Jena et al., J Pulm Respir Med 2019, 9:2
DOI: 10.4172/2161-105X.1000491

Journal of
Pulmonary & Respiratory Medicine

Research Article Open Access

A Clinico-Radiological and Pathological Evaluation of Bronchogenic Carcinoma with Special Reference to Immunohistochemistry Ki-67 in a Tertiary Care Hospital of Eastern India

Jena P, Pattnaik M, Patra JK*, Meher BK, Sethy HK, Mohanty T and Panda G

Department of Pulmonary Medicine, SCB Medical College and Hospital, Cuttack, Odisha, India

Abstract

Introduction: Lung cancer is the most commonly diagnosed cancer and leading cause of cancer related death worldwide. Ultimate determinant of patient management lies on histopathological evaluation of the disease process. Immunohistochemistry extends to the determination of cell lineage, determining the primary site of tumour origin and contributing to decisions on prognosis and targeted treatment. The proliferative activity of Ki-67 immuno-staining on biopsy specimens is known to be a valuable prognostic factor.

Aims and objective: To study clinicoradiological correlation with different histological type of bronchogenic carcinoma by different diagnostic modalities to establish diagnosis and to study immunomarker KI-67 in different histological type of lung cancer.

Materials and methods: The study was conducted in the Department of Pulmonary Medicine, SCB Medical College, and Cuttack in collaboration with Department of Pathology during the period May 2016 to December 2017.50 patients of various age groups with strong clinical suspicion and/or chest radiographic diagnosis of lung cancer were included in this study from IPD of Pulmonary Medicine. Patient having known coagulopathy, history of recent myocardial infarction and unwilling to give consent were excluded from the study.

Discussion: The present study constituted 31 males (62%) and 19 females (38%) out of the total 50 with a M: F ratio of 1.63:1. Cough (74%) was the most common symptoms followed by breathlessness (56%) and chest pain (52%). Pallor (44%) and clubbing (28%) most commonly seen followed by lymphadenopathy. The most common radiological presentation was mass lesion (52%) followed by combined presentation (44%) and collapse-consolidation (40%). Various diagnostic modalities used were fibre-optic bronchoscopy with biopsy (42.6%) followed by thoracoscopy and biopsy (23.4%). Evaluated biopsy specimen showed definite malignancy in 80%, inflammatory lesions in 8%, tuberculosis in 2%, fungal in 2% and inconclusive in 8% cases. Adenocarcinoma (45%) followed by Squamous cell Carcinoma (40%) were most commonly evaluated malignant lesions. Squamous cell carcinoma is associated with high Tumor Proliferative Fraction (TPF) with higher mean ki-67% value (46.5%) followed by small cell carcinoma (33.3%) and adenocarcinoma (28.2%).

Conclusion: Clinico-radiological examination along with histopathological evaluation of bronchogenic carcinoma is always necessary for accurate diagnosis, which help in proper sub-classification of tissue type in right clinical context. Immuno-histochemical markers help in subtyping the poorly differentiated carcinomas and predicting clinical evolution and response to treatment. Ki-67 antigen expression is useful to elaborate a therapeutic strategy before surgery or, alternatively, could be relied on to select chemotherapy protocols in non resectable lung carcinomas.

Keywords: Immunohisto-chemical markers; Lung cancer; Carcinoma

Introduction

Lung cancer is a major global health problem. Despite advances in prevention, diagnostics and therapies in the past decade, Lung cancer is the most commonly diagnosed cancer and leading cause of cancer related death worldwide [1]. The commonest presentation has been a mass lesion with or without collapse followed by pleural effusion and superior vena cava compression syndrome.

New imaging modalities like ultrasonography, computerized axial tomography, positron emission tomography, magnetic resonance imaging are being used widely these days, but ultimate determinant of patient management lies on histopathological evaluation of the disease process [2,3].

