ISSN NO. 2320-5407

Journal homepage: http://www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH

RESEARCH ARTICLE

STAGING OF LUNG CARCINOMA AT PRESENSATION TO A TERTIARY CARE CENTRE IN SOUTHERN RAJASTHAN

[1.] Dr. Kripa Shanker Jhirwal,[2.] Dr. Hemant Mahur ,[3.] Dr. D.P. Singh ,[4]. Dr.Avinash Adiga ,[5.] Dr.Mayank Ameta, [6.] Dr.Dilip Singh

1. Resident,Deptt. Of Medicine Maharana Bhupal Associate Group Of Hospitals and R.N.T. Medical College, Udaipur, Rajasthan (India)
2. Associate Professor, Department of Medicine Maharana Bhupal Associate Group Of Hospitals and R.N.T. Medical College, Udaipur, Rajasthan (India)
3 Sr. Professor & Head, Department of Medicine Maharana Bhupal Associate Group Of Hospitals and R.N.T. Medical College, Udaipur, Rajasthan (India)
4,Deptt. Of Medicine Maharana Bhupal Associate Group Of Hospitals and R.N.T. Medical College, Udaipur, Rajasthan (India)
5., Ameta Resident,Deptt.of Medicine Maharana Bhupal Associate Group Of Hospitals and R.N.T. Medical College, Udaipur, Rajasthan (India)
6, Mudgal Resident,Deptt.of Medicine Maharana Bhupal Associate Group Of Hospitals and R.N.T. Medical College, Udaipur, Rajasthan (India)

Manuscript Info

Manuscript History:

Received: 15 January 2015
Final Accepted: 25 February 2015
Published Online: March 2015

Key words:

Cancer, smoking, Risk factors, Rural dwellers.

Corresponding Author

Dr. Kripa Shanker Jhirwal

Abstract

Background: Cancer is more fearful disease and more than two -third of cancer patients are in advanced and incurable stage at the time of diagnosis.
Objective: To study staging of lung carcinoma at presentation in a tertiary care hospital Udaipur, Rajasthan and to establish importance of early screening in lung carcinoma to reduce mortality and morbidity.
Materials and methods: A total of 60 patients were diagnosed as carcinoma lung admitted in M.B. Government hospital, R.N.T. Medical College, Udaipur, were included in this study. **Results:** The study included 60 patients with a male to female ratio 6.5:1, probably due to more smoking rates among Indian males (30%) when compared to females 3.2%. Age distribution 23 to 80 years, maximum patients were found between 60-69(35%) years and least in less than 30(1.67%) years. Our patients were rural dwellers owing to higher percentage of Indian population (67%) and higher percentage of rural population smoke (46%) as compared to urban (27%) with earlier age of onset and longer duration of continuity in smoking as well as higher bidi smoking rate in rural (44.6%) than urban (17.8%).
Conclusion: Lung cancer is more predominant in elderly male ,rural dwellers who smoke early and for longer duration.

INTRODUCTION

There are 20 million people living with cancer in the world today and it is the second leading cause of death(1).

The numbers are such that each of us will be touched by it either as a patient, a family member or a friend. Many patients die from preventable cancers and suffer unnecessarily from pain and anguish at the end of their lives.

The crux of the problem is that more than two third of the cancer patients present themselves to a medical facility when the disease is far advanced and is not amenable to treatment.[2]

Lung cancer is a malignant disease in which lung cells become abnormal, characterized by uncontrollable, unlimited growth. These cells can then invade nearby normal tissue and destroy organ structure, a process called "invasion". Lung cancer cells can also breakdown lung tissue structure and enter the bloodstream or lymphatic system and thus spread to distant organ in other parts of the body, a process called metastasis. Clinically, lung cancer can be classified into two groups according to its cell types under microscopy: non-small cell lung cancer and small cell lung cancer. Non-small cell lung cancer includes cancer of three cell types: squamous cell carcinoma, adenocarcinoma and large cell carcinoma. Small cell lung cancer also called as oat cell cancer, is a less common cancer that grows faster, and is more likely to spread to other parts of the body than non-small cell lung cancer is a highly lethal disease in the United States and worldwide.[3]

Lung cancer is the leading cause of cancer death worldwide, with a total of 9,21,000 deaths per year (6,92,600 in men and 228,400 in women) in 1990. The five year survival rate of lung cancer is 13.7% in United States, 7.8% in developing countries, 7% in Eastern Europe, 7.9% in China and 6.7% in India.

