



## Histopathology Of Lung Biopsies Among Patients With Lung Cancer At A Tertiary Care Centre

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### Abstract

**Background:** Lung cancer is a major health problem and causes increased mortality worldwide. The main histological types of lung cancer are Adenocarcinoma, Squamous cell carcinoma, Large cell carcinoma and Small cell carcinoma.

**Aims & Objectives:** To study Histopathology of lung biopsies among patients with lung cancers at tertiary care centre.

**Methodology:** An observational cross sectional study was conducted in the Department of Pathology at Maharajah's Institute of Medical Sciences, Vizianagaram during November 2021 to November 2022 among 40 study participants. Both male and female patients with lung cancer aged above 20 years to 70 years who had their lung biopsies performed during study period were included in the study. Personal details and clinical history like age, gender, use of tobacco, chief complaints etc were recorded.

**Results:** Out of 40 study participants 30(75%) were male and 10(25%) were female. 4(10%) of the study population were in the age group 40 to 50 years, 10(25%) were in the age group 51 to 60 years and 26(65%) were in the >60 years age group. In the present study among 40 cases, highest number of cases found with Adeno carcinoma 19(47.5%) followed by Squamous cell carcinoma 12(30%), Small cell carcinoma 8(20%), and Undifferentiated type was seen among 1(2.5%) cases.

**Conclusion:** Smoking is one of the important risk factor which was found among majority of the study participants and Adenocarcinoma was common histological type of carcinomas Awareness among public and early diagnosis of the disease may reduce the disease burden.

**Keywords:** Histopathology, Lung biopsy, Smoking

### Introduction

Lung cancer is a major health problem and causes increased mortality worldwide.<sup>1</sup> Data from report GLOBOCON 2018 reported approximately 2.1 million new cases (11.6% of all cancers) and 1.8 million deaths due to lung cancer (18.4% of all cancer-related deaths) worldwide.<sup>2</sup> In India, 67,795 new lung cancer cases (5.9% of all cancers) were estimated in 2018, of which 48,698 were males.

Furthermore, lung cancer caused 63,475 deaths (8.1% of all cancer-related deaths).<sup>2</sup>

Lung cancer mainly originates from the basal epithelial cells and is mainly classified into two types, non-small cell lung cancer (NSCLC) and small cell lung cancer (SCLC). Among these NSCLC is more common and which accounts for around 85% of lung cancer cases.<sup>3</sup> The main histological types of

lung cancer are Adenocarcinoma, Squamous cell carcinoma, Large cell carcinoma and Small cell carcinoma.<sup>4</sup> Tobacco smoking is the primary risk factor for the development of lung cancer.<sup>5</sup> Current smokers of one pack per day for 40 years are at high risk of developing lung cancer approximately 20 times than those who have never smoked. Other risk factors include exposure to indoor and outdoor air pollution,<sup>6</sup> environmental tobacco smoke,<sup>7</sup> and occupational exposure to asbestos, radon,<sup>8</sup> nickel, arsenic, chromium.<sup>9</sup>

Histological classifications forms the basis of treatment and prognosis in all malignancies. Hence it is of utmost importance to get diagnosis in all cases. However, it is technically difficult to obtain histological type in all lung cancer cases due to limited tissue samples obtained via bronchoscopy/ transthoracic biopsy. Also, with small biopsy or cytology specimens, classification of tumours can be difficult, and tissue might be too scanty for processes such as immunohistochemical stains.<sup>10</sup>

**Aims & Objectives**

To study Histopathology of lung biopsies among patients with lung cancers at tertiary care centre.

**Materials And Methods**

**Study design:** An observational cross sectional study

**Study setting:** The present study was conducted in the Department of Pathology at Maharajah’s Institute of Medical Sciences, Vizianagaram.

**Study period:** November 2021 to November 2022

**Sample size:** 40

**Study population:** Both male and female patients with lung cancer aged above 20 years to 70 years who had their lung biopsies performed during study period were included in the study.

