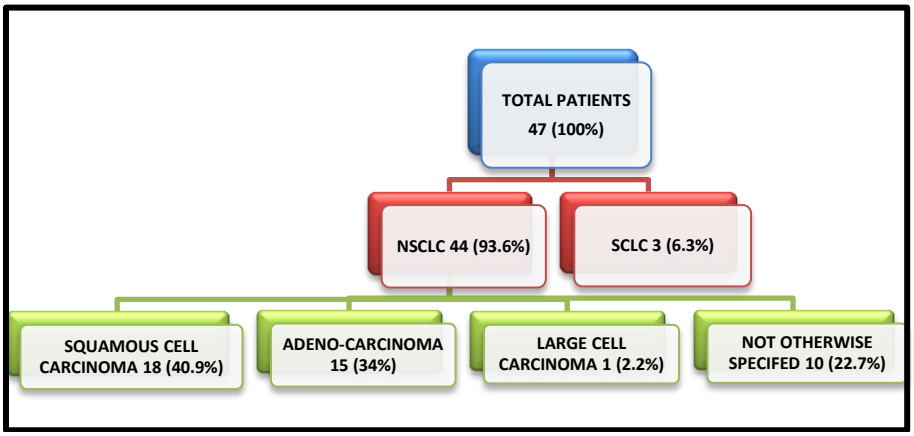

Fig. 3: Histopathological distribution of patients of lung cancer

ECOG / WHO performance status of ≤ 2 in 30(63.9%) patient's disease: Out of 44 patients of NSCLC 29 (65.8%) were having advanced disease with TNM stage IIIB and IV at the time of diagnosis. In SCLC 2(66.6%) were having limited disease and 1(33.3%) was having extensive disease.

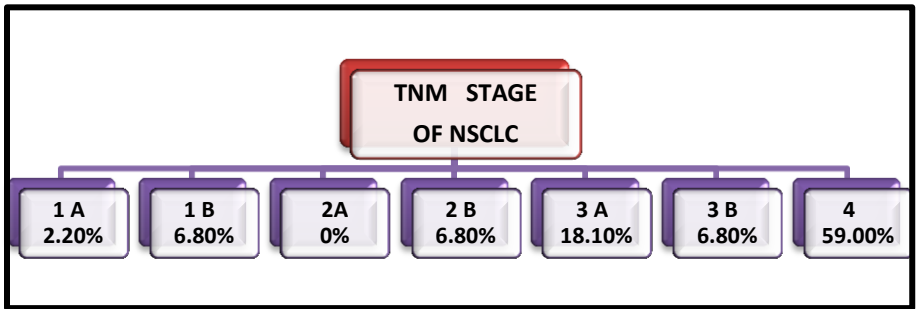

Fig. 4: TNM stage of non-small cell lung cancer patients at the time of diagnosis

Discussion

The study showed that lung cancer is a male predominant disease, as smoking which is the most important risk factor for lung cancer is more common in males. This is also seen in other Indian studies conducted by Prasad et al(6) and Jindal and Behera(7), Bhaskarapillai and colleagues (8) and Sheema Sheikh et al (9). The mean age of lung cancer was 58.6 yr as the disease is usually found in people of elderly age because of prolonged exposure to risk factors (2).

Most of the lung cancer patients were underweight supporting that weight loss is important symptom of the disease. Majority of the patients coming to our medical college were from rural areas and farming was the most common occupation. Most of the patients were illiterate. It was found that besides the tobacco smoke there was no significant exposure to any other carcinogenic substance except in female patients who were exposed to Chulha smoke and environmental tobacco smoke at home. Majority of the patients were 'Bidi' smokers (either current smokers or Ex-smoker).Thus smoking is the most important risk factor for lung cancer in our study, as also reported by Rawat et al (10), Kumar et al (11) and Koul et al (12).

Almost one-fourth of the patients had history of ATT and most of them were misdiagnosed as pulmonary tuberculosis due to incomplete evaluation. There are common clinical symptoms and radiological findings in both tuberculosis and lung cancer leading to misdiagnosis and there is inadequate use of diagnostic modalities like sputum for Acid Fast Bacilli, CT scan and bronchoscopy which is responsible for wrong treatment of the patients(13). Another reason for delay in diagnosis is that cough and dyspnoea are usual complaints in most of the COPD patients and are neglected alike by the patient and the treating physician. This fact is also reported in studies by R Prasad et al (6), Arora et al (14), Kumar et al (11) and Singh etal (15). The average duration in which patients were diagnosed as a case of lung cancer was 5.7 months which is quite late, thereby resulting in the presentation in a more advanced stage which cannot be cured.