Tobacco smoking is a major cause of lung cancer[4], smoking results in damage to the bronchial and lung epithelium, which leads to lung cell proliferation and finally to lung cancer. Smoking cessation or lifelong abstinence from smoking offer the best opportunities to reduce lung cancer incidence and death rates.

The promotion of smoking cessation is the most cost effective tool against lung and other smoking related cancers and diseases.[5]

MATERIALS AND METHODS:

Study was conducted over 60 patients who were admitted in General Medicine Wards, Radiotherapy wards of M.B. Govt. Hospital, Udaipur, Rajasthan from November 2009 to December 2011. A well informed consent remained a pre-requisite for all cases which have been included in the study.

Patient inclusion criteria:

All patients of lung carcinoma proven by CT scan/MRI/Sputum in malignant cell/ Bronchoscopic lavage/Bronchoscopy / FNAC/ Tissue biopsy.

Data collection, risk factor definition:

Information on demographic characteristics and risk factors was collected using a structured questionnaire. A detailed history and clinical examination carried out on all the patients.

Smokers: Males and females smoking Beedi, cigarette, or hukka based on number of pack years smoked by the person.

Occupation: Patients classified as farmers, factory workers and other professions.

Urban and rural population with emphasis on exposure to environmental pollutants.

All patients were subjected to Computerized Tomography/ Magnetic Resonance Imaging and Stating is done by TNM classification unless metastasis is proven by FNAC Biopsy/Ultrasonography.

Results

OBSERVATIONS

Table 1: Age wise distribution of patients studied

Age (years)	No. of patients	Percentage
<30	1	1.67
30-39	2	3.33
40-49	7	11.67
50-59	16	26.67
60-69	21	35.00

70-79	10	16.67
>80	3	5.00

Mean age of presentation was 58.2 years and the group between 60-69 years had highest number of patients 35% and group of <30 years had the least 1.6%.

Table 2: Sex distribution of patients studied

Sex	No. of patients	Percentage
Male	52	86.6
Female	8	13.4

Out of the 60 patients there was male predominance 86.6% with females being 13.4%.

Table 3: Residence of the patients

Locality	No. of patients	Percentage
Rural	51	85.0
Urban	9	15.0

Out of the 60 patients 85% of patients in rural areas whereas 15% were urban dwellers.

Table 4: History of smoking with pack years

No. of packs years	No. of patients	Percentage
Non-smokers	1	11.67
<10	-	0.0
10-19	-	0.0
20-29	5	8.33
30-39	11	18.33
40-49	15	25.00
50-59	11	18.33
60-69	8	13.33
70-79	1	1.67
>80	2	3.33

Out of the 60 patients, 11.67% were non-smokers and 83.33% of patients were smokers. Maximum incidence was seen in patients with 40-49 pack years of smoking and the mean duration of smoking was 46.3 years.

Table 5: Comparison of smoking between urban and rural population

	Urban	Rural
Smoker	8 (88%)	51 (90%)
Non-smoker	1 (12%)	6 (10%)

There was no much difference in the smoking trends between urban and rural patients who had lung cancer.

Table 6: Duration of complaints

Duration	No. of patients	Percentage
<1 week	1	1.67
<1 month	11	18.37
1-5 months	29	48.30
6-12 months	6	10.00
12-24 months	9	15.00
>24 months	4	6.67

The group with complaints between 1-6 months had maximum number of patients with mean duration of complaints being 8.5 months.

Table 7: Percentage of various histologic types in different sexes

Type	Both male and female	Male	Female
Squamous carcinoma	21 (35.00%)	20 (38.00%)	1 (12.00%)
Small cell carcinoma	2 (3.33%)	2 (3.33%)	0
Adenocarcinoma	12 (20.00%)	9 (17.00%)	3 (38.00%)
Unclassified	25 (41.67%)	21 (40.00%)	4 (50.00%)

Among the histological types squamous cell carcinoma was most predominant 35% and 41.67% of patients could not have been classified. Among male patients 38% had squamous cell carcinoma followed by 17% adenocarcinoma. Among female patients 38% had adenocarcinoma followed by 12% squamous cell carcinoma.

Table 8: Effect of smoking on various histologic subtype

Type	Smoker	Non-smoker
Squamous carcinoma	20 (37%)	1 (14%)
Small cell carcinoma	2 (3.2%)	0
Adenocarcinoma	6 (11%)	6 (86%)
Unclassified	25 (47%)	0

Non-smokers were most commonly associated with adenocarcinoma 86% followed by squamous carcinoma 14% and no patient with small cell carcinoma. Whereas, among smokers squamous carcinoma 37% was most common followed by adenocarcinoma 11% and 3.2% with small cell carcinoma.

