

Histological Pattern of Bronchial Carcinoma among patients admitted in tertiary level hospital

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Key Words: Bronchial carcinoma; Histological pattern; Squamous cell carcinoma; Smoking.

ABSTRACT:

Background: Bronchial carcinoma is the most frequently diagnosed cancer in the world. It is the prime cancer among the males & fourth most common cancer in women, according to hospital-based data from Bangladesh. However, considering very limited studies regarding histological types of this common cancer, the study was designed to assess the histological types of lung cancers in patients admitted in a tertiary level hospital.

Methodology: The study was a hospital based cross-sectional observational study. A total 50 patients suffering from Bronchial carcinoma were selected by convenient purposive sampling. Data collection were done by researcher focusing socio-demographic profile, details of the disease and their histological types by using a structured questionnaire.

Result: Among 50 study population, mean age was 59.60 ± 11.41 SD (years) with 72% male and 28% female. Male: female ratio was 2.6:1. Most of them (44%) came from poor family. About 68% patients smoked regularly (91.2% male vs 8.8% female) and 32% patients were non-smokers. Squamous cell carcinoma of lung was the most prevalent (52%), followed in decreasing order by adenocarcinoma (32%), small cell cancer (8%), large cell cancer (4%) and undifferentiated carcinoma (4%). Squamous cell carcinoma was more common in smokers (61.8%) in relation to non-smokers (31.2%). Whereas, adenocarcinoma was found more in non-smokers (56.2%) than in smokers (20.6%).

Conclusion: Squamous cell carcinoma is the most common form of Bronchial carcinoma in Bangladesh and occurs relatively in aged patients. But to finalize the result larger cohort is required.

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Introduction

Among all human cancers, carcinoma of the lung has the highest mortality rate and is the leading cause (18%) of

all cancer deaths worldwide [1,2]. In women, carcinoma cervix and Breast cancer are the most prevalent followed by mouth- oropharynx, lung and esophageal cancer.

These four types accounts for about 95% of all cases of primary lung cancers divided cases of lung cancers into two broad categories - small cell carcinoma and non-small cell carcinoma [3]. Although for many years squamous cell carcinoma is the most common histological type, adenocarcinoma has been increasing in incidence over last 20 years Adenocarcinoma has become today the most common histological type of lung cancers and responsible for 50% of all lung cancers [4,5]. The incidence and mortality rate of lung cancer increased markedly through most of the last century, first in men then in women, lung cancer is now accounts for 14% of new cases and 28% of all cancer deaths each year in the United States [6]. Death rates for lung cancer in women surpassed those for breast cancer in 1987 and lung cancer is now the leading cause of cancer deaths in both genders. Studies conducted in the USA, Western Europe and China observed a higher smoking related risk of Squamous cell carcinoma and small cell carcinoma than that of adenocarcinoma of the lung [7,8]. Since 1964 many reports have stressed the causative relations between smoking and lung cancer. The risk being proportional to the amount smoked and to the tar content of the cigarettes. The death rates from the disease in heavy smokers is 40 times that of in non-smokers [9]. Risk of developing lung cancers increases with duration of smoking and the number of cigarettes smoked per day and diminished by discontinuing smoking. The specific carcinogens in tobacco smoke responsible for lung cancer was demonstrated and animal experiment to induce cancer confirmed them [10]. The upper lobe cancer is more common among smokers & histologically most of them are squamous and small cell type adenocarcinoma are more common in lower lobes and is the most common histological type of lung cancer In both smokers and nonsmokers at present. Numerous occupational and environmental carcinogens are known to increase lung cancer risk in cigarette smokers. The best studies of these factors are exposed to asbestos and radon, additional hydrocarbon and vinyl chloride. Smokers who are exposed to asbestoses have almost 100 times the risk of lung cancer compared with nonsmokers without asbestos exposure [11]. There are some evidence that lung cancer may develop in members of the families of lung cancer patients [12]. The familial risk was slightly greater for case with adenocarcinoma of the lung. The familial association of primary lung cancer is most evident among women, nonsmokers and those with adenocarci-

noma [13]. It may be concluded that there are many causes of lung cancer some that increases a person's susceptibility e.g. presence of chronic obstructive pulmonary disease and others that are truly carcinogenic. Furthermore the data indicate that multiple carcinogens do not simply add the risk of one to the risk of others but, instead the total risk is the product of one factor times the other [14].

