Lung cancer in women: Clinico-pathological presentation of 200 cases at RIMS, Imphal

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Abstract
Background: *Lung cancer is the commonest cancer worldwide. The prevalence is increasing in women. There is also a changing trend in histology with increase in adenocarcinoma type.*
Material and Methods: *This is a retrospective analysis of 200 cases with lung cancer who were registered in the Department of Radiation Oncology, RIMS, Manipur, India from January 2011 to August 2019.*
Result: *Majority of the patients were in age group of 61-70 years (37.57%). 68.0% of the patients presented with stage IV disease. Majority of our patients belong to class III socio-economic status (56.0%).*
Squamous cell type was the commonest histopathology(42.14%) followed by adenocarcinoma, small cell lung cancer (SCLC) and undifferentiated type accounting for 34.59%, 11.95% and 11.32% respectively
Out of 200 patients, 67.50% were smokers and 12.50% were passive smokers,152 patients (76.0%) had history of exposure to smoky house from combustion of solid fuels for cooking and 97 patients (48.50%) were exposed to dust.
Cough was the commonest symptom (66.50%) followed by shortness of breath (60.50%) and chest pain (48.50%). On radiological evaluation, mass lesion was the commonest finding (52.0%) followed by mass with effusion (22.5%), mass with effusion and collapse (14.5%) respectively and mass with consolidation was present in 11.0% of the study population. And right sided lung mass was more common (65.0%) compared to left (35.0%).
Out of 200 patients 76 (38.0%) presented with distant metastasis. Contra lateral lung was the commonest site of metastasis (17.0%) followed by bone (13.50%), brain (12.50%), liver (10.0%) and adrenal (1.5%).
Conclusion: *Lung cancer contributes a major disease burden to women in Manipur. The present study highlighted the urgent need of population based awareness program of lung cancer in Manipur for prevention and early detection of lung cancer.*

Introduction

Lung cancer is the commonest cancer and biggest cause of cancer mortality worldwide with an estimated 9,65,446 new cases per year in men and 3,86,875 in women with a major contribution from developing countries.[1] ICMR cancer registry reported 57,795 cases in 2010 which was expected to rise by 2020 to an annual incidence of 67,000 new cases.[2] In our department, in 2018 a total of 237 new cases of lung cancer was registered out of which 121 were female with male: female ratio of 1:1.04

Tobacco smoking remains the biggest risk factor for development of lung cancer even among

women.[3] Other attributable risk factors include second hand smoke,[4,5] environmental exposure including asbestos, arsenic and radon,[6] lung diseases such as idiopathic pulmonary fibrosis,[7] indoor air pollution, genetic susceptibility and exposure to smoke from solid fuels especially in poorly ventilated houses.[8,9]

Although lung cancer has been more prevalent in men there is a trend towards stabilization in men and steady rise in women in the last two decades.[10] This can be attributed in part to slower decline in prevalence of smoking in women than among men and more exposure to combustion generated pollutants principally from solid fuels especially in developing countries.[11]Some studies have also highlighted possible role of estrogen.[12]

Cough with or without sputum production, hemoptysis, chest pain and shortness of breath are the main presenting symptoms of lung cancer. A changing trend in histology has also been noted over the years with decline in squamous cell carcinoma and increased incidence in adenocarcinoma.[13,14]

This paper focuses on clinico-pathological profile of lung cancer in women in this part of India.

Material and Methods

We conducted a retrospective study using data base of 200 histologically proven female lung cancer patients diagnosed in indoor and outdoor of the Department of Radiation Oncology at Regional Cancer Centre, RIMS, Manipur, India from January 2011 to August 2019. All these patients were diagnosed on clinical, radiological and bronchoscopic examination. The diagnosis was confirmed pathologically by image guidance cytology or biopsy, bronchio-alveolar lavage and/or bronchoscopy guided biopsy and classified according to WHO histological classification of lung cancer (Travis,2004). Patient with secondary lung, lymphoproliferative disease and malignant pleural effusion with unknown primary were excluded from the study. The clinical records of the patients were reviewed in relation with age, smoking habits, passive smoking, tobacco chewing, exposure to smoke and dust, socio-economic status, clinical presentation, radiographic finding, histological types and sites of metastasis. Descriptive statistics was used for describing the data using SPSS version 20 and results were presented in percentage. An approval from the Institutional Ethics Committee for research involving human subjects was obtained before the study was conducted. Confidentiality of the patient's identity was maintained.

Results

Patient age ranged from 33 to 86 years. Majority of the patients were in the age group of 61-70 years (37.57%). Majority of our patients presented with stage IV disease accounting for 68.0%. Majority of our patients belong to class III socio-economic status (56.0%).

Squamous cell type was the commonest histopathology (42.14%) followed by adenocarcinoma, small cell lung cancer(SCLC) and undifferentiated type accounting for 34.59%, 11.95% and 11.32% respectively

Most of the patients were smokers (67.50%) and 12.50% were passive smokers. Out of 200 patients 152 patients (76.0%) had history of exposure to smoky house from combustion of solid fuels and other 97 patients (48.50%) had history of exposure to dust.