Tumour staging at presentation

Table 9. Showing tumour staging at presentation

Histologic variant	T1	%	T2	%	T3	%	T4	%
Squamous	0	0	7	33.3	5	23.81	9	42.86
Small cell Ca	0	0	1	50	1	50	0	0
Adeno Ca	0	0	1	8.33	3	25	8	66.67
Unclassified	0	0	11	44	5	20	9	36
Total	0	0	20	33.33	14	23.33	26	44.33

Maximum number of patients were in the group of T4 staging 44.33% and minimum in T1 with no patients unclassified subtype were T2 group had maximum patients.

Nodal staging

Table 10. Showing nodal staging at presentation

Histologic variant	0	%	1	%	2	%	3	%
Squamous	6	28.57	6	28.57	8	38.10	1	4.76
Small cell Ca	0	0	2	100	0	0	0	0
Adeno Ca	2	16.67	4	33.33	6	50	0	0
Unclassified	5	20	7	28	13	52	0	0
Total	13	21.67	19	31.67	27	45	1	1.67

Maximum number of patients were in N2 group (45%) overall and in individual variants and minimum number of patients were found in N3 staging overall and individual groups.

Metastasis:

Table 11. Metastasis at presentation

Histologic variant	M0	%	M1	%
Squamous	16	76.19	5	23.81
Small cell Ca	0	0	2	100
Adeno Ca	3	25	9	75
Unclassified	10	40	15	60
Overall	29	48.33	31	51.67

52% of patients were in M1 group, 48% in M0 group overall, among individual subtype M1 were more than M0 group except for squamous variant where M0 had more patients.

Size of tumour:

Table 12. Shows size of tumour at presentation

Histologic variant	0-3cm	%	3-6cm	%	>6cm	%
Squamous	0	0	6	30	14	70
Small cell Ca	0	0	0	0	2	100
Adeno Ca	0	0	3	25	9	75
Unclassified	0	0	11	44	14	56
Overall	0	0	20	33.33	40	67.34

Maximum number of patients were in >6 cm group overall (67.34%) and in individual groups where in all patients of small cell ca were in >6 cm group.

Size of metastasis:

Table 13. Shows sites of metastasis

Histologic variant	Bone		Adrenal		Liver		Brain	
	No.	%	No.	%	No.	%	No.	%
Squamous cell Ca	5	23	0	0	1	4	1	4
Small cell Ca	0	0	2	100	0	0	0	0
Adeno Ca	5	45.45	3	27.27	3	27.27	0	0
Unclassified	12	63.16	2	10.53	3	15.79	2	10.53

Overall	22	36.67	7	11.67	7	11.67	3	5.00

Vertebral metastasis was most common metastasis 36.67% of overall patients and brain metastasis was least 5%, 100% of small ca had adrenal metastasis.

Staging of lung carcinoma

Table 14. Staging of lung carcinoma at presentation

Histologic variant	Ia	%	Ib	%	IIa	%	IIb	%	IIIa	%	IIIb	%	IV	%
Squamous cell Ca	0	0	0	0	0	0	2	9.52	3	14.29	11	52.38	5	23.81
Small cell Ca	0	0	0	0	0	0	0	0	0	0	0	0	2	100
Adeno Ca	0	0	0	0	0	0	1	8.330	0	0	2	16.67	9	75
Unclassified	0	0	2	8.70	0	0	2	9.52	0	0	6	26.09	15	65.22
Overall	0	0	2	3.33	0	0	5	8.33	3	5.00	19	31.67	31	52.1

Maximum number of patients were in stage IV group overall (52%) and in individual group except for squamous cell ca where it was stage IIIb predominant and minimum was in stage Ia no patients were in this group.

Our study included 60 patients with a 52(86.6%) were male & 8(13.4%) were female, probably due to more smoking rates among Indian males (30%) when compared to females 3.2%.

Distribution of age varied from 23 years to 80 years. Maximum patients were found between 60-69(35%) years and least in less than 30(1.67%) years with a mean age of 58.2 years, 85% of our patients were rural dwellers owing to higher percentage of Indian population (67%) residing in rural areas and higher percentage of rural population smoke (46%) when compared to urban (27%) with earlier age of onset and longer duration of continuity in smoking trends in rural population as well as higher bidi smoking rate in rural (44.6%) than urban (17.8%).

The most common complaint was cough followed by shortness of breath and chest pain with maximum patients presenting in between 1-6 months of onset of symptoms. 1(1.67%) patient presented with complaints of 1 week duration and 4(6.67%) patients with > 24 months duration of complaint.

