

Original Article

Clinicopathological Profiles of Laryngeal Squamous Cell Carcinoma from a Tertiary Hospital in Sylhet, Bangladesh

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Abstract:

Background: Laryngeal cancer accounts for one-third of head and neck cancers, posing a significant global health concern due to its impact on morbidity and mortality. Its management may sometimes be challenging, especially in developing countries due to late presentation, poverty and limited resources.

Aim: This study aimed to highlight the demographic and clinicopathological profiles of most common laryngeal cancer, laryngeal squamous cell carcinoma (LSCC) in a tertiary care hospital in Bangladesh.

Material and methods: This cross-sectional study was conducted in the Department of Pathology, Sylhet MAG Osmani Medical College, from March 2021 to January 2023. A total of 50 histopathologically diagnosed cases of LSCC were included and demographic and clinicopathological data were collected by using a structured case record form. The sampling technique was convenience of non-probability type.

Results: The mean age of the patients was 62.8 years, 66% were male, and 62% were smoker. The cancer was supraglottic in location in 31 (62%) patients, while 23 (56%) patients presented with Stage III (T3) disease. Nodal metastasis was present in 31 (62%) of the patients with N2 in 18 (36%) cases. Grade I is the most frequent histopathological grade (48%), followed by grade II (42%) and grade III (10%).

Conclusion: A significant proportion of the patients were male, smoker, and presented at a relatively advanced stage with neoplasms involving the supraglottic region.

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Introduction

Laryngeal cancer (LC) ranks as the second most prevalent malignancy within the upper aerodigestive tract, surpassed only by lung cancer worldwide.¹

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More than 90% of laryngeal tumors arise from the mucosal epithelium, with well-differentiated squamous cell carcinoma (SCC) representing the predominant histological subtype.² South and East Asia carried the heaviest burden of LC worldwide.¹ Previous study from Bangladesh revealed that 35.32% of all body cancers were in Head and Neck region and the commonest one was LC.³ Another study reported that 25% of the Head-Neck Carcinoma was LC.⁴

Tobacco smoking and alcohol ingestion are two independent and most common risk factors for

development of LSCC. Laryngopharyngeal reflux, exposure to asbestos, polycyclic aromatic hydrocarbons, wood dust, coal dust and cement dust, infections with HPV and EBV viruses were also recognised as risk factors, especially in non-smokers.⁵⁻⁷

Treatment modalities for LC include surgery, chemotherapy, and radiotherapy. Effective management of LSCC necessitates precise diagnosis, accurate tumor staging, appropriate selection of therapeutic modality, and vigilant postoperative monitoring.² In developing countries, the primary challenges in managing the disease included delayed presentation and limited acceptance of surgical intervention by patients and their families.⁸ Although LC is a common head-and-neck cancer in our environment, there is paucity of literature on clinicopathological characteristics of LSCC in the study area. This study, therefore, explores the epidemiological trends, clinical manifestations, and pathological profile of LSCC in a tertiary hospital located in Sylhet, Bangladesh.

Material and methods

This was a cross-sectional study conducted in the Department of Pathology, Sylhet MAG Osmani Medical College, Sylhet from March 2021 to January 2023 after taking institutional review board clearance. The sampling technique was convenience of non-probability type.

Histopathologically confirmed 50 cases of LSCC were included in this study. Patients having history of previous chemotherapy and/or radiotherapy were excluded. Demographic and relevant clinical information such as age, sex, histopathological diagnosis with grade and stage were collected. Clinical staging was done according to AJCC cancer staging manual.⁹

The results of the study were statistically analyzed using the Statistical Product and Service Solution (SPSS) version 25.0 for windows. Data were expressed as mean $\pm$ SD for the quantitative variables, numbers, and percentage for qualitative variables. Only descriptive statistics were used in the analysis.

