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Profile of Female Lung Cancer at a Tertiary Care Hospital in Kashmir Valley

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Abstract
Purpose: *To analyze the clinicopathological characteristics and the outcome of various treatment modalities used in management of lung cancer in females.*
Methods: *This was a retro-prospective study in which female patients with histological confirmed lung cancer who were registered at Regional Cancer Centre of Sher-i-Kashmir Institute of Medical Sciences, Srinagar between 2008 to 2014 were enrolled. Patient characteristics with regard to age, clinical presentation, locality, investigations, pathological characters and outcome of various treatment modalities were studied in detail. Data was compared using Pearson chi-square and Fischer's exact test. P value <0.05 was considered to be statistically significant. SPSS version 20 was used for analyzing the data.*
Results: *A total of 298 patients were enrolled and 167 received treatment. Most patients were in the elderly age group (32.9%) and were from Srinagar district (29.9%). Dry cough was present in 71.4% of patients at presentation. Most common diagnostic modality used was bronchoscopy (58.05%). Squamous cell ca was most common histology (41.5%). Most (63.4%) patients were non smokers. 54.4% of patients had stage 4 at presentation. Chemotherapy alone was the most frequently used treatment modality (33.5%). Only 96 were available for response evaluation. During follow up, 3.12% had local failure and 27.08% had distant metastasis. Overall 1,2,3 and 6 year survival rates were 72.2%, 21.9%, 4.5% and 1.3% respectively. Triple modality treatment had highest survival rates followed by chemoradiation.*
Conclusion: *Delayed diagnosis and advanced disease were responsible for poor outcome. Early diagnosis and treatment and combined modality of treatment can improve survival.*

Introduction

Lung cancer is one of the most common malignant neoplasm worldwide, accounting for more deaths than any other cancer cause.[1] The incidence is increasing globally at a rate of 0.5% peryear.[2] It remains the most lethal form of cancer in men and has now surpassed breast cancer in women as well in USA[3]. The worldwide incidence is 14% whereas it constitutes 6.8% of all cancers in India.[4] In Kashmir it ranks second among all cases in males.

Although lung cancer has traditionally been thought of as a man's disease, it is the second most common cancer and the leading cause of cancer deaths in women in the United States. The primary cause of lung cancer cases is smoking cigarettes. Women may have genetic and hormonal differences that effect the development of lung cancer in never-smokers as well as in those who smoke. Other risk factors include passive smoking.[5] Non-small cell lung cancer accounts for nearly 85% and small cell lung cancer accounts for 15% to 20% of cases. Despite advances in imaging techniques and treatment modalities, the prognosis of lung cancer remains poor, with a five-year survival of 14% in early stages and less than 5% in locally advanced stages.[6,7] Unfortunately only 20-30% of patients present with an operable disease, while most of the patients present in an advanced stage II and III[8]. The main reason for late presentation in our country is the poor health awareness, delayed recognition and the poor referral of patients to the specialized centers. The present study was undertaken to analyze the demographic pattern, clinical presentation and pathological characteristics of lung cancer and to study the outcome of various treatment modalities used in the management of lung cancer at a tertiary care hospital in Kashmir, India.

Material and Method

All female patients with histopathologically confirmed lung cancer who were registered at Regional Cancer Centre of Sher-i-Kashmir Institute of Medical Sciences, Srinagar between 2008 to 2014 were enrolled in the study. This was a retro prospective study in which patient characteristics with regard to age, clinical presentation, locality, investigations, pathological characters, risk factors and outcome of various treatment modalities were studied in detail. Data was compared using Pearson chi-square test and Fischer's exact test. P value <0.05 was considered to be statistically significant. SPSS version 20 was used for analyzing the data.

Results

A total of 468 female lung cancer patients were registered with regional cancer centre, SKIMS, Srinagar from 1st January 2008 to 31 December 2014. Out of 468 lung cancer patients only 298 were histopathologically confirmed.