Immuno-histochemistry helps in supporting the morphological diagnosis of malignancy. Its role now extends to the determination of cell lineage, determining the primary site of tumour origin and contributing to decisions on prognosis and targeted treatment [4,5].

The proliferative activity, as detected by Ki-67 immuno-staining on biopsy specimens, is known to be a valuable prognostic factor. A high proliferative activity identifies a subset of cases with a more aggressive clinical course that may require a more intensive therapy. The preoperative evaluation of the Tumor Proliferative Fraction (TPF) on biopsy specimens might help to plan therapeutic strategies both in resectable lung cancer and nonresectable ones [4].

Aims and Objective

- To study clinicoradiological correlation with different histological type of bronchogenic carcinoma.

***Corresponding author:** Jeetendra Kumar Patra, Department of Pulmonary Medicine, SCB Medical College and Hospital, Cuttack, Odisha, Tel: 9623503906; E-mail: jeetendrakumarpatra@gmail.com

Received April 03, 2019; **Accepted** April 25, 2019; **Published** May 02, 2019

Citation: Jena P, Pattnaik M, Patra JK, Meher BK, Sethy HK, et al. (2019) A Clinico-Radiological and Pathological Evaluation of Bronchogenic Carcinoma with Special Reference to Immunohistochemistry Ki-67 in a Tertiary Care Hospital of Eastern India. J Pulm Respir Med 9: 491. doi: 10.4172/2161-105X.1000491

- To study different diagnostic modalities to establish diagnosis.
- To study immunomarker KI- 67 in different histological type of lung cancer.

Materials and Methods

Settings

The study was conducted in the Department of Pulmonary Medicine, SCB Medical College, and Cuttack in collaboration with Department of Pathology during the period May 2016 to December 2017.

Patient number

50 patients of various age groups with strong clinical suspicion and/or chest radiographic diagnosis of lung cancer were included in this study from IPD of Pulmonary Medicine.

Inclusion criteria

- A strong clinical suspicion of bronchogenic carcinoma.
- Plain chest radiographic diagnosis of bronchogenic carcinoma.

Exclusion criteria

- Any contraindication to invasive procedure like:

  a) Having known coagulopathy.

  b) History of recent myocardial infarction.

- Patient unwilling to give consent for invasive procedure like bronchoscopy, thoracoscopy, CT/USG guided biopsy.

Ethics

- The aims and objectives of my study were informed to every patient. Written consent was taken from each patient who participated in my study. I protected their identity while publishing the thesis work. Those who did not give their consent were excluded from my study.

This study was approved by Institutional Ethics Committee, SCB Medical College, Cuttack, Odisha with IEC/IRB No: 592/26.02.18.

Procedure to obtain tissue

- Bronchoscopy.
- CT/USG guided needle biopsy.
- Thoracoscopy guided lung biopsy.

Observation

The present study "Clinico-Radiological and Pathological evaluation of bronchogenic carcinoma with Special reference to Immunohistochemistry KI-67 was carried out in 50 patients with clinical suspicion of bronchogenic carcinoma.

Out of 50 cases 31 (62%) were males and 19 (38%) were females. Maximum numbers of patients belong to age group 60-79yrs (50%). Minimum number of patients belongs to age group >80 yrs (4%). Male: Female=1.63:1.

Association with smoking habit shows, among the 31 males, 25 (80.6%) were smokers and 6 (19.4) were non-smokers. Out of 19 females, all the 19 cases (100%) were non-smokers. Out of 22 smokers, 16 cases (40%) had smoking index in between 1 to 300, 4 cases (10%) had smoking index 301-600 and 2 cases (20%) had smoking index >600.