**Inclusion criteria:**

1. Both male and female patients with lung cancer.
2. Aged above 20 years to 70 years.
3. Patients who gave willing to participate in the study

**Exclusion criteria:**

1. Unsatisfactory samples for biopsy.
2. Patients who didn’t give willing to participate in the study.

**Study variables:** Personal details and clinical history like age, gender, use of tobacco, chief complaints etc were recorded. Physical examination and systemic examination were done. Investigations like chest radiograph, ultrasonography, pleural fluid analysis, CT guided or bronchoscopy guided lung biopsy were performed after informed consent and histopathological findings were reviewed.

**Methods:** All small biopsies were processed and stained with routine Hemotoxylline and eosin staining

**Results**

A total of 40 lung biopsies were done during study period, among which 30 (75%) were from male patients and 10 (25%) were from female patients.

Out of 40 cases, 4(10%) of the study population were in the age group 40 to 50 years, 10(25%) were in the age group 51 to 60 years and 26(65%) were in the >60 years age group.

**Table 1: Baseline characteristics of the study population**

Variables	Sub category	Frequency	Percentage
Smoking status	Smokers	33	82.5%
	Non smokers	7	7.5%
	Rural	24	60%

<b>Residence</b>	Urban	16	40%
<b>Side of lesion</b>	Right side	25	62.5%
	Left side	15	37.5%

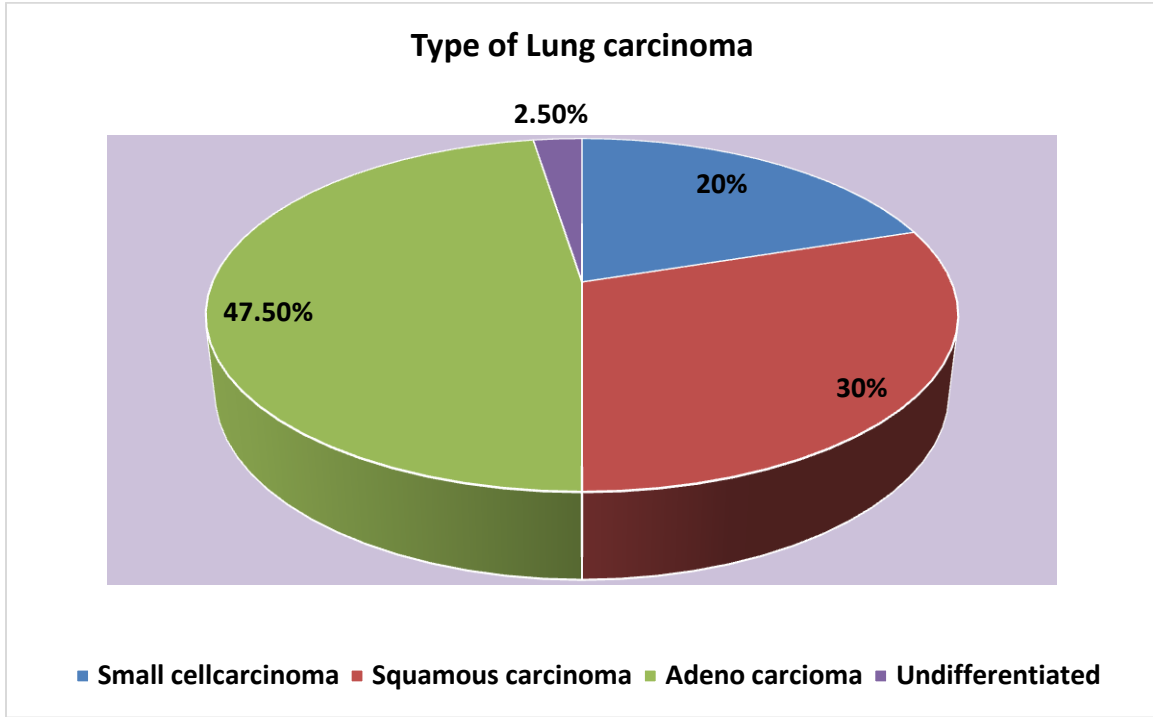
Out of 40 cases, majority were smokers 33(82.5%). Nearly two thirds of the study population were belonged to rural area 24(60%). Among 25(62.5%) study participants right side lesion was present.