Cough was the commonest symptom (66.50%) followed by shortness of breath (60.50%) and chest pain (48.50%). On radiological evaluation, mass lesion was the commonest finding (52.0%) followed by mass with effusion (22.5%) and mass with effusion and collapse (14.5%) respectively. Mass with consolidation was present in 11.0% of the study population. And right sided lung mass was more common (65.0%) compared to left (35.0%).

Out of 200 patients 76 (38.0%) presented with distant metastasis. Contra lateral lung was the commonest site of metastasis (17.0%) followed by bone (13.50%), brain (12.50%), liver(10.0%) and adrenal (1.5%).

Table 1 Patient characteristics

Variables	No. of patients	Percentage
Age		
<50 yrs	21	10.50%
51-60 yrs	51	25.50%
61-70 yrs	75	37.50%
>70 yrs	53	26.50%
Clinical stage		
I	8	4.0%
II	8	4.0%
III	48	24.0%
IV	136	68.0%
Socio economic status		
I	11	5.5%
II	15	7.5%
III	112	56.0%
IV	55	27.5%
V	7	3.50%
Histology		
Squamous	88	44.0%
Adenocarcinoma	66	33.0%
Small cell	27	13.50%
Undifferentiated	19	9.50%

Table 2. Distribution of Age and Histopathology

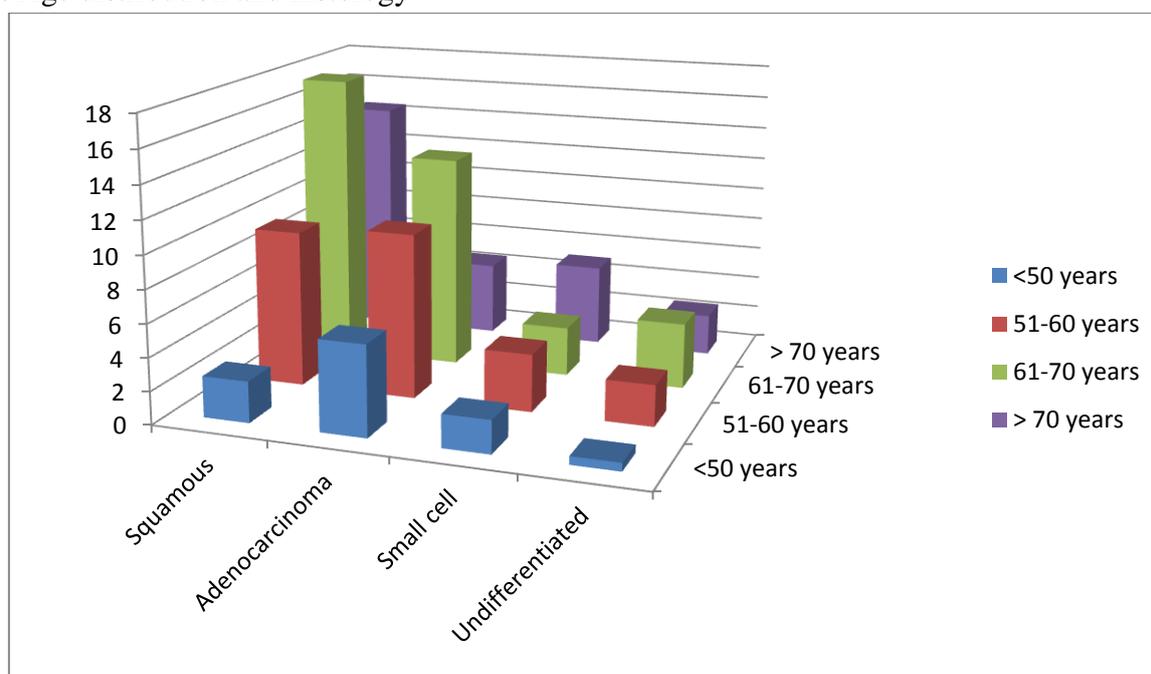| Age	Squamous cell carcinoma	Adenocarcinoma	Small cell lung carcinoma	Undifferentiated carcinoma	Total
< 50 years	5	11	4	1	21(10.50%)
51-60 years	19	20	7	5	51(25.50%)
61-70 years	35	26	6	8	75(37.50%)
>70 years	29	9	10	5	53(26.50%)
Total	88(44.0%)	66(33.0%)	27(13.50%)	19(9.50%)	200

Figure 1. Age distribution and histology

Figure 2. Distribution of different histological types

- Squamous cell carcinoma
- Adenocarcinoma
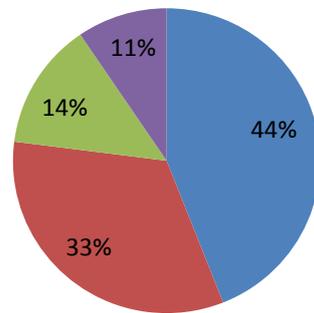- Small cell carcinoma
- Undifferentiated carcinoma