Results and Discussion

Primary lung cancer in India was rare during the early 20th century. But now with increased life span and increasing prevalence of smoking, lung cancer has reached an epidemic proportion in India [6]. It has become a major health problem. Bronchogenic carcinoma in clinical practice can vary widely and is usually difficult to diagnose without the aid of radiological evidence and tissue diagnosis. Immunohistochemistry is now an established ancillary technique in lung cancer diagnosis. It helps in supporting the morphological diagnosis of malignancy. Its role now extends to the determination of cell lineage, determining the primary site of tumour origin and contributing to decisions on prognosis and treatment. In this regard "A study of clinicoradiological and pathological evaluation of bronchogenic carcinoma with special reference immunohistochemistry KI-67" provides the optimum benefit to the patient and Pulmonologist in reaching a correct diagnosis and predicting prognosis.

In the light of above facts the study of "Clinico-Radiological & Pathological evaluation of bronchogenic carcinoma with special reference to immunohistochemistry KI-67" was done in 50 cases in the Department of Pulmonary Medicine with collaboration of department of pathology, SCB Medical College & Hospital, during the period from May 2016 to December 2017.

Mandal et al. [7], in his study with findings of M: F ratio of 1.09:1 with most cases were more than 60 years of age (67.8%) and age ranging from 39-85 years. Baburao and Narayanswamy [8] in a study of 96 patients male to female ratio of 3:1. Distribution of age varied from 40 to 90 years, with a major contribution in the age group between 61 and 80 years (55.2%). Rawat et al. [9] reported Male to female ratio was 8.2:1. The common age group being 40-60 years, 9.86% of the patients were less than 40 years old age.

The present study constituted 31 males (62%) and 19 females (38%) out of the total 50 with a M: F ratio of 1.63:1 (Table 1). The age ranged from 32-87 years. The most common age group affected was within 60-79 years in which 25 (50%) patients were found and the least common age group was more than 80 years, in which 2 (4%) patients were found. Many studies have reported high M:F ratio, attributing it to smoking, more exposure to toxic substance and outdoor life of males. My study coincides with Mandal et al. [7].

The risk of malignancy increases in smoking index. It is the product of average number of cigarettes per day and total period of smoking in years. Jindal and Behera [10], reported from their study that 69% of their patients were smokers, 91.3% smokers had smoking index above 300. Rawat et al. [9] studied 203 patients of lung cancer where

Clinical symptoms and signs	Number of cases	% of total cases
Cough	37	74
Fever	13	26
Chestpain	26	52
Breathlessness	28	56
Loss of apetite and weight	25	50
Hemoptysis	12	24
Pallor	22	44
Clubbing	14	28
Lymphadenopathy	6	12
SVC obstruction	3	6

Table 1: Cough (74%) followed by breathlessness (56%) were the most common symptoms whereas pallor (44%) and clubbing (28%) were the most common signs the patients presented with.

Smoking was found to be the main risk factor in 81.77% patients. Singh and Vinod [11] analysed 434 lung cancer cases where 68% of patients were smokers. Mandal et al. [7] studied on 466 lung cancer patients and concluded that 78.8% of patients were chronic smokers with male smoker to female smoker ratio of 1.43:1.

80.6% males in our study are smokes and all females (100%) were non-smoker out of them, (40%) had smoking index in between 1 to 300, (10%) had smoking index 301-600 and (20%) had smoking index >600 (Tables 2 and 3).

The increased proportion in smoking status of my study correlates with the report from different parts of India [9]; Singh and Vinod [11]. Higher prevalence of tobacco use among male could be due to easiness in availability and cheaper cost of such items.

Rawat and Sindhwani [9] studied 203 patients of lung cancer where most frequent symptom was cough (72.9%). Jindal and Behera [10] studied 794 patients of primary lung cancer and opine that 88% cases complained cough with or without expectoration. Singh and Vinod [11] analysed 434 lung cancer cases where most common presenting symptom in both NSCLC and SCLC was cough (57.03% and 57.8% respectively).

In our studies cough (74%) was the most common symptoms followed by breathlessness (56%) and chest pain (52%) in cases of bronchogenic carcinoma (Table 4). This is similar to reports published by author Rawat and Sindhwani [9].