Table 1- Age-Wise Distribution

Age group (in years)	Frequency	%age
<30	22	7.4
30-40	2	0.7
40-50	46	15.4
50-60	70	23.5
60-70	98	32.9
>70	60	20.1
Total	298	100

Most common age group was 60-70 years accounting for 32.9% of patients. Mean age for female lung cancer was 57.43 years.

Table 2- Clinical Presentation

Symptoms	NSCLC n=233		SCLC n=65		Total	
	N	%	N	%	N	%
Cough-dry	111	47.6	32	49.2	143	48.0
Cough-Productive	61	26.2	9	13.8	70	23.5
Hemoptysis	73	31.3	22	33.8	95	31.9
Breathlessness	92	39.5	28	43.1	120	40.3
Chest pain	58	24.9	12	18.5	70	23.5
Hoarsness of voice	7	3.0	1	1.5	8 .0	2.7
Others	57	24.4	11	16.92	68	22.8
Asymptomatic	2	.9	0	0	2.0	0.9

Most common symptom at presentation was cough 71.4% followed by breathlessness 40.3%, hemoptysis 31.9% and chest pain 23.5%.

Table 3-Histology

Histology	Frequency	%age
Squamous cell ca	123	41.5
Adenocarcinoma	91	30.5
Bronchoalveolar	13	4.4
Small cell ca	65	21.8
Large cell ca	5	1.7
Adenoid cystic ca	1	.3
Total	298	100

78.2% of the patients have Non-small cell lung cancer and 21.8% have Small cell lung cancer. Among NSCLC, squamous cell ca was most common (41.5%) followed by adenocarcinoma (30.5%), other histologies were only 6.4%.

Table 4- Stage at presentation

Stage	Frequency	%age
1	1	0.3
2A	4	1.3
2B	9	3.0
3A	77	25.8
3B	45	15.1
4	162	54.4

Most [54.4%] patients have stage 4 at presentation, followed by stage 3A[25.8%], stage3B[15.1%], stage2[4.3%], stage1[0.3%].

Table 5- Site

Site	Frequency	%age
Right upper lobe	69	23.2
Right middle lobe	56	18.8
Left lower lobe	52	17.4
Left upper lobe	52	17.4
Right lower lobe	46	15.4
Left middle lobe	23	7.7
Total	298	100.0

Right upper lobe was the most common site in 23.2% of patients followed by Right middle lobe in 18.8%.

Table 6-Treatment Modality

Treatment Modality	Frequency	%age
No Rx	107	35.9
Surgery	2	0.67
Chemotherapy	100	33.5
Radiation	12	4.03
Surgery+Chemotherapy	7	2.3
Surgery+Radiation	1	0.34
Radiation+Chemotherapy	38	12.8
Surgery+Chemo+Radiation	7	2.3
Palliative	24	8.05
Total	298	100.0

Out of 298 patients, 56.04% patients received treatment, 35.9% did not receive and 8.05% received palliative treatment. Chemotherapy was the most frequently used treatment modality in 33.5% of the patients as most patients presented in stage 4. Radiation therapy in combination with chemotherapy, surgery and with both was delivered in 12.8%, 0.34% and 2.3% of cases respectively.

Table 7 Response versus Treatment Modality

Treatment Modality	RESPONSE							
	Progression		Stable		Partial		Complete	
	Frequency	%age	Frequency	%age	Frequency	%age	Frequency	%age
Surgery	0	0	0	0	1	100	0	0
Chemotherapy	12	27.3	17	38.6	15	34.1	0	0
Radiation	1.0	11.1	2	22.2	6	66.7	0	0
Surgery+Chemotherapy	3.0	60	0	0	1	20	1	20
Surgery+Radiation	0	0	0	0	1	100	0	0
Radiation+Chemotherapy	7.0	25	2	7.1	15	53.6	4	14.3
Surgery+Chemotherapy+Radiation	1.0	14.3	0	0	2	28.6	4	57.1
Total	24	25	22	22.9	41	42.7	9	9.4

Out of 167 patients only 96 were available for evaluation of response. Response was evaluated by using Responsive Evaluation Criteria in Solid Tumors (RECIST) Criteria. Complete response was seen in 9.4% of patients, partial response in 42.7%, stable disease in 22.9% and progression in 25%.

