RESEARCH ARTICLE

CLINICAL-PATHOLOGICAL AND RADIOLOGICAL PROFILE OF PRIMARY LUNG CANCER IN WESTERN RAJASTHAN, INDIA: ANALYSIS OF 310 CASES

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ARTICLE INFO	ABSTRACT
	Background: Lung cancer is one of the commonest and most lethal cancer throughout the world. Tobacco smoking continues to be the leading cause of lung cancer worldwide. An increase incidence of lung cancer has been observed in India. Objective: The aim of this study was to find out the demographic and clinico-pathological and radiological profile of diagnosed lung cancer patients and its relation to smoking habit in area of western Rajasthan, Jodhpur, India. Materials and Methods: We performed a retrospective analysis of histo-pathologically proven cases of lung cancer in our hospital from 2012 to 2014. Results: Out of 310 patients, male 278 and female 32, 83.2 % were smoker and only 7.41 % were ≤40 years of age. Smoking was the major risk factor for lung cancer. The most frequent symptom was cough (59.35) followed by chest pain (50.32). The most common radiological presentation was mass lesion (30.96%), followed by collapse in (30.22%). Squamous cell carcinoma (50.32%) was most common histopathological type followed by adenocarcinoma (32.90%). Conclusion: It was found that squamous cell carcinoma was the most frequent histopathological type. Adenocarcinoma was the predominate type below 50 years and squamous cell carcinoma was more common in age above 50 years. Smoking still remain the major risk factor.

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INTRODUCTION

Lung cancer was considered to be rare in the beginning of the century (Parkin and Muir, 1992) but has now reached almost epidemic proportions. It is the leading cause of cancer deaths in developed countries and is also rising at alarming rates in developing countries (Khuri *et al*., 2001). Deaths due to lung cancer are more than those due to colorectal, breast and prostate cancers put together. Incidence and mortality from lung cancer in females are rising while it is declining are males in developed countries. This is the single most devastating cause of cancer-related deaths (Khuri *et al*., 2001). One million of the current 5 million deaths in world, and 2.41 million in developing countries is contributed by India (Thankappan and Thresia, 2007; Pai, 2002) and, in 2020, this figure is projected at 1.5 million (Thankappan and Thresia, 2007; Murray and Lopez, 1996). In this study, we have documented our experience of lung cancer in a tertiary medical college of western Rajasthan and compared it with reports of other part of India and abroad. We also try to evaluate the relationship of lung cancer with smoking habit.

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MATERIALS AND METHODS

This retrospective study was done using database with 310 patients of lung cancer who had diagnosed at our hospital. The clinical records of the patients reviewed in relation with age, sex, duration of symptoms, smoking habit, duration of illness, radiographic finding, method of diagnosis and histopathology. Major diagnosis was based on either fibre optic bronchoscopy guided procedure or image guided percutaneous fine needle aspiration cytology.

RESULTS

The study included 310 patients and there was an overall male predominance with male/female ratio of 9:1(278 male and 32 female). 43.75 % (14/32) of female and only25.89 % (72/278) of male were diagnosed at age less than 50 years. Incidence of lung cancer was significantly higher in young female as compared to young male where as in old age, male were more suffered than female. (Table 1) Of the total 310 patients, 83.2% (258/310) were smoker (Table 2) and (170/310) 54.83 % of them were smoked more than 20 pack years (Table 3). Cough was the most common symptom found in (59.35%) followed by chest pain (50.32%), Breathlessness (29.03%) and Haemoptysis (28.38%) (Table 4).

Table 1. Demographic profile of cases included in the study (n =310)

Age in Year	Male		Female		Total	
	No.	Percentage	No.	Percentage	No.	Percentage
31-40	22	7.91	8	25	30	9.6
40-50	50	17.98	6	18.75	56	18.06
50-60	88	31.65	10	31.25	98	31.61
60-70	80	28.77	4	12.5	84	27.09
70-80	30	10.79	2	6.25	32	10.32
Above 80	8	2.87	2	6.25	10	3.22
	278(89.67 %)		32(10.33%)		310	

Table 2. Smoking Status

Smoker		Nonsmoker	
Male	Female	Male	Female
254	4	28	24
258(83.2 %)		52(16.8 %)	

