ORIGINAL RESEARCH PAPER

Volume-8 | Issue-5 | May-2019 | PRINT ISSN No 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

CLINICAL AND EPIDEMIOLOGICAL PROFILE OF CARCINOMA LUNG AT TERTIARY CARE CENTRE

Gynaecology

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ABSTRACT

Present study was conducted in the Department of Internal Medicine in Command Hospital (EC), Kolkata, and West Bengal. 54 lung carcinoma patients were selected from October 2016 to June 2018. Informed consent was taken from all the patients and the approval of Ethics committee was being sought.

We found that 3(5.6%) patients had ALK Positive for mutational Study, 4(7.4%) patients had EGFR Positive for mutational Study and (96.3%) patients had no for mutational Study. 2(5.3%) patients had ALK Positive for mutational Study in adenocarcinoma, 3(7.9%) patients had EGFR Positive for mutational Study in adenocarcinoma and 33(86.8%) patients had no for mutational Study in adenocarcinoma. Adenocarcinoma patients more common in male and advanced stage also.

We also concluded that 38(70.4%) patients had Adenocarcinoma and that was higher prevalence. According to mutational study 3(5.6%) patients had ALK Positive, 4(7.4%) patients had EGFR Positive. Adenocarcinoma is the commonest subtype. Poor performance status advanced disease is the most common presentation. We found that according to stage Kaplan Meier Survival Curve for Overall survival was showing statistically significant. Poor survival was observed in stage IV.

KEYWORDS

EPIDIMIOLOGICAL PROFILE, CARCINOMA LUNG, ADENOCARCINOMA, ALK, EGFR, OVERALL SURVIVAL

INTRODUCTION

Lung cancer is one of the most frequently diagnosed cancers and the most common cause of cancer-related death worldwide.[1,2] It is the leading cause of cancer related mortality in the world. The two main types are small-cell lung carcinoma (SCLC) and non-small-cell lung carcinoma (NSCLC). [3] The most common symptoms are coughing (including coughing up blood), weight loss, shortness of breath, and chest pains. [1]

The vast majority (85%) of cases of lung cancer are due to long-term tobacco smoking. [4] About 10–15% of cases occur in people who have never smoked. [5] These cases are often caused by a combination of genetic factors and exposure to radon gas, asbestos, second-hand smoke, or other forms of air pollution. [6] Lung cancer may be seen on chest radiographs and computed tomography (CT) scans. [7] The diagnosis is confirmed by biopsy which is usually performed by bronchoscopy or CT-guidance. [8]

With some important exceptions, the prognosis for lung cancer patients is poor. Unfortunately, cases of lung cancer are most often detected relatively late in the illness, which makes cure less likely. However, with appropriate treatment, survival and prognosis can be improved considerably. [9] The 5-year survival rate of those with lung cancer is approximately 15%; however depending on cancer type and stage, this number can vary between 1% and 50%. [10] The aim of the study was to look at the epidemiology, clinical signs and symptoms ,stage, pathological profile of carcinoma, the progression free survival and overall survival lung patients undergoing treatment at a tertiary care Centre.

MATERIAL AND METHOD

54 lung carcinoma patients were taken in Command Hospital (Eastern Command), Kolkata.

Inclusion criteria

All cases of lung cancer patient admitted in CH (EC), KOLKATA

Exclusion criteria

(a) Patient without histopathological diagnosis.
(b) Patient with multiple cancer

Statistical Analysis:

For statistical analysis data were entered into a Microsoft excel spreadsheet and then analyzed by SPSS 24.0. and GraphPad Prism version 5. Data had been summarized as mean and standard deviation for numerical variables and count and percentages for categorical variables. A chi-squared test ($\chi 2$ test) was any statistical hypothesis test wherein the sampling distribution of the test statistic is a chi-squared distribution when the null hypothesis is true. Without other qualification, 'chi-squared test' often is used as short for Pearson's chi-squared test. Unpaired proportions were compared by Chi-square test or Fischer's exact test, as appropriate. p-value ≤ 0.05 was considered for statistically significant.