Table 8-Survival vs Treatment

Treatment modality	Survival Group								Total Patients	P value
	1yr		2yr		3yr		6yr			
	N	%age	N	%age	N	%age	N	%age		
Surgery	2	100	0	0	0	0	0	0	2	
Chemotherapy	70	78.7	19	21.3	0	0	0	0	89	
Radiation	10	83.3	2	16.6	0	0	0	0	12	
Surgery+Chemotherapy	1	14.2	4	57.1	2	28.6	0	0	7	≤0.0001
Surgery+Radiation	0	0	1	100	0	0	0	0	1	
Radiation+Chemotherapy	27	80	5	13.5	4	10.8	1	2.7	37	
Surgery+Chemo+Radiation	2	28.6	3	42.9	1	14.2	1	14.2	7	
Overall Survival	112	72.2	34	21.9	7	4.5	2	1.3	155	

Modality Overall 1,2,3 and 6 year survival rates were 72.2%, 21.9%, 4.5% and 1.3% respectively.

Discussion

Lung cancer is the most common fatal malignancy among men and women in most countries of the world and the gender difference is narrowing[9]. In India, the incidence of lung cancer is increasing rapidly, mainly due to progressive change in life style. It remains a major health problem in the Kashmir valley and constitutes nearly 9.9% of all cancers.

Mean age for lung cancer in females was 57.43 years and it was comparable to males in study by Sheema Sheikh et al.[10] The most common age group for female lung cancer was 60-70yrs[32.9%] which is contrary to 40-60yrs for males in study by Bhattacharyya Sujit Kumar et al[11], Jagdish Rawat et al[12]

Most of the patients were from Srinagar (29.9%) followed by Baramulla (14.8%), low prevalance was in districts- Bandipora (4.7%), Kulgam (3.4%), Kupwara (2.7%), Shopian (2.3%). These results were compatible with study by Parvaiz A Koul et al.[13]

Most common symptom at presentation was cough 71.4% followed by breathlessness 40.3%, and it was comparable to study by Bhattacharyya Sujit Kumar et al.[11] The duration of symptoms before diagnosis of cancer ranged from 3-6mths. More than 80% patients presented with multiple symptoms.

Out of 298 patients, 36.1% were smokers and 63.4% were non-smokers and smoking status was not known in 0.67% patients, it was comparable to study by Noronha V et al.[14] Among smokers 42.9% smoked for 20-40 yrs, however duration was unknown in 52.3% of patients. 40% were hukka smokers, 10% both hukka and cigarettes smokers, type of smoking was unknown in 50% patients.

H/O Tuberculosis was present in 3.7% patients and COPD in 2 0.7%. These results slightly vary with the study by Sanjeet Kumar Mandal et al.[15]

Xray chest and CT scan chest were done in all patients. Xray chest showed an abnormality in 95% of the cases. Most common modality used for confirming the histology was bronchoscopic biopsy in 58.05% patients followed by CT guided biopsy in 31.87% , and it was comparable to study by NA Khan et al.[16]

Right sided lung cancer was more common [57.4%] than Left [42.6%] and it was comparable to study by Sanjeet Kumar Mandal et al.[15]

Most of the patients had Non small cell lung cancer (78.2%), only 21.8% had Small cell lung cancer. Among NSCLC, squamous cell cancer was most common (41.5%) followed by adenocarcinoma (30.5%). which was comparable to study by Sheema Sheikh et al[10]. Despite being more non smokers in our study, squamous cell ca was most common histology in females, this could be attributed to passive smoking. Among smokers 51.40% were sq cell ca, 26.17%-adenoca, 5.61%-brochoalveolar, 14.95%-small cell ca, 0.93% both large cell and adenoid cystic ca, which was comparable to study by Sheema Sheikh et al[10] for sq cell ca.