**Table 2: Distribution of study participants based on type of carcinoma**

Type of carcinoma	Frequency	Percentage
<b>Small cell carcinoma</b>	8	20%
<b>Moderately differentiated squamous cell carcinoma</b>	8	20%
<b>Poorly differentiated squamous cell carcinoma</b>	4	10%
<b>Well differentiated adeno carcinoma</b>	15	37.5%
<b>Poorly differentiated adeno carcinoma</b>	4	10%
<b>Undifferentiated type</b>	1	2.5%
<b>Large cell carcinoma</b>	0	0%

Among 40 cases, small cell carcinoma was found in 8(20%) patients, moderately differentiated squamous cell carcinoma was seen among 2(20%) cases, poorly differentiated squamous cell carcinoma was seen among 4(10%) cases, well differentiated adeno carcinoma was seen among 15(37.5%) cases, poorly differentiated adeno carcinoma was seen among 4(10%) cases and cell type undifferentiated was seen among 1(2.5%) cases. No case of large cell carcinoma.

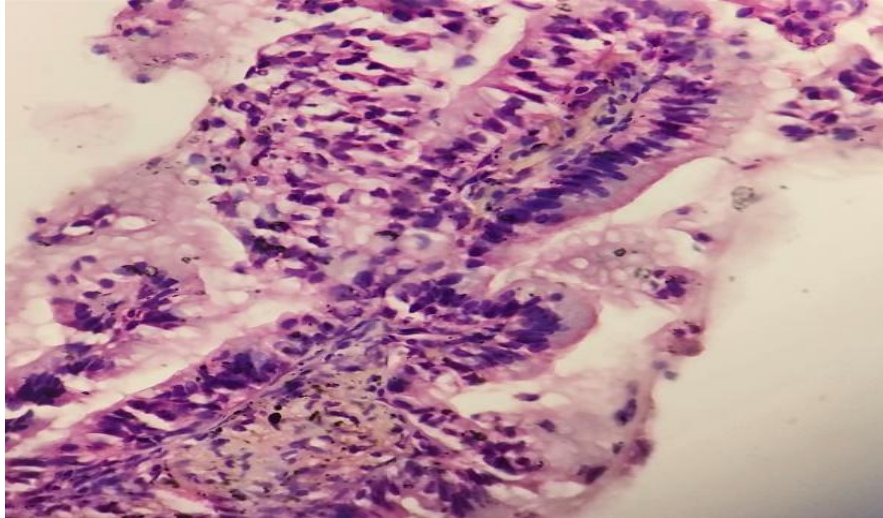
**Figure 1: Distribution of study participants based on type of lung cancer**



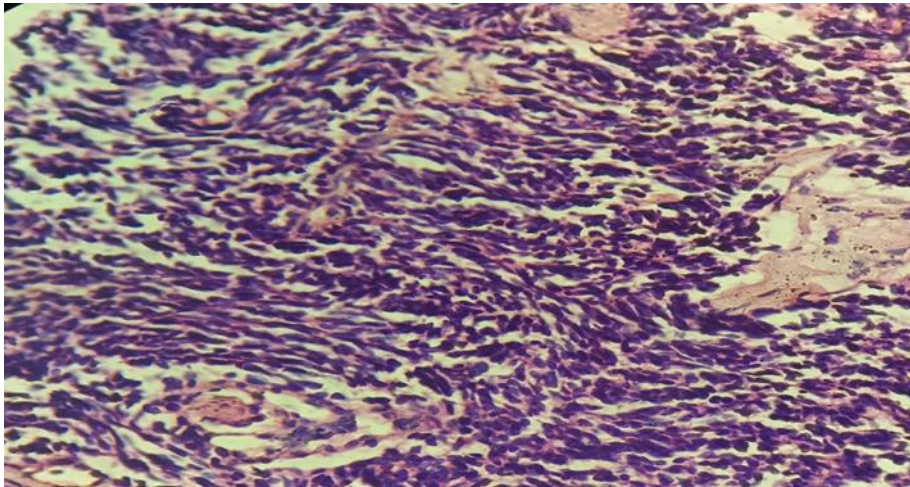
**Table 3: Comparison of present study findings with other similar studies**