Table 3. Duration of Smoking (in Years)
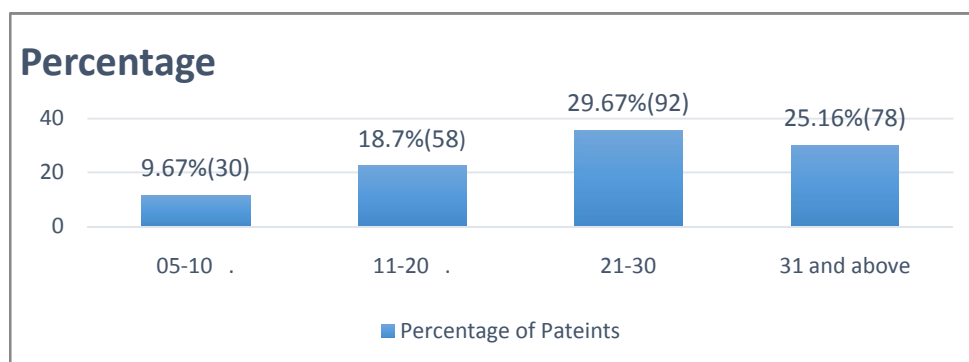
Table 4. Presenting symptom at the time of diagnosis

S. No	Symptom	No. of patients	Percentage
1	Cough dry/productive	184	59.35
2	Haemoptysis	88	28.38
3	Chest pain	156	50.32
4	Breathlessness	90	29.03
5	Fever	21	13.54
6	Loss of appetite	22	23.87
7	Hoarseness of voice	22	14.19
8	Swelling on face	20	12.90

Table 5. Radiological Appearances

S. No	Radilogical	No. of patients	Percentage
1	Mass	96	30.96
2	Collapse	94	30.32
3	Combination	36	11.61
4	Pleural effusion	60	19.35
5	Consolidation	60	19.35
6	Mediastinal widening	36	11.61
7	Hilar Prominence	28	9.03
8	Cavitation	22	7.09
9	Bone Erosion	12	3.08
10	Pericardial Effusion	6	1.93
11	Bronchoalveolar pattern	4	1.20
12	Diaphragm paralysis	32	10.32

Table 6. Age wise Distribution of lung Cancer

| S. No	Age	Sq. cell ca (156)		Adenoca(102)		Small cell ca(28)		Unclassified ca(24)	
		No	%	No	%	No	%	No	%
1	< 40	12	7.69	27	26.47	4	14.28	5	20.83
2	41-50	37	23.17	11	10.78	14	50	5	20.83
3	51-60	48	30.76	26	25.49	8	28.57	10	41.66
4	61-70	39	25	23	22.54	2	7.14	-	-
5	>71	20	12.82	15	14.70	-		4	16.66

Table 7. Sex wise distribution of histological subtype

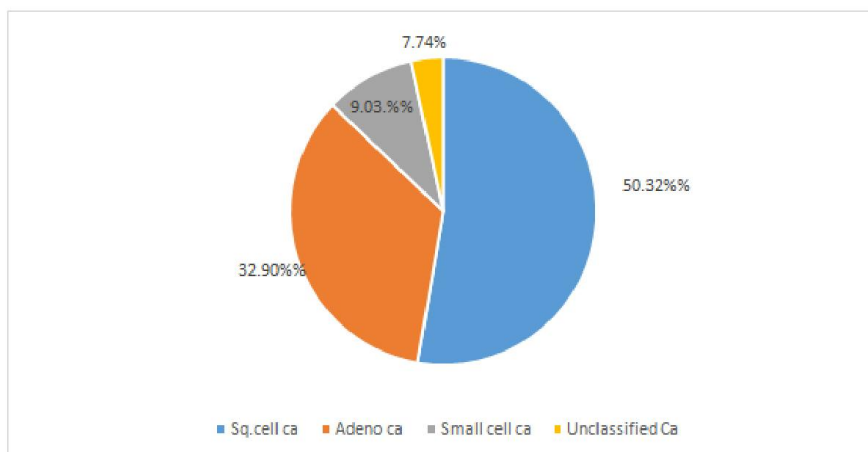| S. No	Sex	Squamous cell ca.	Adenocarcinoma	Small cell Ca	Unclassified ca
1	Male	138 (88.46%)	49 (74.24 %)	24 (85.71%)	21 (87.5%)
2	Female	18 (11.53%)	17 (25.75%)	4 (14.28 %)	3 (12.5%)