Most of the patients had stage4[54.4%] at presentation, followed by stage3A[25.8%], stage3B[15.1%] which was comparable to study by Viswanath Sundaram et al.[17] Bone was the most common site of metastasis in 25.3% followed by brain-17.3% and liver-14.8%. was in contrast to study by Noronha V et al.[14] Lumbar spine is the most common site of bone metastasis followed by dorsal spine, femur, pelvis and ribs.

Out of 298 patients, 56.04% patients received treatment, 35.9% received no treatment, and 8% received palliative treatment.

Chemotherapy alone was the most frequently used treatment modality in 33.5% patients as most of the patients presented in stage 4. Other treatment modalities used were, Radiotherapy only-12(4.03%) patients, Surgery alone in 2[0.67%] patients, Radiotherapy + Chemotherapy- either concurrent or sequential- 38(12.8%) patients, Radiotherapy + Surgery - 1 (0.34%)patient, Chemotherapy + Surgery- Either adjuvant or neo-adjuvant-7(2.3%) patients, Radiotherapy + Chemotherapy + Surgery- 7 (2.3%) patients.

Of the 17 patients who had undergone surgery, lobectomy was done in 11 patients followed by pneumectomy, decortication and segmentectomy in 3,2 and 1 patients.

Of the 58 patients who received radiation, 14 received 60GY/30# and 44 received 45GY/20#.

Of the 152 patients who received chemotherapy, 100 patients received chemotherapy only, 37 patients received chemotherapy in combination with other modalities and 15 patients received Tyrosine kinase Inhibitors. Type of chemotherapy given depends on the histology. Various chemo combinations were: cisplatin and etoposide, paclitaxel and carboplatin, Gemcitabine and Cisplatin/Carboplatin, Pemetrexed and Carboplatin, cyclophosphamide and erlotinib. 37[27%] patients received <3 cycles, 45[32.8%] received 3-5 cycles and 55[40.1%] received 6 cycles.

Out of 167 patients only 96 were available for evaluation of response. Response was evaluated by using Responsive Evaluation Criteria in Solid Tumors (RECIST) Criteria. 9 patients (9.4%) had complete response, 41 patients (42.7%) had partial response and 22 patients (22.9%) had stable disease, 24 patients (25%) had progression of disease. Out of 9 patients who had complete response, 4 received triple modality i.e. radiotherapy + chemotherapy + surgery, 4 received radiotherapy + chemotherapy, 1 received chemotherapy + surgery.

During follow up, out of 96 patients, 3.12% had local failure and 27.08% had distant metastasis Higher incidence of distant metastasis and local failure can be attributed to lower radiation dose[45Gy] and the fact that most of these patients did not complete the recommended schedule of chemotherapy.

Overall survival for CT+RT at 2,3 and 6yr was 13.5%, 10.8% and 2.7% and for CT+RT+SX at 2,3 and 6yr was 42.9%,14.2% and 14.2% and it was comparable to study by Shilpen Patel et al[18]**.** Multimodality approach improves the overall survival compared to a single modality.

Overall 1,2,3 and 6 year survival rates were 72.2%, 21.9%, 4.5% and 1.3% respectively.

Conclusion

The delayed diagnosis and consequent advanced disease are responsible for the poor outcome. A multi-modality approach to the treatment of lung cancer is advisable.