Type of carcinoma	Present study	Chandrmouli, Hosmane	Muhas et al	Hathilal et al
Squamous cell carcinoma	30%	48%	48.7%	61%
Adeno carcinoma	47.5%	42%	36.1%	27%
Small cell carcinoma	20%	6%	10%	6%
Cell type undifferentiated	2.5%	4%	1.2%	1%
Large cell carcinoma	0%	0%	3.7%	3.7%

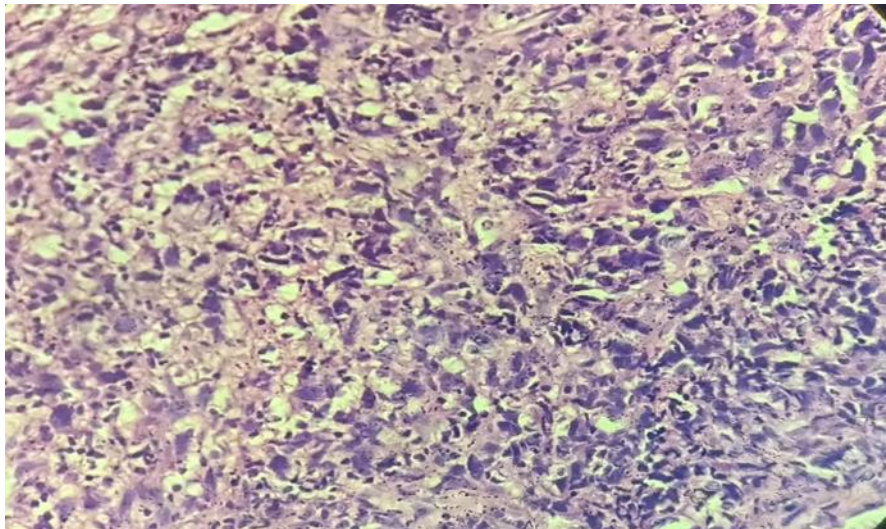
**Figure 2: Well differentiated Adenocarcinoma of lung**



**Figure 3: Small Cell Carcinoma Of Lung**



**Figure 4: Poorly differentiated carcinoma**



## Discussion

In the present study majority were male 30(75%). Similar study findings were found in study done by Chandramouli, Hosmane<sup>11</sup> in Karnataka. Majority of the study participants were affected 26(65%) in the >60 years age group. Similar study findings were found in study done by Chandramouli, Hosmane<sup>11</sup> (40%), Hathila et al<sup>12</sup> (50.7%) and Malik et al (36.6%). Out of 40 cases, majority were smokers 33(82.5%). These findings were consistent with Muhas et al study who found that 69.7% of the study population had history of smoking. In this study among 25(62.5%) study participants right side lesion was present. Similar study findings were found in study done by Chandramouli, Hosmane who reported that 60% of the study participants were right side affected.

In the present study among 40 cases, highest number of cases found with adeno carcinoma 19(47.5%) followed by squamous cell carcinoma 12(30%), small cell carcinoma 8(20%), and cell type undifferentiated was seen among 1(2.5%) cases. No case of large cell carcinoma. These findings were consistent with Chandramouli, Hosmane<sup>11</sup> study in Karnataka, Hathilal et al.<sup>12</sup> and Muhas et al.,<sup>13</sup>

## Conclusion

The present study concludes that males were affected commonly than females and age above 60 years were commonly affected with lung carcinomas. Smoking is one of the important risk factor which found among majority of the study participants. Adenocarcinomas was common histological type of carcinomas was found among study participants. Awareness regarding tobacco cessation programmes among public and early diagnosis of the disease and primary and secondary preventive strategies may reduce the disease burden.

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