

ORIGINAL RESEARCH

Clinico-Radiological And Pathological Profile of 300 Cases of Bronchogenic Carcinoma

Lokendra Dave¹, Swapnil S Garde², Ramakant Dixit³, T N Dubey⁴, Nishant Shrivastava⁵

ABSTRACT

Introduction: This study was planned to analyze the various clinical, radiological and pathological characteristics of patients diagnosed with bronchogenic carcinoma in our geographical area.

Materials And Methods: This prospective observational study was conducted on 300 patients presenting to our centre from 2008 to 2014 (six years).

Result: Over eighty percent patients were smoker and in two third patients smoking object was bidi. Majority of patients had smoking index of more than 300. The total duration of illness was less than 3 months in half of cases, with weight loss and anorexia as the most common constitutional symptoms. Cough and chest pain were most common cardinal respiratory symptoms. Half of the cases presented with Zubrods performance Index 3 or 4. Most common physical signs were anemia and clubbing followed by cervical or axillary lymphadenopathy.

Conclusion: The radio-imaging confirmed mass lesion and pleural effusion as commonest findings followed by consolidation. Special investigations like bronchoscopy and FNAC are having role in better diagnostic yield. Squamous cell carcinoma (42%) was commonest histological type followed by adenocarcinoma.

Keywords: Bronchogenic carcinoma, clinical profile, smoking

How to cite this article: Lokendra Dave, Swapnil S Garde, Ramakant Dixit, T N Dubey, Nishant Shrivastava. Clinico-Radiological and pathological profile of 300 cases of bronchogenic carcinoma. International Journal of Contemporary Medical Research 2015;2(3):635-638

¹Professor and Head, TB Chest, GMC Bhopal,
²Senior Resident, General Medicine, GMC Bhopal,
³Professor, TB Chest, JNL Medical College, Ajmer,
⁴Professor, Gen Medicine, GMC Bhopal, ⁵Senior Resident, TB Chest, GMC Bhopal, ⁶Assistant Professor, TB Chest, GMC Bhopal, India

Corresponding author: Dr Lokendra Dave, Professor and Head, Department of TB and Chest Diseases, Gandhi Medical College, Bhopal, India

Source of Support: Nil

Conflict of Interest: None

INTRODUCTION

Lung cancer is beyond doubt the leading cancer associated with enormous morbidity and mortality in industrialized countries and in India too it is fast catching the same distinction. The most commonly diagnosed cancers worldwide are lung cancer (1.61 million, 12.7% of the total), breast (1.38 million, 10.9%) and colorectal cancers (1.23 million, 9.7%)⁽¹⁾ In India, approximately 63,000 new lung cancer cases are reported each year² with increasing incidence in both sexes.³ The diagnosis of Lung cancer requires assessment at several levels. This includes clinical history taking, physical examination, chest radiography with CT scan, bronchoscopy & other allied procedures and finally FNA or tissue sampling from the lesion for final diagnosis.^{4,5} If diagnosis at an early stage, it can be easily treated and a significant increase in five year survival rate in non small cell lung cancer (NSCLC) can be achieved. Even small cell lung cancer (SCLC) with limited disease has an edge for the better prognosis. Hence the role of an early diagnosis of bronchogenic carcinoma is highly desirable which can lead to better management strategies and alleviate patients suffering to a great extent.

MATERIALS AND METHODS

This prospective observational study was conducted on 300 patients presenting to our centre from 2008 to 2014 (six years). After taking informed consent, the suspected patients of lung cancer were evaluated on the basis of history, clinical examination, imaging procedures (skiagram, CT scan, Ultrasonography of pleural space, mediastinum and abdomen), fiber-optic bronchoscopy (FOB), fine needle aspiration biopsy cytology (FNABC) of lung, lung biopsy and pleural fluid analysis with pleural biopsy etc. Patients were staged by TNM classification recommended by the International system for staging of lung cancer⁶. Patients were also followed up monthly and at the end of one year. All clinical, radiological and laboratory parameters were analysed and have been discussed here.

STATISTICAL ANALYSIS

SPSS version 21 was used to generate tables. Descriptive statistics was used to get results.

RESULTS

300 patients of Bronchogenic carcinoma were diagnosed, out of which 264 were males and 36 females. Patients were in the age group of 40-70 years with mean age of 55.78+/-6.818. Most of the patients (69%) were from rural areas.