Cohen and Hossain [12] reported out of 417 cases of lung cancer, 24% having pallor and 50 (12%) were having clubbing, Guleria et al. [13] reported pallor (39%) and clubbing in 26% among 120 cases of lung cancer. Jindal and Behera [10] studied 1009 cases of bronchogenic carcinoma, out of which 28 number of cases having clubbing.

My study showing Pallor (44%) and clubbing (28%) most commonly followed by lymphadenopathy tallies [13] (Table 4). Rawat and Sindhwani [9] opine that most common presentation was mass (46%) followed by collapse consolidation (40.83%) and pleural effusion (4.43%). Prasad et al. [14] opine that X-ray findings in the patients were as follows: 44 (60.3%) presented with a mass lesion, 32 (43.8%) with pleural effusion and 14 (19.2%) with collapse/consolidation.

Dey et al. [15] opine that radiologically upper zone is the most involved zone (40.19%) followed by midzone (34.9%) and lower zone (22.07%). Mass is the most common lesion of bronchogenic carcinoma (77.3%) followed by pleural effusion (27.8%) and collapse (18.6%).

Mandal et al. [7] opine that the most common radiological presentation was a mass lesion (70%) followed by combined presentation (20.3%), collapse consolidation (6.7%) and pleural effusion (3%). Right lung (60.3%) was most common site of primary site, followed by left lung (39.1%) and both lung (0.6%).

Baburao and Narayanswamy [8] reported that mass lesion (55.2%) was the commonest radiological feature followed by collapse consolidation (28.1%), pleural effusion (9.37%) and combined presentation (7.29%). Right lung (57.2%) was the commonest primary site followed by left lung (39.5%) and both lung (3.12%).

The most common radiological presentation seen in our study is mass lesion (52%) followed by combined presentation (44%) and collapse-consolidation (40%) similar to reports published in Indian literature (Rawat and Sindhwani [9] Prasad et al. [14]) with predominantly involving right lung at presentation (52%) (Table 5).

Radiological manifestation site	Number of cases	% of total cases
Bilateral	6	12
Right lung	26	52
Left lung	18	36
Mass lesion	26	52
Collapse-consolidation	20	40
Pleural effusion	15	30
Combined presentation	22	44

Table 2: The above table shows that most patients suspected of bronchogenic carcinoma clinic-radiologically presented with features of mass lesion (52%) followed by combined presentation (44%) and collapse-consolidation (40%). Radiographically right lung (52%) is involved most followed by left lung (36%) and bilateral involvement in 12% of cases.

Total cases	Biopsy (bronchoscopy/thoracoscopy/CT guided/ USG guided			Inconclusive
	Done	Adequate material	Inadequate material	
50	50	46	4	4

Table 3: Samples were adequate in 46 cases (92%). 4 cases (8%) have inconclusive report due to inadequate material.

Diagnostic procedures	Number of cases	Percentage
Fiber optic bronchoscopy and biopsy	20	42.6
Thoracoscopy and biopsy	11	23.4
Usg/CT guided transthoracic needle biopsy	9	19.1
Pleural fluid cytology	4	8.5
Lymph node aspiration cytology	3	6.4
Total	47	100

Table 4: Among various diagnostic modalities used either single or in combination, fibreoptic bronchoscopy and biopsy (42.6%) stands out as front liner followed by thoracoscopic biopsy (23.4%).

Pathological diagnosis	No. of cases	%
Neoplastic		
Malignant-40	40	80%
Non neoplastic		
Non-specific Inflammation-4	6	12%
Tubercular-1		
Fungal-1		
Non-diagnostic		
Inconclusive	4	8%
Total	50	100

Table 5: Majority of the cases were malignant (80%) followed by benign lesion (12%). 4 cases (8%) cases came out to be non-diagnostic. Out of benign lesion one case came out as tuberculosis and one came out as fungal infection, rest 4 (8%) cases came out as non-specific inflammation histopathologically.