RESULT AND ANALYSIS

We found that 9(16.7%) patients had ≤40 yrs of age group, 21(38.9%) patients had 41-50 yrs of age group, 16(29.6%) patients had 51-60 yrs of age group and 8(14.8%) patients had >60 yrs of age group. The mean age (mean± s.d.) of patients 50.3704 ±8.5612 years with range 38.00-67.00 years and the median age was 50.00 years. It was found that 12(22.2%) patients had female and 42(77.8%) patients had male. We found that 4(7.4%) patients had profession, 6(11.1%) patients had clerical, shop-owner, 20(37.0%) patients had skilled worker, 13(24.1%) patients had semi-skilled worker, 7(13.0%) patients had unskilled worker and 4(7.4%) patients had unemployed. It was found that 9(16.7%) patients had presenting complain of chest pain, 22(40.7%) patients had presenting complain of chest pain and cough, 4(7.4%) patients had presenting complain of cough, 5(9.3%) patients had presenting complain of cough and fever, 5(9.3%) patients had presenting complain of fever, 2(3.7%) patients had pleural effusion and 7(13.0%) patients had shortness of breath. We found that 4(7.4%) patients had CAD comorbidity, 12(22.2%) patients had DM comorbidity and 12(22.2%) patients had HTN comorbidity. It was found that 2(3.7%) patients had history of TB. We found that 33(61.1%) patients had smoking history.

It was found that 8(14.8%) patients had IIIA stage, 7(13.0%) patients had IIIB stage and 39(72.2%) patients had IV stage.We found that all patients had normal CBC. It was found that 17(31.5%) patients had bilateral lung mass chest X-ray, 9(16.7%) patients had homogenous opacity right middle lung chest X-ray, 14(25.9%) patients had opacity in left upper lung, 12(22.2%) patients had opacity in right upper lung and 2(3.7%) patients had right massive pleural effusion. We found that 2(3.7%) patients had left upper lobe mass PET CT, 20(37.0%) patients had metabolic active lesion left upper lobe PET CT, 2(3.7%) patients had metabolic active soft lesion right upper lobe PET CT, 24(44.4%)

patients had ND PET CT, 2(3.7%) patients had pleural effusion with collapse PET CT, 3(5.6%) patients had right hilar mass PET CT and 1(1.9%) patients had right hilar mass with liver Mets PET CT.

It was found that 9(16.7%) patients had left upper lobe lung mass bronchoscopy finding, 28(51.9%) patients had ND bronchoscopy finding, 3(5.6%) patients had pressure effect on right upper lobe and right lower lobe bronchoscopy finding and 14(25.9%) patients had right upper lobe lung mass bronchoscopy finding.

We found that 46(85.2%) patients had adenocarcinoma histopathology, 4(7.4%) patients had non-small cell lung carcinoma histopathology, 2(3.7%) patients had small cell lung carcinoma histopathology and 2(3.7%) patients had squamous cell carcinoma histopathology. It was found that 3(5.6%) patients had ALK Positive Mutational Study, 4(7.4%) patients had EGFR Positive Mutational Study and 47(87.0%) patients had No Mutational Study.We found that aassociation of histopathology vs. sex was not statistically significant (p=0.2414). We found that aassociation of histopathology vs. history of TB was statistically significant (p=0.9481). It was found that aassociation of histopathology vs. mutational study was not statistically significant (p=0.8476).We found that aassociation of histopathology vs. Stage history was not statistically significant(p=0.8294).

DISCUSSION

Present study was conducted in the Department of Internal Medicine in Command Hospital (EC), Kolkata, and West Bengal. 54 lung carcinoma patients were selected from October 2016 to June 2018. Informed consent was taken from all the patients and the approval of Ethics committee was being sought. PANIGRAHI MK et al [11] found that mean age of presentation was 55±9.62. Seven (5.6%) patients were =40 years. Ninety-five (76%) were male. Trufelli DC et al [12] found that in 171 patients analyzed, the average age was 64 years, ranging from 33 to 90 years. As for gender, 114 (66.67%) were men and 57 (33.33%), women. 119 patients were smokers (69.59%), and the remaining 52 (30.41%), non-smokers.