Methods

A cross-sectional observational study was conducted in the Department of Medicine at a Sir Salimullah Medical College & Mitford Hospital, Dhaka over a period of six months, from June 2017 to December 2017. 50 cases of bronchial carcinoma were included. All patients admitted with clinical and histological diagnosis of bronchial carcinoma were enrolled in this study.

Selection criteria

Inclusion criteria:

- Patients having clinical and radiological findings suggestive of bronchial carcinoma
- From whom informed consent can be obtained.

Exclusion criteria:

- When detailed history, clinical examination and radiological findings raised the possibility that the lung cancer is a secondary one as opposed to primary one.
- Established cases of malignancy in other sites.

Study procedure

Before commencement of the study, prior approval was taken from the Ethical Review Committee (ERC) from SSMC to conduct the study. An operational definition and study plan was made during protocol development. Patients suffering from bronchial carcinoma were approached from the study. Following describing the aim and objectives of the study, benefits and potential hazard of the study, informed written consent form was obtained from each of the patients. Face to face interview was conducted by using a semi-structured questionnaire containing socio-demographic parameters and relevant information about Bronchial carcinoma and histological pattern. The principal investigator was taken the details history and examination of the patients. Following investigation were performed for confirmation of the diagnosis Bronchial brushing and Broncho alveolar lavage, Bron-

chial biopsy, CT guided FNAC. Histopathological report was collected and documented in to the questionnaire. Collected data were encoded into the data collection form and after cleaning and editing, it was inputted into a statistical software. Analysis was done the SPSS 16.

Data Processing and Analysis

All the data were checked and edited after collection. Then data were entered in SPSS 16 for Windows 7 program version. An analysis plan was developed with concordance of the objectives of the study. Frequency distribution and normal distribution of all continuous variables were calculated and expressed as Mean $\pm$ SD. To assess the correlation and significant test: chi-square test was considered in each case. In all cases p value was considered $<.05$.

Result

Mean age of the 50 cases was 59.60 ± 11.41 years. Maximum age was 85 years and minimum age was 36 years.

Table 1: Demographic characteristics of the study subject (n=50)

Variables	Frequency	Percentage
Age		
31-40	3	6%
41-50	8	16%
51-60	15	30%
61-70	15	30%
71-80	7	14%
>80	2	4%
Education		
Illiterate	6	12%
School	22	44%
College	14	28%
University	8	16%
Occupation		
Farmer	13	26%
Business	10	20%
Service	7	14%
Housewife	10	20%
Other	10	20%
Religion		
Muslim	48	96%
Hindu	2	4%
Residence		
Urban	19	38%
Rural	31	62%
Economy		
Poor	22	44%
Middle class	18	36%
Rich	10	20%

The majority of patients were aged 51–70 years (60%), indicating that arthritis in systemic lupus erythematosus (SLE) predominantly affects middle-aged to elderly individuals. Most participants had school-level education (44%), and a significant portion were farmers (26%). Regarding religion, 96% were Muslim and 4% were Hindu, reflecting the general demographic distribution of the region. A majority of patients were from rural areas (62%), and 44% belonged to the poor socioeconomic group, suggesting a predominance of cases among rural and economically disadvantaged populations.

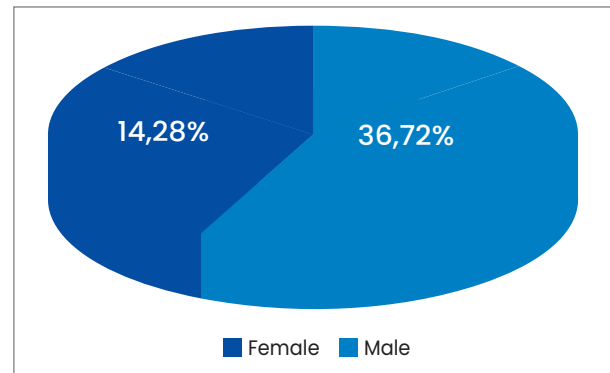


Figure 1: Sex distribution of patients (n=50)

Among 50 subjects of lung cancer 72% were male and 28% were female. Male: female ratio was 2.6:1. (Figure 1)