All cases were subjected to biopsy by different modalities like (Bronchoscopic/Thoracoscopic/CT guided/USG guided). In the present study adequacy of sampling was 92% (Table 6). Bronchoscopy was the commonest diagnostic tool used in patients with suspected endobronchial tumour. Peripherally situated mass lesions which were beyond the bronchoscopic reach were diagnosed with CT guided biopsies and thoracoscopy for patients presented with pleural effusion (Table 7). Rawat et al. [9] showed usefulness of bronchoscopy in 48.77% patients followed by Fine needle aspiration biopsy in 43.84% cases. Jindal and Behera [10,6] described contribution of different procedures towards the diagnosis of lung cancer where they showed bronchoscopy contributes the most (38.4%) followed by fine needle lung aspiration

biopsy (12.7%). Similarly Baburao and Narayanswamy [8] showed bronchoscopy (68.75%) is the most common diagnostic modalities used followed by CT guided biopsy (22.91%).

Among various diagnostic modalities used in my study either single or in combination, fibre-optic bronchoscopy and biopsy (42.6%) stands out as front-liner followed by thoracoscopy and biopsy (23.4%) (Table 7). So my study coincides with Rawat et al. [9].

The biopsy specimen evaluated in the present study (Table 8) showed definite malignancy in 80%, inflammatory lesions in 8%, tuberculosis in 2%, fungal in 2% and inconclusive in 8% cases. Rawat et al. [9] where majority of malignant lesions were Adenocarcinoma (45%) followed by Squamous cell Carcinoma (40%). Adenocarcinoma is commonest tumor in both male and female (Tables 9 and 10). Krishnamurty et al. [16] reported that most common histology was adenocarcinoma (42.6%) followed by squamous cell carcinoma (15.6%). Singh and Vinod [11] found that adenocarcinoma is the most common histology (37.3%).

Cell type	No. of cases	%
Adenocarcinoma	18	45
Squamous cell carcinoma	16	40
Small cell carcinoma	3	7.5
Anaplastic carcinoma	2	5
Large cell carcinoma	1	2.5
Total	40	100

Table 6: Majority of malignant lesions were Adenocarcinoma (45%) followed by Squamous cell Carcinoma (40%).

Pathologic variant	Smoker (%)	Non-smoker (%)
Adenocarcinoma	7 (31.8)	11 (61.1)
Squamous cell carcinoma	10 (45.4)	6 (33.3)
Small cell carcinoma	2 (9.09)	1 (5.6)
Anaplastic cell	2 (9.09)	0
Large cell carcinoma	1 (4.5)	0

Table 7: In all 40 confirmed cases of bronchogenic carcinoma, Adenocarcinoma 18 (45%) cases were the most common lung cancer among both male and female.

Pathologic variant	Smoker (%)	Non-smoker (%)
Adenocarcinoma	7 (31.8)	11 (61.1)
Squamous cell carcinoma	10 (45.4)	6 (33.3)
Small cell carcinoma	2 (9.09)	1 (5.6)
Anaplastic cell	2 (9.09)	0
Large cell carcinoma	1 (4.5)	0

Table 8: The above table shows most common histologic variant among smokers is squamous cell carcinoma (45.4%) and among non-smoker is adenocarcinoma (61.1%).

Types of bronchogenic carcinoma	Total number of cases	Mean % of Ki-67
Adenocarcinoma	18	28.2
Squamous cell carcinoma	16	46.5
Small cell carcinoma	3	13.3
Large cell carcinoma	1	20
Anaplastic variant	2	25

Table 9: The above table shows squamous cell carcinoma histologic type is associated with high Tumor Proliferative Fraction (TPF) as marked by higher mean ki-67% value (46.5%) followed by small cell carcinoma (33.3%) and adenocarcinoma (28.2%).

In our study majority of malignant lesions were Adenocarcinoma (45%) followed by Squamous cell Carcinoma (40%) (Table 9). This is same as other studies like Krishnamurty et al. [16]. Most common histologic variant among smokers is squamous cell carcinoma (45.4%) and among non-smoker is adenocarcinoma (61.1%) (Table 11) similar to study of Rawat et al. [9].