Smoking status: 86% of cases were smoker and 14% were non smoker. The most common form of smoking object was found to be BIDI (79%). Amongst the studied population; 32.9% had smoking index 300-600 followed by index of 600-900 in 22.3% cases. (Table-1)

Duration of illness: Amongst the symptomatic patients 44% of cases had duration of symptom of 3 months while 35% were symptomatic from last 3 to 6 months. Only 6% patients (all males) were having total duration of symptoms of more than one year.

Symptoms:

- **Constitutional Symptoms:** In the lung cancer patients studied most common constitutional symptom was weight loss, found in 62% patients (58% males and 4% females). Second most common symptoms was anorexia found in 66% of cases (54%-male, 6%-female), other symptoms studied were fever, weakness or malaise.
- **Respiratory Symptoms:** In the studied group among the respiratory symptoms cough (81%) and chest pain (80%) were more commonly seen followed by shortness of breath, expectoration and haemoptysis in 62%, 52% and 37% of cases respectively.

Performance Index: Eastern co-operative oncology group (Zubrod) performance scale was followed which revealed 49% patients (45% male and 4% females) were having performance index 3 or more while only 14% patients (10% males and 4% females) had performance index zero at the time of diagnosis.

Physical Examination

On physical examination anaemia was the commonest sign seen in 78% patients (76% male and 2%female) followed by clubbing, cervical lymphadenopathy, hepatomegaly and superior vena cava syndrome (SVC) in 69%, 21%, 18% and 13% of cases respectively 16%(all males) had vocal cord paralysis and 4% lump abdomen.

Imaging Investigations: On skiagram, pleural effusion was commonest observation irrespective of sex, seen in 27% cases followed by mass lesion and consolidation in 25% and 23% cases respectively. Least common findings were pneumothorax (1%), metastatic deposits (1%) to opposite lung, skull and metacarpal was seen in one case each.

Even in Ultrasound evaluation (done in 71%) cases, pleural effusion was the commonest abnormal finding seen in 28% cases followed by hepatomegaly with metastatic deposits in 23.9%. In majority of the patients 33.8% there was no abnormality detected on ULTRASOUND evaluation.

On doing CECT and NECT (24% [n=72] patients), most common finding was parenchymal solid mass (16%, n=8) as compared to the 6 patients on skiagram. Consolidation and collapse diagnosed on chest SKIAGRAM turned out to be mass lesion on CT scanning, similarly pneumothorax on chest x ray was found to be loculated hydropneumothorax.

Bronchoscopic findings: 165 lung cancer patients were subjected to bronchoscopy and intra luminal growth was commonest finding seen in 56.3% cases. The frequency of other findings were mucosal congestion in 20%, narrowed lumen in 16.3%, mucosal irregularity in 7.2%, localized bulging in 3.6%, ulceration in 1.8% and plaque like lesions and widened carina had equal frequency of 1.8%. There was one case in which bronchoscopy revealed nothing abnormal.

Histologic Types in Lung Cancer patients

On histological breakup, squamous cell carcinoma was the commonest histological type in 42% cases followed by adenocarcinoma in 22% cases. In females adenocarcinoma was commonest. (Table 2)

Life span after diagnosis

Amongst 183 patients where life span detection after diagnosis could be possible, 47.5% patients died within 3 months of diagnosis, 27.8% died between 3-6 months and 13.1% patients died between 6-9 months of diagnosis. Only 6.5% patients survived more than one year after diagnosis.

DISCUSSION

The present prospective study of 300 cases of Bronchogenic carcinoma for evaluation of clinico-radiological features, histological types and trends in clinical and radiological behaviour was studied which included 264 males and 36 females with male:female ratio of 7.3:1 is suggestive that disease is more common in males. In studies like wig et al⁷, singh et al⁸, and karai et al⁹, Gupta et al¹⁰, had ratio of 4.9, 2.4

SMOKING INDEX	% of patients
<300	7
300-600	32.9
600-900	22.3
900-1200	15.2
1200-1500	5.8
>1500	16.4

Table-1: Smoking Index in study patients

A.	NSCLC	
	Squamous Cell Carcinoma	42%
	Adenocarcinoma	22%
	Large Cell Carcinoma	4%
B	Sclc	18%
C	Unclassified	14%

Table-2: Histological types of bronchogenic carcinoma

and 5.9 respectively, which matches the male dominance in our study.

