

ORIGINAL ARTICLE

Histopathological pattern of lung carcinoma at tertiary care center – A three-year study, RMCH, Bareilly

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Received: 24-10-2021

Accepted: 07-11-2021

How to cite this article:

Agrawal R, Lochab S, Basra P. Histopathological pattern of lung carcinoma at tertiary care center – A three-year study, RMCH, Bareilly. Int J Adv Integ Med Sci 2022;7(1):42-45.

Source of Support: Nil,

Conflicts of Interest: None declared.

Introduction: Lung cancer is one of the most frequent causes of cancer-related deaths worldwide. In India, it accounts for up to 9.3% of all cancer-related deaths in both sexes. Adenocarcinoma, squamous cell carcinoma, large cell, small cell, and undifferentiated carcinoma are the most common histological types that account for more than 90% of all the cases of lung cancers. Aim: The objective was to assess the histopathological pattern of primary malignant lung tumors at a tertiary care hospital over a 3 year period (2018–2020). Results: A total of 122 cases of lung carcinoma studied included 90 males and 32 females, in Respiratory Medicine Department, Rohilkhand Medical College and Hospital, Bareilly. Cases detected by biopsy 82 (67%), fine-needle aspiration cytology (FNAC) 15 (12.29%), and 25 (20.49%) on pleural fluid examination. Patients diagnosed on pleural fluid analysis were excluded as their histopathological type could not be evaluated. Among 97 patients, most common was squamous cell carcinoma 53% followed by adenocarcinoma in 23%, small cell carcinoma 8%, large cell carcinoma 2%, and poorly differentiated 14%. Among 100 smokers, most common was squamous cell Ca 70 (70%). Among 76 nonsmokers, most common type was AdenoCa 30 (39.5%). Conclusion: According to the studies, adenocarcinoma was the most common histological type but at our center, squamous cell carcinoma was the most predominant type.

KEY WORDS: Histopathological pattern, lung carcinoma, squamous cell carcinoma, male predominant, dyspnea, smoking, adenocarcinoma, three year

INTRODUCTION

Lung cancer is one of the most common causes of cancer-related deaths worldwide. In India, lung cancer accounts for 9.3% of all cancer-related deaths in both sexes. Worldwide, cases of lung carcinoma are on track to rise by 38% to 2.89 million by around 2030. The most important risk factor for causation of lung cancer is considered to be tobacco smoking. Additional factors include environmental exposure to radon, asbestos, and metals such

as chromium, cadmium, and arsenic; few organic chemicals; radiation; coal smoke; and indoor emission of burning fuel.

Adenocarcinoma, squamous cell carcinoma, large cell carcinoma, small cell, and undifferentiated carcinoma are the most common histological types which account for more than up to 90% of all cases of lung carcinoma. In the initial decades when smoking lead to epidemic of lung carcinoma, squamous cell carcinoma was observed most commonly. After steadily increase in number of cases during the period 1973–1987, adenocarcinoma replaced squamous cell carcinoma as the most frequent type. Significant change has taken place in the incidence of lung cancer by histologic type. One factor is the reduction in the average nicotine and tar delivery of the cigarettes. Other major component for the decreased smoke emission is correlated to the changes in the composition of the cigarette tobacco blend and cigarettes with filter tips. However, the low-yield cigarette smokers compensate for this low delivery of nicotine by inhalation of smoke more

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deeply and smoking more intensely. This leads to exposure of the peripheral lung to increased amount of the smoke carcinogens which are suspected cause for lung adenocarcinoma.^[1] Moreover, the more intense smoking leads to rise in N-nitrosamines in the smoke by 2–3-fold that causes adenocarcinoma of the lung.^[2] This idea that deeper and more intense smoking causes primarily adenocarcinomas in more distant parts of the lung is supported by the data which show that the most of the lung neoplasms among the smokers of pipes and cigars are squamous cell carcinomas which arise from major bronchi.^[3] The objective of this study was to assess the histopathological pattern of primary malignant tumors of lung at a tertiary care hospital among smokers and non-smokers of both sexes.

MATERIALS AND METHODS

This retrospective study was conducted on 122 patients in Rohilkhand Medical College, Bareilly.

The study was done from January 2018 to December 2020, on patients whose diagnosis was confirmed on biopsy, cytology or fine needle aspiration cytology (FNAC). The routine history taking and examination were done to make the diagnosis of carcinoma. Investigations such as chest X-ray and computed tomography (CT) scan were done before confirming the diagnosis of lung cancer by Biopsy- Bronchoscopic/CT guided/ USG guided/Pleural biopsy, FNAC- USG-guided/CT-guided, and pleural fluid analysis for malignant cells. All the patients with confirmed diagnosis of lung carcinoma were included in the study. The Ethical Committee approval from the institution was taken for conducting this study. The data were coded and entered, it's clearing and compiling was done on a Microsoft Excel spreadsheet and then it was imported into Statistical Package for the Social Sciences (SPSS) version 23 for statistical analysis. Data were analyzed by applying frequency, percentage, mean, and standard deviation.