We found that 9(16.7%) patients had ≤40 yrs of age group, 21(38.9%) patients had 41-50 yrs of age group, 16(29.6%) patients had 51-60 yrs of age group and 8(14.8%) patients had >60 yrs of age group. The mean age (mean± s.d.) of patients 50.3704 ±8.5612 years with range 38.00-67.00 years and the median age was 50.00 years.

We also showed that 12(22.2%) patients had female and 42(77.8%) patients had male. We also found that 30(78.9%) male patients had adenocarcinoma but this was not statistically significant.

Present study found that 33(61.1%) patients had smoking history. It was found that 4(7.4%) patients had profession, 6(11.1%) patients had clerical, shop-owner, 20(37.0%) patients had skilled worker, 13(24.1%) patients had semi-skilled worker, 7(13.0%) patients had unskilled worker and 4(7.4%) patients had unemployed.

PANIGRAHI MK et al [11] found that Cough in 110 (88%), dyspnea in 92 (73.6%) and chest pain in 63 (50.4%) were the predominant symptoms among patients. 9(16.7%) patients had presenting complain of chest pain, 22(40.7%) patients had presenting complain of chest pain and cough, 4(7.4%) patients had presenting complain of cough, 5(9.3%) patients had presenting complain of cough and fever, 5(9.3%) patients had presenting complain of fever, 2(3.7%) patients had pleural effusion and 7(13.0%) patients had shortness of breath.

4(7.4%) patients had CAD comorbidity, 12(22.2%) patients had DM comorbidity and 12(22.2%) patients had HTN comorbidity. 2(3.7%) patients had history of TB. PANIGRAHI MK et al[11] found that majority of NSCLC patients 70 patients (61%) presented with stage IV disease followed by IIIB (17.4%), IIIA (12.2%), IIB (6%) and IIA (3.4%). Nine out of ten with SCLC had extensive disease. We found that 7(18.4%) patients had stage IIIA, 5(13.2%) patients had stage IIIB and 26(68.4%) patients had stage IV with adenocarcinoma. We found that 8(14.8%) patients had IIIA stage, 7(13.0%) patients had IIIB stage and 39(72.2%) patients had IV stage.

All patients had normal CBC. 17(31.5%) patients had bilateral lung mass chest X-ray, 9(16.7%) patients had homogenous opacity right middle lung chest X-ray, 14(25.9%) patients had opacity in left upper lung, 12(22.2%) patients had opacity in right upper lung and 2(3.7%) patients had right massive pleural effusion. 2(3.7%) patients had left upper lobe mass PET CT, 20(37.0%) patients had melabolic active lesion left upper lobe PET CT, 2(3.7%) patients had metabolic active soft lesion right upper lobe PET CT, 24(44.4%) patients had ND PET CT, 2(3.7%) patients had pleural effusion with collapse PET CT, 3(5.6%) patients had right hilar mass PET CT and 1(1.9%) patients had right hilar mass with liver Mets PET CT. 9(16.4%) patients had left upper lobe lung mass bronchoscopy finding, 29(52.7%) patients had ND bronchoscopy finding, 3(5.5%) patients had pressure effect on right upper lobe and right lower lobe bronchoscopy finding and 14(25.5%) patients had right upper lobe lung mass bronchoscopy finding.

PANIGRAHI MK et al[11] found that most non-smokers (73%) had adenocarcinoma whereas equal proportions (41%) of smokers had squamous cell and adenocarcinoma each. We found that 23(60.5%) patients had smokers had adenocarcinoma but this was not statistically significant. Most of the patient's i. e 94 % in our study had metastatic disease (stage IV) at the time of presentation (80 % in adenocarcinoma and 14 % in squamous cell carcinoma). In the series from western world as well as from our country, it is reported that 50-70% cases of NSCLC and up to 2/3rd of SCLC usually present in advanced stage.