Expression of the Ki-67 protein (pKi-67) is associated with the proliferative activity of intrinsic cell populations in malignant tumors, allowing it to be used as a marker of tumor aggressiveness. The Ki-67 Labelling Index (LI) were defined as the percentage of tumor cells displaying nuclear immuno-reactivity and calculated by counting the number of nuclear Ki-67-stained tumor cells in 1000 tumor cells in each section.

Viberti et al. [17] studied in 66 resectable lung carcinomas, the tumor proliferative fraction was 57% in squamous cell carcinoma, 39.4% in adenocarcinoma not otherwise specified, 23.9% in bronchioloalveolar carcinoma, and 24.4% in Neuroendocrine tumors.

Mehdi et al. [18] investigated 260 patients with stage I and II NSCLCs and reported that Ki-67 expression was higher in squamous cell cancers than in non-squamous cell cancers. He showed squamous cell carcinomas (86.0%) had high Ki-67 staining, while adeno-carcinoma/large cell (71%) had high Ki-67. Haga et al. [19] observed high Ki-67 LI was significantly associated squamous cell carcinoma histology.

Our study shows sqamous cell carcinoma histologic type is associated with high tumor proliferative fraction (TPF) as marked by higher mean ki-67% value (46.5%) followed by small cell carcinoma (33.3%) and adenocarcinoma (28.2%) (Table 12). It is similar to other study (Viberti et al., Haga et al. [19] where high ki-67 was found in squamous cell carcinoma compared to non-squamous cell carcinoma.

Haga et al. [19] showed A high Ki-67 LI was found in 116 of the 215 (54%) tumors and Nicola ciancio et al. showed 42.1% patients with a higher Ki 67 score (>25% positive cell). In our study (60%) bronchogenic carcinoma samples having moderate proliferation followed by (27.5%) samples shows moderate proliferation and 12.5% cases shows low proliferation (Table 13). My study does not correlate with any study because majority patients were adenocarcinoma having moderate proliferation fraction.

Haga et al. [19] a high Ki-67 LI was significantly associated with male gender, squamous cell carcinoma histology and smoking ($p<0.0001$ each). Mehdi et al. [18] showed high Ki-67 expression was found in 85.5% of males as compared with 55.4% of females.

Type of Lesion	Clinico-radiological diagnosis	Pathological diagnosis			Microbiology	
		Correct	Incorrect	Inconclusive/Inadequate material	Positive for tuberculosis	Positive for fungal
Malignant	42	37	3	2	AFB^{+VE}	Fungal +ve
Benign	8	3	3	2	-	-
Total	50	40	6	4		

Table 10: Out of 46 cases, in 40 cases a complete clinico-radiological and pathological correlation was done. In 6 cases there was no correlation between clinico-radiological and pathological diagnosis. The clinico-radiological and pathological correlation of bronchogenic carcinoma in present study is 40/46 (86.9%).

Clinico-radiological diagnosis	Pathological diagnosis		Chi-square value	p-value
	Malignant	Benign		
Malignant	37	3	8.3088	0.003945
Benign	3	3		

Table 11: Shows the association between clinic-radiological and pathological diagnosis by chi-square test .The chi-square test value (8.3088) was compared at 1% level of significance with tabulated value at 1 degree of freedom and found to be highly significant (p=0.003945).

Pathological evaluation	Values
Total number of cases evaluated	50
Biopsy done	50
Adequate material obtained	46
Inadequate material	4
Malignant lesion	40
Immuno-histochemistry (ki-67) done	40
Common age group of bronchogenic carcinoma	>60years
M:F ratio of bronchogenic carcinoma	1.67:1
Most common type of lung cancer	Adenocarcinoma
Most common modality used for diagnosis	Bronchoscopy
Type of histologic variant associated with highest mean ki-67% value	Squamous cell carcinoma
Clinico-Radiological & pathological correlation	86.90%
Chi-square value at 1% significance	8.3088

Table 12: Observation at a glance of clinico-radiological and pathological evaluation of bronchogenic carcinoma with Special reference to immunohistochemistry marker ki-67.