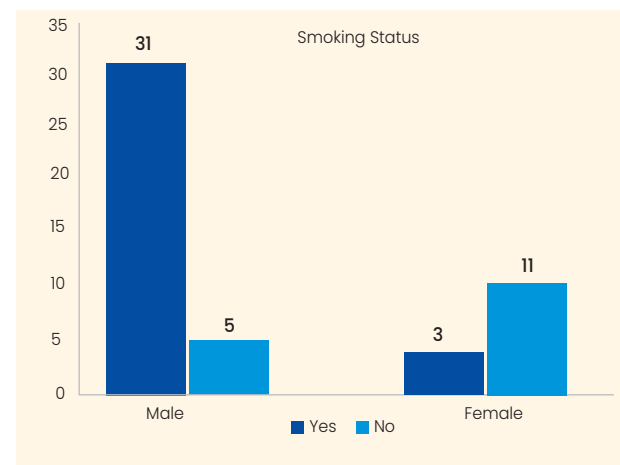


Figure 2. Smoking status of patients (n=50)

Among all patients who were enrolled for this study 68% patients smoked regularly and 32% patients were non-smokers. Among 36 patients who were smokers 91.2% were male and 8.8% were female. Among 16 non-smokers 68.8% were female and 31.2% were male.

Table 2: Distribution of patients according to histologic type of carcinoma lung (n=50)

Variables	Frequency	Percentage
Squamous cell carcinoma	26	52%
Adenocarcinoma	16	32%
Small cell cancer	4	8%
Large cell cancer	2	4%
Undifferentiated	2	4%

The most common type of carcinoma encountered was squamous cell carcinoma of lung (52%), followed in decreasing order by adenocarcinoma (32%), small cell cancer (8%), large cell cancer (4%) and undifferentiated carcinoma (4%).

Table 3: Relationship of sex with histologic type of carcinoma (n=50)

Variable	Male n (%)	Female n (%)	p Value*
Squamous cell carcinoma	21 (58.3%)	5 (35.7%)	0.171
Adenocarcinoma	8 (22.2%)	8 (57.1%)	
Small cell cancer	3 (8.3%)	1 (7.1%)	
Large cell cancer	2 (5.6%)	0	
Undifferentiated cancer	2 (5.6%)	0	
Total	36 (100%)	14 (100%)	

*p value determined by χ^2 test

Squamous cell carcinoma was more common in male (58.3%) in relation to non-smokers (35.7%). Whereas, adenocarcinoma was found more in non-smokers (57.1%) than in smokers (22.2%). But the differences in distribution was not significant (p= 0.171). Rest of the distribution is given in table 3.

Table 4: Relationship of smoking with histologic type of carcinoma (n=50)

Variable	Smoker n (%)	Non-smoker n (%)	p Value*
Squamous cell carcinoma	21 (61.8%)	5 (31.2%)	0.107
Adenocarcinoma	7 (20.6%)	9 (56.2%)	
Small cell cancer	3 (8.8%)	1 (6.2%)	
Large cell cancer	2 (5.9%)	0	
Undifferentiated cancer	1 (2.9%)	1 (6.2%)	
Total	34 (100%)	16 (100%)	

*p value determined by χ^2 test

Squamous cell carcinoma was more common in smokers (61.8%) in relation to non-smokers (31.2%). Whereas, adenocarcinoma was found more in non-smokers (56.2%) than in smokers (20.6%). But the differences in distribution was not significant (p= 0.107). Rest of the distribution is given in table 4.

Table 5: Distribution of subjects according to symptoms (n=50)

Symptoms	Frequency	Percentage
Cough	45	90%
Haemoptysis	35	62%
Breathlessness	31	70%
Chest pain	28	56%
Loss of appetite	25	50%
Weight loss	24	48%
Hoarseness of voice	22	44%
Wheeze	10	20%
Fever	15	30%

The most common symptom was cough (90%) followed in decreasing order by breathlessness (70%), hemoptysis (62%), chest pain (56%), loss of appetite (50%), weight loss (48%), hoarseness of voice (44%), fever (30%) and wheeze (20%).

Table 6: Distribution of subjects according to signs (n=50)

Clinical features	Frequency	Percentage
Clubbing	33	65%
Mass lesion	20	40%
Pleural effusion	14	28%
Peripheral lymphadenopathy	13	25%
SVC obstruction	5	10%
Stridor	2	4%
Chest wall invasion	2	4%

The most common sign was clubbing (65%) followed in decreasing order by mass lesion (40%), pleural effusion (28%), peripheral lymphadenopathy 25%, SVC obstruction 10%, stridor 4% and chest wall invasion 4%. See table 6.