Table 3 Risk factors

Variables		No. of patients	% of population
Smoking	Yes	135	67.50%
	No	65	32.50%
Passive Smoker	Yes	25	12.50%
	No	175	87.50%
Smoky house	Yes	152	76.0%
	No	48	24.0%
Dust exposure	Yes	97	48.50%
	No	103	51.50%

Table 4. Presentation

Symptoms	No. of patients	% of total
Cough	133	66.50%
Shortness of breath	121	60.50%
Pain	97	48.50%
Superior vena cava obstruction (SVCO) symptoms		
Yes	83	41.50%
No	117	58.50%

Table 5. Radiological presentation

Variables	No. of patients	% of population
Radiological presentation	104	52.0%
Lung mass	45	22.5%
Lung mass with Effusion	29	14.5%
Lung mass with Consolidation	22	11.0%
Lung mass with Effusion and collapse		
Site		
Right	130	65.0%
Left	70	35.0%
Metastasis at presentation		
Bone	27	13.50%
Brain	25	12.50%
Liver	20	10.0%
Contra lateral lung	34	17.0%
Adrenal	3	1.5%

Discussion

Over the decades, incidence of lung cancer is rising and is the most common cause of cancer death in the world. However, over the last two decades there has been stabilization of incidence in men but in women it is still increasing.

Lung cancer typically affects older age group with peak incidence at around 70-80 years. In our study too, majority of the patients were in age group 61-70 years (37.50%). The average age of presentation in our study was similar to studies of Sunderam et al and Anurag et al.[13,14]

Majority of the patients presented with stage IV disease accounting for 68.0%. Anurag et al also reported majority of the patients (75.4%) presenting with stage IV disease. Tobacco smoking is the main risk factor accounting for 85.0% of lung cancer death. In women too, smoking remains the major risk with more women taking up smoking.[15] Similarly, a large number of our study population had history of smoking accounting for 67.50%

Environmental tobacco smoke (ETS) in passive smokers is also an important contributing risk factor. In our study 12.50% of the total patients had history of passive smoking. Zhong L et al and Rapiti et al also reported contribution of ETS in causation of lung cancer in never smoker. [16,17]

In addition to smoking and passive smoking, exposure to smoke from solid fuels especially in poorly ventilated house is also an important risk factor for lung cancer in developing countries like India. In our study, 76.0% of the patients had history of using solid fuels for cooking . Gupta et al and Wu at el have also reported a good correlation between indoor air pollution as measured by benzo(a)pyrene concentration and lung cancer mortality rate.

In our study, majority of the patients (n= 174, 87.0%) belong to low socio- economic status. This may attribute to continuous exposure to smoke and fumes and lack of awareness of lung cancer.

The commonest radiological lesion was lung mass (52.0%) which was followed by lung mass with effusion(22.5%) and lung mass with effusion and collapse(14.5%). Our study was supported by a study by Anurag Agrawal et al who also reported lung mass as the commonest presentation followed by effusion.

And involvement of right lung was more commonly observed 65.0% vs 35.0% of left lung. Kumar et al and Mohan et al also reported higher incidence of lung cancer in right(65.79%) compared to left(52.3%) respectively.[18,19]

There has also been a changing trend in the histology of lung cancer with increasing incidence of adenocarcinoma type in both sex. Malik et al[20] and Sunderam et al[13] also reported adenocarcinoma to be the predominant histological pattern. But in our study, squamous cell type was more common than adenocarcinoma type and was followed by SCLC and undifferentiated type. Jagadish et al and Shiekh et al also reported squamous cell type to be more common compared to other histology types.[21,22] Predominance of squamous cell type in our study, may be explained by the fact that majority of the patients were smokers and were elderly age group where squamous type predominates. In the past, smoking was a traditional life style among women of Manipur and now majority of the young generation women are non-smokers. Radzikowska et al[23] also reported that connection of smoking and lung cancer is more pronounced in case of squamous cell type and SCLC and weaker for adenocarcinoma type. In our study too, similar finding was observed. 81.48% of SCLC and 76.14% of squamous cell carcinoma were smokers opposed to 50.0% of adenocarcinoma.

A large number of our patients presented with distant metastasis (38.5%). This can be attributed to nonspecific nature of the disease, delayed diagnosis and lack of awareness in this region of the country.Contralateral lungs was the commonest site of secondary (17.0%) followed by bone (13.50%), brain 12.50(%), liver(10.0%) and adrenal(1.5%).

Conclusion

Lung cancer contributes a major disease burden to women in Manipur. Smoking and increasing age had been observed as the major risk factors. Late presentation may be due to late manifestation of symptoms or ignorance of the patients which lead to delay in seeking medical advice. The present study highlighted the urgent need of population based awareness program of lung cancer in Manipur for prevention and early detection of lung cancer

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