Age group (in years)	No. of cases (%)	Male (%)	Female (%)
30-40	5(12.5)	2(5)	3 (7.5)
41-59	13(32.5)	8 (20)	5 (12.5)
≥ 60	22(55)	15(37.5)	7 (17.5)
Total	40(100)	25(62.5)	15 (37.5)

Table 13: Shows the age and sex distribution of cases of bronchogenic carcinoma. Out of 40 cases 25 (62.5%) were males and 15(37.5%) were females. Male: Female=1.67:1, Maximum numbers of patients belong to age group ≥ 60 yrs (22 cases). Minimum numbers of patients belong to age group 30-40yrs (5 cases).

Sex	No. of Patients	Smoker		Non-Smoker	
		No.	%	No.	%
Male	25	22	88	3	12
Female	15	0	-	15	100

Table 14: Association with smoking habit shows among the 25 males,22 were smokers (75.9%) and 3 were non-smoker (24.1%). Out of 15 females, all the 15 cases were non-smokers.

Our study shows that Males have high proliferative index as marked by higher mean ki-67% value (38.92%) compared to female sex (35.33%) (Table 14) and patients who smokes have a higher mean ki-67% value in comparison to patients who never smokes.

Viberti et al. [17] showed mean tumor proliferative fraction was 40.3% in bronchial biopsy followed by 26.3% in fine needle aspiration biopsy. In my study the proliferative activity of bronchogenic carcinoma is assessed maximally by fiber-optic bronchoscopy biopsies (34.5%) followed by CT guided biopsy (28.88%) and thoracoscopic biopsy (27.27%). It is similar to other studies like Viberti et al. [17]. This may be due to most cases approached by bronchoscope were of central tumour of squamous cell variant.

The Clinico-Radiological diagnosis was compared with the pathological diagnosis in 46 cases. In 40 cases the Clinico-Radiological diagnosis was well correlated with the pathological diagnosis. 1 Case suspected to be malignant Clinico-Radiologically came out to be Fungal pathologically. 1 case suspected to be malignant clinico-radiologically came to be tubercular. Similarly 3 cases suspected to be benign clinico-radiologically came out to be malignant pathologically. In 4 cases there was in-conclusive report/in-adequate sample. The Clinico-Radiological & Pathological correlation of bronchogenic carcinoma in my study is 86.9%. The chi-square test value (8.3088) was compared at 1% level of significance with tabulated value at 1 degree of freedom and found to be highly significant (p=0.003945) with a sensitivity of 92.5% and specificity of 50%.

Conclusion

Clinico-Radiological examination along with histopathological evaluation of bronchogenic carcinoma is always necessary for accurate diagnosis, which help in proper sub-classification of tissue type in right clinical context. Unsatisfactory and benign lesions with high degree of suspicion needs clinical correlation and close follow up where a re-biopsy may be necessary.

The current therapeutic strategies for lung cancers require accurate morphological differentiation between variants of bronchogenic carcinoma. Immuno-histochemical markers help in subtyping the poorly differentiated carcinomas and predicting clinical evolution and response to treatment.

This study concludes that the tissue obtained by bronchial, FNA biopsies of lung and pleural biopsy to diagnose carcinoma and may provide reliable information about the Tumor Proliferation Fraction (TPF) as detected by Ki-67 immuno-staining. Further management of patients depends upon the Tumor proliferation fraction in selecting chemotherapy protocols and predicting prognosis of patients which guide to further follow up. The limitation of this study includes use of one immunomarker. Other sensitive markers like TTF-1, P63, PAN CK; synaptophysin may be taken which could help in management of patient.