Study revealed that lung cancer shares the common symptomatology as other respiratory diseases. Cough was the most common symptom is also reported in other studies (*6,16,17,18).* Change in symptoms of COPD patients not relieving with adequate treatment and appearance of symptoms like hoarseness, facial puffiness, chronic chest pain, haemoptysis, excessive weakness and significant weight loss should be further evaluated to rule out malignancy.

In majority of the patients the lung mass was the commonest clinical presentation. Similarly studies by Jindal and Behera(7) also found mass with or without collapse as the most common clinical presentation. Associated clinical manifestations in our patients were lymphadenopathy, SVC syndrome, Pan Coast syndrome and Horner's syndrome in some patients. These clinical findings should be evaluated with high suspicion of underlying malignancy. COPD was the commonest associated co-morbidity in our patients due to sharing of same risk factor that is the smoking. Clubbing and monocytosis were important paraneoplastic syndromes found in our study.

Most common radiological finding was mass lesion in lung. Mass as the most common finding on radiology was also reported by Hassan & colleagues(16), Omer SAlamoudi(17) and Fusun Sahin and colleagues(19). Hilar prominence and non-resolving pneumonias in high risk group like smokers should raise the suspicion of malignancy and can lead to early diagnosis of patient.

Most common site of metastasis was the lymph nodes but the most common site for extra thoracic organ metastasis was the liver. Lymph nodes are also reported as commonest site of metastasis in studies by Arora et al (14), Rajesekaran et al (20) and Jindal and colleagues (21) and if evaluated can give us earliest diagnosis. Maximum diagnostic yield was obtained with FNAC while endobronchial biopsy and percutaneous lung biopsy gave almost equal results. So in central lesions

endobronchial biopsy and in peripheral lesions percutaneous lung biopsy can be done for adequate tissue diagnosis. FNAC should be used as the first diagnostic tool wherever possible because it is easy, cheap, Outpatient department (OPD) procedure which is well accepted by the patients and gives earliest diagnosis. FNAC was reported to have maximum yield in study by Kumar et al (11)similar to our study but most of the studies reported maximum diagnostic yield by fiberoptic bronchoscopy(7,10,17). Sputum cell cytology has not revealed malignancy in any case in our study however it was positive in some studies by Prasad et al(6), Jindal and Behera(7) and Hassan and colleagues(16), but yield was very low.

Intrabronchial, centrally located tumour was the most common finding on fiberoptic bronchoscopy which is common in patients of squamous cell carcinoma and small cell carcinoma. In our study too squamous cell carcinoma(SCC) is the predominant histopathological type of malignancy. The cause is most likely due to the fact that the majority of the patients in our study are smokers, this is consistent with the other Indian studies (9,20,*12*,*21*,*22*,23), however the predominant type of lung cancer in western world is adenocarcinoma(3,10).

Almost two-third of the patients were having advanced disease at the time of diagnosis which is also observed in other studies (6,11). This suggests an urgent need of some diagnostic modality for screening and early diagnosis of patients of lung cancer as well as measures to decrease tobacco consumption; the most important etiological factor responsible for lung cancer.

Conclusion

The lung cancer is emerging as a big medical and social problem for our country especially with rampant use of tobacco despite legislation to control it. Our patients are presenting in advanced stages of the disease whereby only palliation can be planned. The government should establish more centers for the treatment as affordability is major issue especially in the rural area. The government should strictly implement the rules and regulations for decreasing tobacco consumption. There is a need for strengthening cancer registry system in our country so that exact burden of the disease can be assessed and measures can be taken for planning and management of the disease. There is a need for new research in the field of early diagnosis and management for improvement of survival of the lung cancer patients. So, while awaiting a breakthrough in early diagnosis and effective management it is imperative that doctors keep a high clinical suspicion for it especially in the high risk groups of smokers and COPD patients and evaluate them appropriately to avoid misdiagnosis and delayed diagnosis of lung cancer.

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