OBSERVATIONS AND RESULTS

Out of 122, number of cases detected by biopsy are – 82 (67%), FNAC are 15 (12.29%), and 25 (20.49%) on pleural fluid examination [Figure 1]. Patients detected on pleural fluid examination were excluded from the study as we could not evaluate the type of carcinoma in these patients.

Out of total 97 patients, the most common histological type of tumor in both sexes was squamous cell carcinoma in 53%, followed by adenocarcinoma in 23% [Figure 2], small cell carcinoma in 8%, poorly differentiated in 14%, and large cell carcinoma in 2% (Type 2).

Males constituted 74% (90 cases) and females 26% (32 cases) of all malignant primary lung tumors. In our study, the male to female ratio 3:1 is which could be compared with Jindal S.K's study which reports the ratio as 4.5:1. Both among males and females, the most common type was squamous cell carcinoma [Figures 3 and 4]

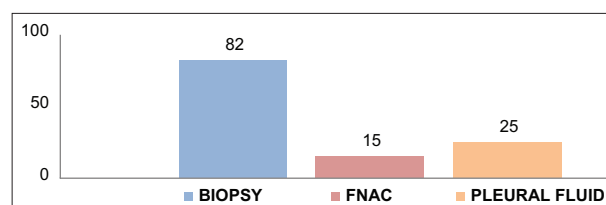


Figure 1: Diagnostic modalities for Lung Ca

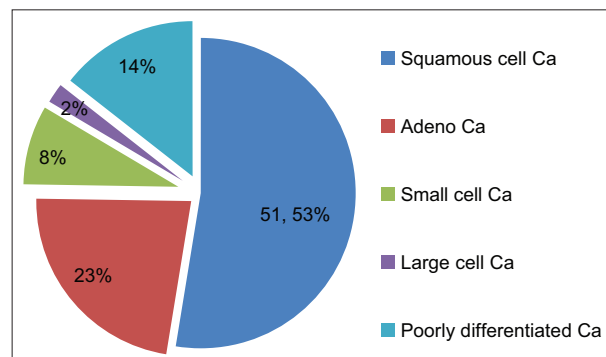


Figure 2: Histologic Type

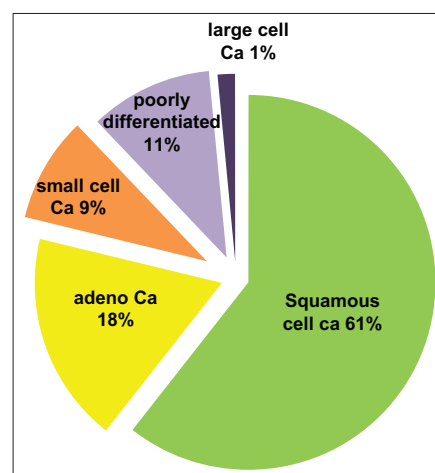


Figure 3: Histopathological distribution in males

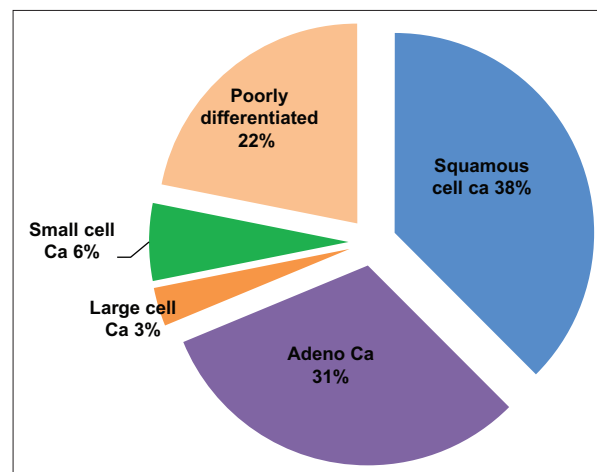


Figure 4: Histopathological distribution among females

In our study, the age range of the lung carcinoma incidence was falling in between 30 and 85 years with maximum number of

cases seen between 56 and 65 years (40%), followed by 46 and 55 years (31%). Least incidence rate was seen in the age group of 76–85 years (2%) [Figure 5]. The overall mean age of patients of primary lung cancer was 56 years. In Jindal S.K's study, 40.2% of patients were <50 years of age. Squamous cell carcinoma was most predominant in the age group of 56–65 years [Figure 6]. No significant difference in histopathological type was observed in other age groups. This observation needs to be further studied on a larger scale of population.