In conclusion, tumor proliferative activity and smoking status before surgery were important prognostic factors in patients with bronchogenic carcinoma and detecting the Ki-67 antigen expression was useful to elaborate a therapeutic strategy before surgery or,

alternatively, could be relied on to select chemotherapy protocols in non resectable lung carcinomas.

References

1. Alberg AJ, Ford JG, Samet JM (2007) Epidemiology of lung cancer. ACCP evidence-based clinical practice guidelines. 2nd edition. Chest 132: 29-55.
2. Tuddenham WJ (1984) Glossary of terms of thoracic radiology: Recommendations of nomenclature committee of the flieschner society. AJR Am J Roentgenol 143: 509-517.
3. Bhatia A, Singh N, Arora VK (2004) A perspective on cytology of lung cancer. Indian J Chest Dis Allied Sci 46: 81-83.
4. Kasper DL, Fauci AS, Hauser SL, Longo DL, Jameson JL, et al. (2016) Harrison's principles of internal medicine. 19 edition. McGraw Hill Education Medical, New York.
5. Walker C, Chung J (2018) Mullers Imaging of the chest. 2nd edition pp: 9-136.
6. Behera D, Balmugesh T (2004) Lung cancer in India. Indian J of Chest Dis Allied Sci 46: 269-281.
7. Mandal SK, Singh TT, Sharma TD, Amrithalingam V (2013) Clinico-pathology of lung cancer in a regional cancer center in Northeastern India. Asian Pac J Cancer Prev 14: 7277-7281.
8. Baburao A, Narayanswamy H (2015) Clinico-pathological profile and haematological abnormalities associated with lung cancer in Bangalore. Asian Pac J Cancer Prev 16: 8235-8238.
9. Rawat J, Sindhwani G, Gaur D, Dua R, Saini S (2009) Clinico-pathological profile of lung cancer in Uttarakhand. Lung India 26: 74-76.
10. Jindal SK, Behera D (1990) Clinical spectrum of primary lung cancer review of Chandigarh experience of 10 years. Lung India 8: 94-98.
11. Singh MP, Vinod R (2015) Lung cancer: Prevalent trends and emerging concepts. Indian J Med Res 141: 5-7.
12. Cohen S, Hussain MS (1966) A review on bronchogenic carcinoma. NEJM 21: 571-578.
13. Guleria JS, Gopinath N, Talwar JR, Bhargave S, Pande JN, et al. (1971) Bronchial carcinoma an analysis of 120 cases. J Ass Phy India 19: 251-255.
14. Prasad R, Verma SK, Sanjay V (2009) Comparison between young and old patients with bronchogenic carcinoma. J Cancer Res Ther 5: 31-35.
15. Dey A, Biswas D, Saha SK, Kundu S, Kundu S, et al. (2012) Comparison study of clinicoradiological profile of primary lung cancer cases: An Eastern India experience. Indian J Cancer 49: 89-95.
16. Krishnamurthy A, Vijayalakshmi R, GadigiV, Ranganathan R, Sagar TG (2012) The relevance of "Nonsmoking-associated lung cancer" in India: A single-centre experience. Indian J Cancer 49: 82-88.
17. Viberti L, Papotti M, Abbona GC, Celano A, Filosso PL, et al. (1997) Value of Ki-67 immunostaining in preoperative biopsies of carcinomas of the lung. L Hum Pathol 28: 189-192.
18. Mehdi SA , Etzell JE, Newman NB, Weidner N , Kohmanb LJ, et al. (1998) Prognostic significance of Ki-67 immuno-staining and symptoms in resected stage I and II non-small cell lung cancer. Lung Cancer 20: 99-108.
19. Haga Y, Hiroshima K, Iyoda A, Shibuya K, Shimamura F, et al. (2003) Ki-67 expression and prognosis for smokers with resected stage I non–small cell lung cancer. Ann Thorac Surg 75: 1727-1732.