PANIGRAHI MK et al [11] found most common histological type was adenocarcinoma in 67 patients (53.6%) followed by squamous cell 39 patients (31.2%), small cell carcinoma 10 patients (8%), undifferentiated 7 patients (5.6%) and large cell carcinoma 2 patients (1.6 %). We found that 46(85.2%) patients had adenocarcinoma histopathology, 4(7.4%) patients had non-small cell lung carcinoma histopathology, 2(3.7%) patients had small cell lung carcinoma histopathology and 2(3.7%) patients had squamous cell carcinoma histopathology. The most prevalent EGFR kinase domain mutations in NSCLCs account for about 45% in frame deletions of exon 19 nested around the LREA string of amino acids located between residues 747–750 of EGFR polypeptide.[13] Another recurrent mutation is the L858R substitution in exon 21 within the activation loop of EGFR comprising of another 40–45% of EGFR mutations. Exon −18 nucleotide substitutions and exon 20 inframe insertions account for another 5% of EGFR mutations. Most noteworthy, clinically relevant mutation in exon 20 is T790M, detected in 50% of cases as a second site mutation associated with acquired resistance to Gefitinib and Erlotinib.[14,15]

Any routine EGFR assay used in clinical practice should be able to detect common EGFR TKI sensitizing mutations (exon 19 del and L858R) mutations that confer decreased sensitivity to EGFR TKI (T790M , exon 20 insertions).[15] We found that 3(5.6%) patients had ALK Positive for mutational Study, 4(7.4%) patients had EGFR Positive for mutational Study and (96.3%) patients had no for mutational Study. 2(5.3%) patients had ALK Positive for mutational Study in adenocarcinoma, 3(7.9%) patients had EGFR Positive for mutational Study in adenocarcinoma and 33(86.8%) patients had no for mutational Study in adenocarcinoma. We found that according to stage Kaplan Meier Survival Curve for Overall survival was showing statistically significant (Log-Rank:11.5181, p=0.0032). Poor survival was observed in stage IV.

CONCLUSION

This study was intended for studying clinic epidemiological profile of lung cancer patients at tertiary care cancer Centre. 33(61.1%) patients had smoker and that also advance stages. We found that according to stage Kaplan Meier Survival Curve for Overall survival was showing statistically significant. Poor survival was observed in stage IV. We also found that 38(70.4%) patients had Adenocarcinoma and that was higher prevalence. According to mutational study 3(5.6%) patients had ALK Positive, 4(7.4%) patients had EGFR Positive. Out of 38 smokers 23 patients had Adenocarcinoma. Chest pain and cough were the most common symptoms. Adenocarcinoma patients more common in male and advanced stage also. Adenocarcinoma is the commonest subtype. Poor performance status advanced disease is the most common presentation.

Table: Distribution of age. Sex, occupation, presenting complain, ccomorbidity, history of TB, smoking history, stage and CBC

		Frequency	Percent
Age	**≤40**	9	16.7%
	41-50	21	38.9%
	51-60	16	29.6%
	>60	8	14.8%
	Total	54	100.0%

Sex	Female	12	22.2%
	Male	42	77.8%
	Total	54	100.0%
Occupation	Profession	4	7.4%
	Clerical, Shop-owner	6	11.1%
	Skilled worker	20	37.0%
	Semi-skilled worker	13	24.1%
	Unskilled worker	7	13.0%
	Unemployed	4	7.4%
	Total	54	100.0%
Presenting complain	Chest pain	9	16.7%
	Chest pain and Cough	22	40.7%
	Cough	4	7.4%
	Cough and Fever	5	9.3%
	Fever	5	9.3%
	Pleural Effusion	2	3.7%
	Shortness of Breath	7	13.0%
	Total	54	100.0%
Comorbidity	CAD	4	7.4%
	DM	12	22.2%
	HTN	12	22.2%
	NO	26	48.1%
	Total	54	100.0%
History of TB	No	52	96.3%
	Yes	2	3.7%
	Total	54	100.0%
Smoking History	No	21	38.9%
	Yes	33	61.1%
	Total	54	100.0%
Stage	IIIA	8	14.8%
	IIIB	7	13.0%
	IV	39	72.2%
	Total	54	100.0%
CBC	Normal	54	100.0%
	Total	54	100.0%

Table: Distribution of chest X-ray, PET CT, bbronchoscopy ffinding, hhistopathology and mmutational Study