The majority of cases (39%) were from the age group of 51-60 years. Mean age of male patients was 56+/-11.93 which is close to 55.8 years by Wig et al,⁷ 57.2+/-4 years in study conducted by Guleria et al,¹¹ 57.1 years by Sinha et al.⁸

Smoking has been implicated as the cause in about 85% of cases of Bronchogenic carcinoma and 86% patients were smoker in this study with smoker: non smoker ratio of 6:1 which is more in comparison to 1.9 reported by Jindal and Behera,¹² 2.7 by Arora et al¹³ and 4.2 by Rajasekran et al.¹⁴ The high risk of Bronchogenic carcinoma had a parallelism with increasing smoking index. 71% lung cancer patients were having smoking index above 300 in a large series from the study by Gupta et al.¹⁰ In a study by Arora et al.¹⁵ 57.1% of the lung cancer patients below the age of 40 years were having smoking index above 350. Thus, confirming the relationship between these two.

The total duration of symptoms at the time of presentation was less than 3 months in 44% cases in comparison to 25% of the cases by Jindal and Behera.¹² 35% patients were symptomatic for 3-6 months while 21% patients were symptomatic for 6 months. The latter were having more associated conditions and possibly this could be the reason for their long duration symptomatology. In the present study, major constitutional symptoms were weight loss (62%) and anorexia (60%) followed by weakness or malaise in 27% cases and fever in 20%. In other studies from the country weight loss and anorexia were seen in 77% cases by Gupta et al,¹⁰ 52.5% cases by Guleria et al,¹¹ weakness was seen in 20% cases by Jindal and Behera¹² and 34% by Gupta et al.¹⁰

The most common respiratory symptom was dry cough which was present in 81% cases followed by

chest pain (80%), breathlessness (62%), expectoration (52%) and hemoptysis in 37% cases. In Indian series by Jindal and Behera¹² reported chest pain in 52.2% cases. Guleria et al¹¹ analysed cases of bronchial carcinoma and reported chest pain in 42.2% patients. Gupta et al¹⁰ reported chest pain in 62% cases. Chest pain is emerging as one of the most common presenting respiratory symptoms among bronchial carcinoma patients. Among physical signs, anaemia was most common (78%) single, next was clubbing (69%), cervical lymphadenopathy (21%), hepatomegaly (18%) and SVC syndrome in 13% cases, which is consistent with studies done by Guleria et al,¹¹ Gupta et al,¹⁰ and Jindal and Behera.¹²

Among radiographic presentations pleural effusion was the commonest sign seen in 27% cases followed by mass lesion in 25%, consolidation in 23%, hilar and perihilar mass in 23%, collapse in 14%, mediastinal widening in 13%, rib erosion in 6%, cavitating mass/lung abscess and raised hemidiaphragm in 5% cases each in the present study. The observations of Gupta et al¹⁰ were obstructive pneumonitis/ collapse in 59.5%, mass lesion in 31.8%, rib erosion in 5.1%, Pleural effusion in 14.5%. On the other hand Jindal and Behera¹² found mass lesion (with or without collapse) in 70.7%, rib erosion in 4.5% and pleural effusion in 25.1% cases. The difference of present study with other part of study needs further confirmation and evaluation.

CT scan has advantage over routine chest radiography in detection of Bronchogenic carcinoma and the present study also showed superiority of CT scan in detection of mediastinal adenopathy, hilar adenopathy, rib erosion, presence of fluid in cavity/pneumothorax space and liver metastasis.

Bronchoscopy revealed intraluminal growth in 56.2% of attempted cases in present study followed by congestion in 20% and narrowed lumen in 16.3% cases, endobronchial growth as reported in 37.7% by Guleria et al¹¹, in 40% by Martini & McCormicke¹⁶ and in 53.5% cases by Jindal and Behera.¹² Narrowed lumen was noted in 18% cases by Martini & McCormicke¹⁶ and 9.3% in cases by Jindal and Behera.¹²

In the present study the incidence of squamous cell carcinoma was 42%, adenocarcinoma 22%, large cell carcinoma 4%, small cell carcinoma 18% and unclassified including rare tumors 14%. Table 3 shows histological types in other studies.

There is a great overlap of roentgenographic abnormality among the cell types of Bronchogenic carcinoma. Adenocarcinoma, frequently presents as peripheral mass²¹, and similarly 36 (12%) patients of this type have peripheral lesion against 24(8%) patients having central lesion in the present study. Squamous cell carcinoma and SCLC tend to be

centrally located lesion, in 66(22%) patients AND 48(16%) respectively.