Pie chart -1 Radiological Distribution   Pie chart-2 Type of lesion
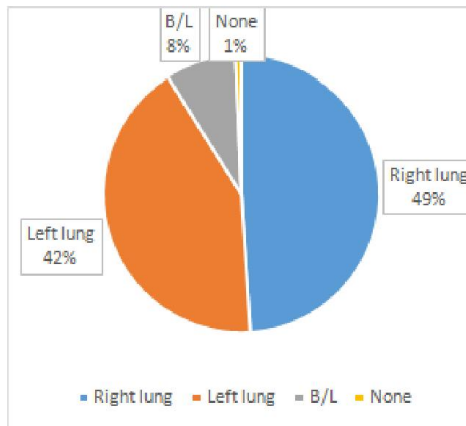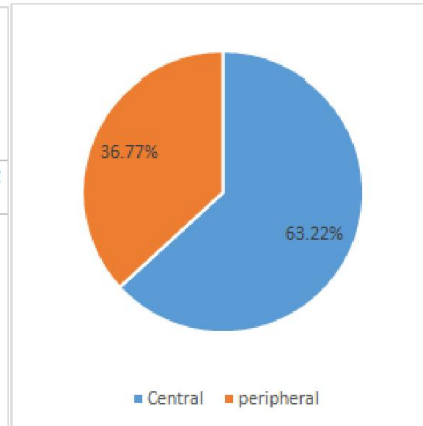
Pie Chart-3. Histological Pattern

Mass lesion (30.96%) was the commonest radiological feature followed collapse (30.32%) (Table 5). In major cases, right lung was involved (49%%), (Pie chart-1). Central lesion(63.22%) involvement is more common than peripheral lesion (36.77%). (Pie chart-2) The most common histological presentation was squamous cell carcinoma in 156 (50.32%) followed by adenocarcinoma in 102 (32.90%) patients ,small cell carcinoma in 28 (9.03%) patients, undifferentiated group found in 24patients (7.74% %) (Pie chart-3).

DISCUSSION

Though our hospitals are located in Jodhpur (Rajasthan, India), but we get majority of our patients from remote village of western Rajasthan and often in very advanced stage. The distribution of histological subtype, age related difference and gender association in our study are compared with other previous studies in India and abroad (Table 4, 5). Male: Female ratio was 9:1 in our study.

The ratio is significantly higher in older population, age more than 50 years compare to young patients ($\leq$ 50 year). In our study, female patients were younger than male (female 43.75% and male 25.89% below $\leq$ 50 year) which is similar to most of previous reports (Radzikowska *et al*., 2002; Minami *et al*., 2000; Ferguson *et al*., 2000). Smoking was the most predisposing factor which include cigarette, beedies etc. Similar observation has been reported by other Indian studies also (Behera and Balamugsh, 2004; Jindal *et al*., 1979; Notani and Sangvi, 1974; Jindal *et al*., 1982). The smoking habit is significantly less among young population (33.5% Vs 98.5%). This emphasizes the presence ofsome confounding factors other than smoking in young population. Santos-Martinez concluded that male sex and smoking are associated with squamous cell carcinoma and female sex is associated with adeno-carcinoma (Jindal *et al*., 1979). There was predominance of adenocarcinoma in female 25.75% in comparison to Sq. cell ca. in 11.53% of female and   squamous cell carcinoma in

malepatients in our study which is similar to various studies outside India (Green *et al.*, 1993; Kreuzer *et al.*, 1999; Gadgeel *et al.*, 1999; Kuo *et al.*, 2000) (Table 7)

Lung cancer is being increasingly diagnosed in women and adeno-carcinoma has over taken squamous cell carcinoma as the most common histological cell type among all groups. But squamous cell carcinoma still commonest type in all patients in our study which is similar to reports from other part of India (Jindal *et al.*, 1979; Notani and Sangvi, 1974; Jindal and Behara, 1990) the reason for this could be, our study population were predominantly rural population and our most of study population were have smoking pattern bodies rather than cigerates (filtered) and other local tobacco product like chilam, hukka which is very common in western Rajasthan. The differences in histo-pathology may be due to the fact that smoking is less prevalent among women in India compare to west.

Conclusion

This study has shown smoking as the Principal risk factor in causation of lung cancer. There are many awareness programs running throughout India but results are satisfactory. So proper implementation of these programmes should be done to educate people to quit smoking and there by decreasing the incidence of lung cancer near future. There are also lack of screening of lung cancer methods and no proper programme in place, similar to cervical and breast cancer.

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