		Frequency	Percent
Chest X-ray	Bilateral lung mass	17	31.5%
	Homogenous opacity right middle lung	9	16.7%
	Opacity in left upper lung	14	25.9%
	Opacity in right upper lung	12	22.2%
	Right massive pleural effusion	2	3.7%
	Total	54	100.0%
PET CT	Left upper lobe mass	2	3.7%
	Metabolic active lesion left upper lobe	20	37.0%
	Metabolic active soft lesion right upper lobe	2	3.7%
	ND	24	44.4%
	Pleural effusion with collapse	2	3.7%
	Right hilar mass	3	5.6%
	Right hilar mass with liver Mets	1	1.9%
	Total	54	100.0%
Bronchoscopy Finding	Left upper lobe lung mass	9	16.7%
	ND	28	51.9%
	Pressure effect on right upper lobe and right lower lobe	3	5.6%
	Right upper lobe lung mass	14	25.9%
	Total	54	100.0%
Histopathology	Adenocarcinoma	46	85.2%
	Non-small cell lung carcinoma	4	7.4%
	Small cell lung carcinoma	2	3.7%
	Squamous cell carcinoma	2	3.7%
	Total	54	100.0%
Mutational Study	ALK Positive	3	5.6%
	EGFR Positive	4	7.4%
	NO	47	87.0%
	Total	54	100.0%

Table: Association of hhistopathology with smoking history, sex and history of TB

		Smoking History		SEX		History Of Tb	
		No	Yes	F	M	No	Yes
Histopathology	Adenocarcinoma	18	28	8	38	44	2
	Row %	39.1	60.9	17.4	82.6	95.7	4.3
	Col %	85.7	84.8	66.7	90.5	84.6	100.0
	Non-small cell lung carcinoma	2	2	2	2	4	0
	Row %	50.0	50.0	50.0	50.0	100.0	0.0
	Col %	9.5	6.1	16.7	4.8	7.7	0.0
	small cell lung carcinoma	1	1	1	1	2	0
	Row %	50.0	50.0	50.0	50.0	100.0	0.0
	Col %	4.8	3.0	8.3	2.4	3.8	0.0
	Squamous cell carcinoma	0	2	1	1	2	0
	Row %	0.0	100.0	50.0	50.0	100.0	0.0
	Col %	0.0	6.1	8.3	2.4	3.8	0.0
	TOTAL	21	33	12	42	52	2
	Row %	38.9	61.1	22.2	77.8	96.3	3.7
	Col %	100.0	100.0	100.0	100.0	100.0	100.0
Chi-square value		1.5855		4.1925		.3612	
p-value		0.6627		0.2414		0.9481	

Table: Association of histopathology with mutational study and stage

		Mutational Study			STAGE		
		ALK Positive	EGFR	ND	IIIA	IIIB	IV
Histopathology	Adenocarcinoma	3	3	40	8	6	32
	Row %	6.5	6.5	87.0	17.4	13.0	69.6
	Col %	100.0	75.0	85.1	100.0	85.7	82.1
	Non-small cell lung carcinoma	0	1	3	0	1	3
	Row %	0.0	25.0	75.0	0.0	25.0	75.0
	Col %	0.0	25.0	6.4	0.0	14.3	7.7
	small cell lung carcinoma	0	0	2	0	0	2
	Row %	0.0	0.0	100.0	0.0	0.0	100.0
	Col %	0.0	0.0	4.3	0.0	0.0	5.1
	Squamous cell carcinoma	0	0	2	0	0	2
	Row %	0.0	0.0	100.0	0.0	0.0	100.0
	Col %	0.0	0.0	4.3	0.0	0.0	5.1
	TOTAL	3	4	47	8	7	39
	Row %	5.6	7.4	87.0	14.8	13.0	72.2
	Col %	100.0	100.0	100.0	100.0	100.0	100.0
Chi-square value		2.6819			2.8337		
p-value		0.8476			0.8294		

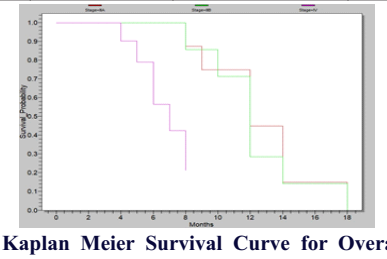

Figure 1: Kaplan Meier Survival Curve for Overall survival according to stage

According to stage Kaplan Meier Survival Curve for Overall survival was showing statistically significant (Log-Rank: 11.5181, p=0.0032). Poor survival was observed in stage IV.