The most common histologic subtype was squamous cell carcinoma accounting for 35% of cases followed by adenocarcinoma 20% of cases and small cell carcinoma in 3.3% of cases however 41% of our patients could not have been typed due to lack of consent for invasive procedures or poor yield of tissue diagnosis. This pattern was similar to other Indian studies but varied from US studies where adenocarcinoma as predominant.

Female sex most commonly presented with adenocarcinoma (38%) followed by squamous cell carcinoma (12%) and no females presented with small cell carcinoma as most of the females were non smokers (85%).

Among the non smokers 86% presented with adenocarcinoma and 14% had squamous cell carcinoma, whereas 37% of smoker had squamous cell carcinoma followed by 11% adenocarcinoma and 3.2% small cell carcinoma. Majority of tumors presented at T4 stage (43%) and of size > 6 cm (67.34%). Most of our patients presented in N2 nodal stage (45%) and least in N3 stage (1.67%). 52% of our patients had metastasis at presentation with the rates being 100% for small cell carcinoma, 75% for adenocarcinoma, 60% for unclassified tumors and the least 24% for squamous cell carcinoma.

Bone metastasis was the most common site accounting for 36% of all cases in contrary to other studies where liver & adrenal metastasis was most common. 11.6% of cases had adrenal & liver metastases each and 5% had brain metastasis.

Patients residing in urban area mostly presented in stage IV (88%) whereas rural population presented equally in stage Ill (43%) and stage IV (43%). Rural patients presented earlier than urban patients median of 3 months compared to 5 months may be the reason why more percentage urban patients presented in stage IV.

DISCUSSION:

Lung cancer stands one of the most common malignancy causing very high morbidity and mortality increase in the incidence of lung carcinoma has been observed in India. In the present study we had a ratio of 6.5:1 for male to female. Reddy et al[6] in 1972 had found male to female ratio 4:1 in his study. Kashyap et al[7] in 2003 reported a ratio of 6.1:1.WHO report on tobacco epidemic 2008 states that 30% of Indian adult male are smokers whereas only about 3.5% of females are smokers. This may probably be the reason for male predominance over females in our study.

The mean age of presentation of lung cancer was 58.2years in our study with 35% patients presenting in the ages 60-69 years highest when compared to often age groups and 16% of patients being under the age of 30 years. Out of 60 patients in our study 85% of the patients resided in the rural areas whereas only 15% of the patients were urban dwellers. Prevalence of smoking as per National Sample Survey Organization in 1993/94 shows 32.8%of rural male population smoke whereas only 20% of urban population smoke. WHO reports[8] in 1983 that bidi smoking appears to carry a higher lung cancer risk than cigarette smoking owing to higher concentration of carcinogenic hydrocarbon in smoke being the reason for higher number of rural patients presenting with lung carcinoma in our study.

CONCLUSION:

Increasing incidence of various cancer is of concern to public health. Analysis of this study is that lung cancer is more predominant in elderly male, rural dwellers, smokers, late presentation, squamous cell carcinoma followed by adenocarcinoma and small cell cancers. Patients from urban area presented later than rural patients median of 5 months and 3 months respectively with higher percentage in stage 4 (88%) as compared to rural patients (43%). Screening for lung cancer in high risk population would be of benefit in Indian patients as they present late (mean duration 8.5 months) to the hospital in a poorer unsuitable stage of stage IV.

References:

1. Boyle P, Levin B, World Cancer Report 2008. Lyon: International Agency For Research on Cancer, 2008.
2. Park K Park's Text book of Preventive and Social Medicine (20th Edition) Banarshidas Bhanot Publication, Jabalpur (INDIA) pp.159-175, 2009.
3. Gonzalez JM et al. Archievos de Bronco Neumologia Vol.39, issue 10.
4. Baron, J.A. and Rohan, T. (1997). Tobacco. In: Cancer Epidemiology and Prevention, ed. D. Schottenfeld. New York: Oxford University Press.
5. Parkin, D.M. Pisani, P. and Ferlay, J. (1999). Estimates of the Worldwide Incidence of 25 Major cancers in 1990. International Journal of Cancer 80:827-841.
6. Reddy DB, Prasanthamurthy D, Satyavathi S (1972). Bronchogenic Carcinoma : A clinic-pathological study. Ind J. Chest Dis. 14:86-9.
7. Kashyap S, Mohapatra PR, Nagi RS (2003). Pattern of primary lung cancer among bidi smokers in north-western Himalayan region of India. Lung Cancer 41(suppl 2):S111.
8. WHO (1983). Techn. Rep. No.695.