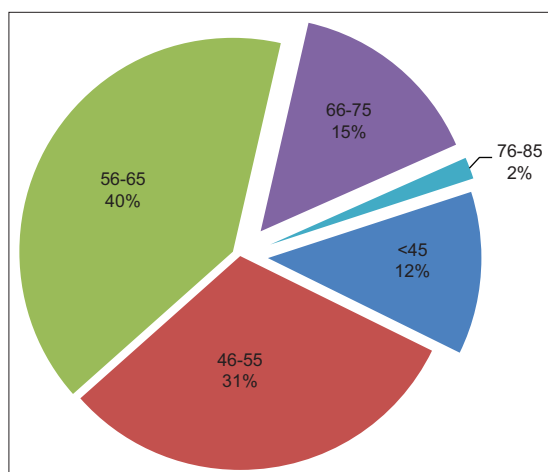


Figure 5: Age distribution in Lung Ca cases

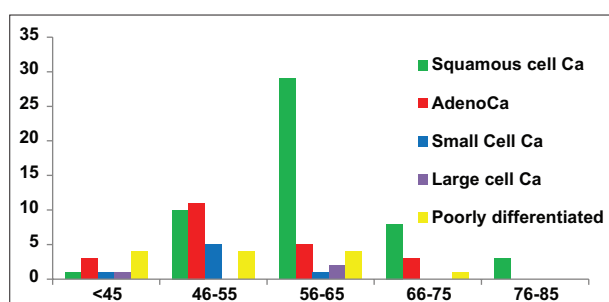


Figure 6: Age-wise distribution of histopathological pattern

Study constituted 70 smokers and 22 non-smokers. All histological types were strongly associated with smoking, though the risks were considerably lower for AdCa (13%) than for SqCC (71%). Among smokers, the most common was squamous cell Ca (71%) [Figure 7]. Pesch *et al.* concluded that AdCa was the most common subtype among never smokers and among women. The greater the amount smoked, the greater the proportion of SqCC and SCLC relative to AdCa.

DISCUSSION

Over the few years, there has been rising trend of adenocarcinoma. Among many countries, AC has surpassed SCC as the most common histologic variant of lung cancer. This could be attributable to the changed smoking pattern and increased incidence of lung cancer among women and non-smokers. We found at our center that squamous cell carcinoma (48%) is predominant than adenocarcinoma (25%) as reported in other Indian studies and attributes these findings to higher number of smokers in our study. The distribution is dissimilar to the most Western studies, where adenocarcinoma is now the most frequent form of lung cancer which is probably due to the trend of smoking filtered cigarettes. Overall, it appears that the clinical spectrum of lung cancer in our study group is identical to other Indian studies.^[4-8]

CONCLUSION

It seems that the clinicopathological profile of the patients with lung cancer has undergone observable changes over the past few decades, especially in the rise in the incidence of adenocarcinoma and their common presence in smokers. This difference in histopathology may be due to the fact that smoking is less prevalent among women in India as opposed to the West, where it is rising; and urbanization, that exposes the patient to other carcinogens, risk factors or a complex interaction among gender, race, and smoking status in West.

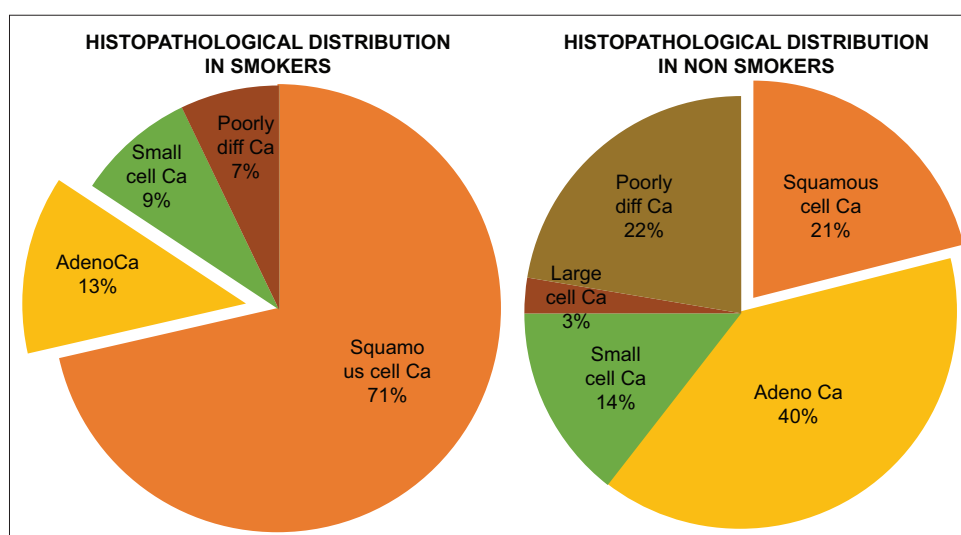


Figure 7: Histopathological distribution in smokers and non-smokers

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