References

1. Banker DD. J Postgrad Med. 1955;1:108. (cited by Nagrath SP, Hazra DK, Lahiri B, Kishore B, Kumar P Primary carcinoma of the lung Clinicopathologic study of 35 cases Indian J Chest Dis 1970;12:15-24)
2. Magarth I, Litak J. Cancer in developing countries:opportunity and challenge. *J Natl Cancer Inst* 1993; 85: 862-74.
3. Jemal A, Thomas A, Murray T, Thun M. Cancer statistics,2002. *CA Cancer J Clin* 2002; 52: 23-47.
4. Nanda Kumar A. Consolidated report of the population based cancer registries, incidence and distribution of cancer,1990-1996. *National Cancer Registry Programme.* New Delhi: Indian Council of Medical Research. 2001.
5. Oncologist approved cancer information from American Society of clinical oncology-women and lung ca.
6. Mghfoor I, Michael C Perry. Lung cancer. *Ann Saudi Med* 2005; 25: 1-12.
7. Montain CF. A new international staging system for lung cancer. *Chest* 1986; 89 (suppl.): 225-33.
8. Overholt RH, Neptune WB, Ashraf MM. Primary cancer of lung: a 42-year-experience. *Ann Thorac Surg* 1975; 20: 511-9.
9. Bal S. Screening for lung cancer. *Hospital Today* 2001; 6: 609-11.
10. Sheema Sheikh, Azra Shah1, Aijaz Arshed, Romana Makhdoomi, Rais Ahmad Histological Pattern of Primary Malignant Lung Tumours Diagnosed in a Tertiary Care Hospital: 10 Year Study *Asian Pacific J Cancer Prev*, 11, 1341-1346.
11. Bhattacharyya Sujit Kumar, Mandal Abhijit, Deoghuria Debasis, AgarwalaAbinash, Aloke Gopal Ghoshal and Dey Subir Kumar

,Clinico-pathological profile of lung cancer in a tertiary medical centre in India,Analysis of 266 cases ,Journal of Dentistry and Oral Hygiene Vol. 3(3), pp. 30-33, March 2011.

12. Jagdish Rawat, Girish Sindhwani, Dushyant Gaur, Ruchi Dua, Sunil Saini, Clinico-pathological profile of lung cancer in Uttarakhand, Indian Chest Society Year : 2009, Volume : 2, Issue | Page : 74-76.
13. Parvaiz A. Koul, Satish Kumar Kaul, Mohammad Mushtaq Sheikh, Reyaz A. Tasleem,1 and Azra Shah2 Lung cancer in the Kashmir valley Lung India. 2010 Jul-Sep; 27(3): 131–137.
14. Noronha V, Dikshit R, Raut N, Joshi A, Pramesh CS, George K, Agarwal JP, Munshi A, Prabhash K,the epidemiological patterns and clinical profile of lung cancer in India, Indian J Cancer. 2012 Jan-Mar;49(1):74-81.
15. Sanjeet Kumar Mandal, Thaudem Tomcha Singh, Takhenchangbam Dhaneshor Sharma, Venkatesan Amrithalingam Clinico-pathology of Lung Cancer in a Regional Cancer Center in Northeastern India *Asian Pac J Cancer Prev*, 14 (12), 7277-7281.
16. Khan NA, Afroz F, Lone MM, Teli MA, Muzaffar M, Jan N. Profile of lung cancer in Kashmir, India: a five-year study,Indian J Chest Disease Allied Sci 2006;48:187-190.
17. Viswanath Sundaram, Nirlipta Sanyal Clinicopathological profile of bronchogenic carcinoma in a tertiary care hospital in eastern part of India Clin Cancer Investig J 2014;3:220-4 Year : 2014 | Volume : 3 | Issue : 3 | Page : 220-224 .
18. Shilpen Patel, Janelle Pakish, Philemon Yen, Tony Quang, Laurie Carr, Douglas Wood, Keith Eaton, Michael Mulligan, Renato Martins; Evaluation of Failure Patterns Using Trimodality in Non-Small Cell Lung Cancer; World J Oncol 2011; 2(2): 64-69.