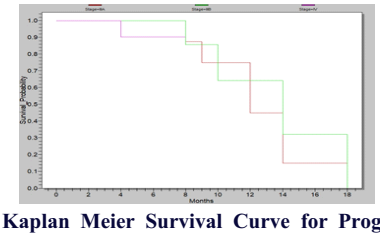

Figure 2: Kaplan Meier Survival Curve for Progression free survival according to stage

According to stage Kaplan Meier Survival Curve for Progression free survival was not showing statistically significant (Log-Rank: 1.1316, p=0.5679). Poor survival was observed in stage IV.

REFERENCES

1. Horn L, Lovly CM, Johnson DH (2015). "Chapter 107: Neoplasms of the lung". In Kasper DL, Hauser SL, Jameson JL, Fauci AS, Longo DL, Loscalzo J. Harrison's Principles of Internal Medicine (19th ed.). McGraw-Hill. ISBN 978-0-07-180216-1.
2. Surveillance, Epidemiology and End Results Program. National Cancer Institute. Archived from the original on 4 March 2016. Retrieved 5 March 2016.
3. Singh N, Behera D. Lung cancer epidemiology and clinical profile in North India: Similarities and differences with other geographical regions of India. Indian journal of cancer. 2013 Oct 1;50(4):291.
4. Alberg AJ, Brock MV, Samet JM (2016). "Chapter 52: Epidemiology of lung cancer". Murray & Nadel's Textbook of Respiratory Medicine (6th ed.). Saunders Elsevier. ISBN 978-1-4557-3383-5.
5. O'Reilly KM, Mclaughlin AM, Beckett WS, Sime PJ (March 2007). "Asbestos-related lung disease". American Family Physician. 75 (5): 683–8.
6. Lu C, Onn A, Vaporciyan AA, et al. (2010). "Chapter 78: Cancer of the Lung". Holland-Frei Cancer Medicine (8th ed.). People's Medical Publishing House. ISBN 978-1-60795-014-1.
7. Lung Carcinoma: Tumors of the Lungs. Merck Manual Professional Edition, Online edition. Archived from the original on 16 August 2007. Retrieved 15 August 2007.
8. GBD 2015 Disease and Injury Incidence and Prevalence, Collaborators. (8 October 2016). "Global, regional, and national incidence, prevalence, and years lived with disability for 310 diseases and injuries, 1990–2015: a systematic analysis for the Global Burden of Disease Study 2015". Lancet. 388 (10053): 1545–1602.
9. Dey A, Biswas D, Saha S, Kundu S, Sengupta A. Comparison study of clinicoradiological profile of primary lung cancer cases: An Eastern India experience. Indian journal of cancer. 2012 Jan 1;49(1):89.
10. Carmona RH (27 June 2006). "The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General". U.S. Department of Health and Human Services. Archived from the original on 15 February 2017. "Secondhand smoke exposure causes disease and premature death in children and adults who do not smoke." Retrieved 2014-06-16.
11. PANIGRAHI MK, SAKA VK, JAGANATHAN V, SINNASSAMY M, NARAHARI NK. Changing Trend of Clinical and Epidemiological Profile of Lung Cancer--Experience from a Tertiary Care Centre in Southern India. Journal of Clinical & Diagnostic Research. 2018 Oct 1;12(10).
12. Trufelli DC, Moraes TV, Lima AA, Giglio AD. Epidemiological profile and prognostic factors in patients with lung cancer. Revista da Associação Médica Brasileira. 2016 Aug;62(5):428-33.
13. EGFR mutation incidence in non-small-cell lung cancer of adenocarcinoma histology: a systematic review and global map by ethnicity (mut MapII) Anita Midha, Simon Dearden, Rose McCormack et al Am J Cancer Res 2015;5(9):2892-2911.
14. Targetable "Driver" Mutations in Non-Small Cell Lung Cancer R. Vijayalakshmi&Arvind Krishnamurthy Indian J Oncl (Jul – Sept 2011) 2(3) :178 – 188.
15. Gould MK, Silvestri GA, Detterbeck F. Multidisciplinary management of lung cancer. NEngl J Med 2004; 350(19): 2008-10.