Table 7: Radiologic features patients with bronchogenic carcinoma (n=50)

Clinical features	Frequency	Percentage
Solitary pulmonary mass	48	96%
Signs of collapse	16	32%
Pleural effusion	15	30%
Hilar prominence	14	28%
Rib destruction	10	20%
Multiple nodules/masses	4	8%
Solitary pulmonary nodule	3	6%
Post obstructive consolidation	2	4%

Solitary pulmonary mass was found 96% of cases. Six percent patients came with solitary pulmonary nodule. Other radiologic features are listed in table 7.

Discussion

Bronchial carcinoma is the most common cancer in the world. Patients with lung carcinoma present with a wide range of clinical symptoms. The symptoms of lung cancer can be nonspecific which delay the diagnoses in some patients [15]. But some clue can be obtained from the history of the patients which raises the suspicion of lung cancer. The age of presentation of lung cancer has remained at sixties for years. This study found mean age of presentation 59.60 ± 11.41 years. This is similar to the findings reported by Pandhi et al [16], Pujari et al [17] and Dhandapani et al [18]. They reported a mean age of 59.3 years, 61 years, and 59.8 years respectively. Majority of the patients were found between 51 to 70 years of age group. This is supported by the fact that lung cancer is mainly a disease of the elderly [19]. The male: female ratio of patients of lung cancer differed from study to study. A male-female ratio of 2.6:1 was found in this study. Nearly similar ratio was reported in an study done in India [16]. A high proportion of male lung cancer patients could be explained by the fact that women are less prone to smoking due to differences in gender role in the society [20]. But, with increasing economic independence and increasing diffusion of cigarettes in the society, use of tobacco by women is also increasing [21]. In this study 91.2% smokers were found to be male and 8.8% patients were female. Among all patients of bronchial carcinoma in this study, 68% patients smoked. This is concordant with findings of Pujari and colleagues, who reported 63.41% smokers in their study [17]. A smoker: non-smoker ratio of 2.1:1 was found in the present study. This is higher the findings of Dhandapani and colleagues. They found a ratio of 1.45:1 [18]. On the other hand Mandal and colleagues found a ratio of 3.7:1 in their study [22]. Majority of patients in this study was farmers (26%) and 44% of study subjects were poor. Most of the patients came from rural area (62%). The most common symptom of patients studied was cough (90%) this can be due to early mucosal changes induced by the tumor and chronic bronchitis associated with smoking. Pandhi et al reported 80% prevalence of cough among lung cancer patients [16]. Clubbing was the most common finding found in this study (65%). Similarly, Hassan et al found clubbing in 44.1% of their patients in their study done in Chittagang Medical College Hospital [23]. The most common radiologic finding was solitary pulmonary mass (96%), this was followed in second and

third by signs of collapse (32%) and pleural effusion (30%). Pujari et al found a well-defined mass in 63.41% patients followed by signs of collapse in 32.92% cases [17]. Whereas, Dhandapani found mass (81.5%) followed by nodules (37%) in their study with lung cancer patients [18]. Pulmonary nodules were found in 6% patients of this study. In this study the most type of carcinoma was squamous cell carcinoma or SCC (52%). According to Hassan et al., squamous cell carcinoma also found to be most common histologic type of lung cancer (66.1%) [23]. Dubey et al. reported majority SCC (40.9%) in their study [24]. Whereas a Kanematsu and colleagues found adenocarcinoma of lung in majority of cases (51%) in a study done in Japan [25]. The findings of this study in relation to smoking shows also to be the case as SCC was found in 61.8% of the patients. The majority of SCC patients were male (58.3%) who were found be smoking in higher proportion than female. This finding is also endorsed by the study done in northeastern India including 454 patients of lung cancer where a higher proportion of SCC was found in male and smoker patients [22]. On the other hand, adenocarcinoma was found in 32% among all patients in the present study second to SCC. Adenocarcinoma was found more in female patients (57.1%). Lung cancer is being increasingly diagnosed in women. Worldwide non-small cell lung cancers account for 85% of all lung cancers and small cell cancer accounts for 15% of cases [26]. In this study, small cell carcinoma was found in 8% of patients and non-small cell cancer accounted for rest of the cases.

Conclusion

In my study, majority of the patients were in 51-70 years of age, predominantly male and smoker. According to histopathological types squamous cell carcinoma of lung was most common 52%, followed by adenocarcinoma (32%), small cell carcinoma (8%), and others. SCC more common among male and smoker, adenocarcinoma was found more in female patients and among non-smoker. About 90% patients presented with cough, >50% presented with other symptoms like hemoptysis, breathlessness and chest pain. However to finalize the result, larger cohort study is required.

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