CONCLUSION

Over eighty percent patients were smoker and in two third patients smoking object was bidi. Majority Patients of Bronchogenic carcinoma had smoking index of more than 300. The total duration of illness was less than 3 months in half of cases suggesting the speed of progression of symptoms, with weight loss and anorexia as most common constitutional symptoms. Cough and chest pain were most common cardinal respiratory symptoms. Half of the cases presented with Zubrods performance INDEX 3 OR 4. Most common physical signs were anemia and clubbing followed by cervical or axillary lymphadenopathy.

The radioimaging confirmed mass lesion and pleural effusion as commonest findings followed by consolidation. CECT or helical CT scan thorax is better investigation than chest radiography. Special investigations like bronchoscopy and FNAC are having role in better diagnostic yield. In Indian scenario squamous cell carcinoma was commonest among NSCLC, followed by adenocarcinoma.

REFERENCES

1. Ferlay J, Skin HR, Bray F, Forman D, Mathers C, Parkin DM. Estimates of worldwide burden of Cancer in 2008. GLOBCAN 2008, Int J Cancer 2010; 127; 2893-917
2. Ganesh B, Sushama S, Monika S, Suvarna P. A Case-control Study of Risk Factors for Lung Cancer in Mumbai, India. Asian Pac J Cancer Prev 2011;12:357-62.
3. Jindal SK; Pulmonary Neoplasms. In: JN Pande Respiratory Medicine in the Tropics. Delhi: Oxford University Press; 1998,439-450.
4. Plant P, Muers MF. Investigation and staging of lung cancer. J.Appl.Med 1997;3:205-210.
5. Becki GK, James CH and John WB. The cost of diagnosis and comparison of four different strategies in the work shop of solitary radiographic lung lesion. Chest1997; 111;870-876.
6. Gary M, strauss. Bronchogenic carcinoma. In: Text book of Pulmonary diseases 1998; 6th edition, lippincott-raven publishers, Philadelphia p. 1329-1382.
7. Wig KL, Lazaro EJ, GAdekar NG, Guleria JS. Bronchogenic carcinoma. Indian J Chest 1967;4:105-114.
8. Sinha BC. Lung Cancer: Clinical feature Indian J Chest Dis. 1961;3;219-2555.
9. Karai GS, Nath HK, Paul G, Saha D, Roy HK. Carcinoma of the Lung. A record and analysis of 100 cases. Indian J Cancer 1967;4:105-113
10. Gupta Rakesh C, purohit SD, Sharma MP et al. Primary Bronchogenic carcinoma: Clinical profile of 279 cases from mid wet rajasthan. Indian J Chest Dis allied sci. 1998; 40;109-116
11. Guleria JS, gopinath N, Talwar JR. Bhargava S, Pande JN, Gupta RG. Bronchial carcinoma- an analysis of 120 cases. J Asso Phys Indian 1971;19:251-255.
12. Jindal SK, Behera D. Clinical spectrum of primary lung cancer: Review of Chandigarh experience of 10 years. Lung India 1990;8:94-98.
13. Arora VK, Seetharaman ML, Ramkumar S et al. Bronchogenic carcinoma – clinicopathological pattern in south Indian population. Lung India 1990; 8:133-136.
14. Rajasekaran S, Manickam TG, Vasanthan PJ Pattern of lung cancer – A Madras study. Lung India 1993; 11:7-11.
15. Arora VK, Sharma V, Reddy KS. Bronchogenic carcinoma in patients below age 40 years and the response to radiotherapy with or without CMF regime. Lung India 1998; 16:155-158.
16. Martini N, Mc Cormick PM. Assessment of endoscopically visible bronchial carcinoma. Chest 1978;73:718-720.
17. Kenneth T, Bastin and Robert Curley. Non small cell lung carcinoma- current and future therapeutic management. Drugs 1996;49:362-373.
18. Viswanathan R, Gupta S, Iyer PVK. Incidence of primary lung cancer in India. Thorax 1962;17:73-76.
19. Shankar PS. Bronchogenic carcinoma. Indian J Chest Dis 1967; 9: 161-164.
20. Jha V K, Roy DC, Ravindran P. Bronchogenic carcinoma: A clinicopathological study. Ind J Chest Dis 1972; 14:78-85.
21. Narang RK, Dubey AL, Gupta MC, Raju S. Primary bronchial carcinoma: A clinical study. Indian J Chest Dis allied Sci 1977; 19:120-123.