Results

A total of 50 cases showed age variations ranging in between 38 years to 100 years. Among them most of the study cases were

between 61 to 70 years (40%) and the least number of the study cases were >70 years (14%). Mean age of patients was 62.82 ($\pm$ 13.26) years. There were 33 (66%) male patients and 17 (34%) cases were female with male to female ratio 1.9:1. Twenty three (46%) patients belonged to either middle social class (46%), followed by 22 (44%) in poor social class and five (10%) patients were from high social class (Table I).

Table I: Sociodemographic characteristics of the patients (n=50)

Variables	Frequency	Per cent
Age (years)		
≤50	9	18.0
51-60	14	28.0
61-70	20	40.0
>70	7	14.0
Mean $\pm$ SD (Min-Max)	62.82 $\pm$ 13.26 (38-100)	
Gender		
Male	33	66.0
Female	17	34.0
Socioeconomic class		
High social class	5	10.0
Middle social class	23	46.0
Poor social class	22	44.0

Out of 50 patients, 31 (62%) reported to smoke tobacco in this study (Figure 1). Moreover, 42 (82%) patients reported to chew tobacco.

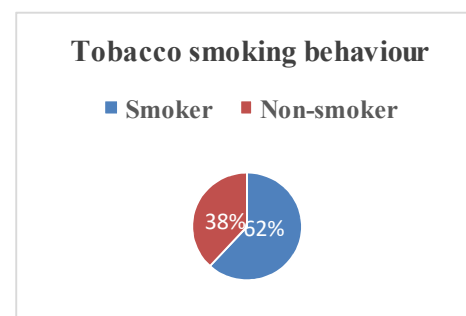


Figure 1: Tobacco smoking behaviour of the patients (n=50)

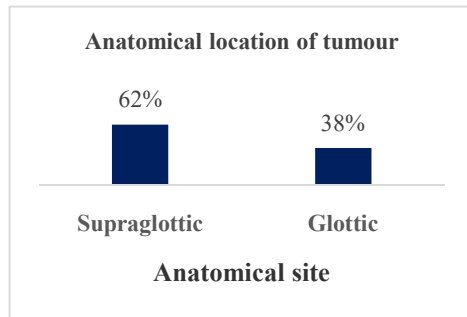


Figure 2: Anatomical distribution of laryngeal squamous cell cancers.

In present study 31 cases (62%) had supraglottis and 19 cases (38%) had glottic cancer. Figure 2 is showing topography of LSCC.

Out of Fifty (50) study cases, most frequent clinical T stage was T3 (56%) followed by T2 (30%) and T1 (14%). In this study, most frequent clinical N stage was N2 (36%) followed by N1 (26%). Table II is showing distribution of cases in each clinical and nodal stage.

Table II: Distribution of the patients according to tumour size, and nodal involvement

Variables	Frequency	Per cent
Clinical T stage		
T1	7 (14.0)	14.0
T2	15 (30.0)	30.0
T3	28 (56.0)	56.0
Clinical N stage		
N0	19	38.0
N1	13	26.0
N2	18	36.0

Histopathological evaluation by punch biopsies via fiberoptic and direct laryngoscopy revealed well differentiated type in 48%, moderately differentiated in 42%, and poorly differentiated in 10% patients. Table III is showing histopathological findings of patients.

Table III: Histopathological findings of patients.

Histological grade	Frequency	Per cent
Well differentiated	24	48.0
Moderately differentiated	21	42.0
Poorly differentiated	5	10.0

Discussion:

Bangladesh has yet to conduct a national-level study to determine the incidence and epidemiology of LC. Small-scale hospital-based studies provide essential information without population-based studies. In this regard, 50 cases of LSCC from a tertiary-level hospital in Sylhet, Bangladesh, may have credentials that reflect specific facts regarding LSCC.

The mean age of the patients in the current study was around 63 years, and 40% of the patients were between 61 and 70. The age distribution of the present studied patients was similar to previous studies conducted in Bangladesh and its neighboring countries.¹⁰⁻¹³ It was a common fact that aging and carcinogenesis run together. Among many cancers, it is observed that LC also occurs more often in the elderly.¹⁴

Regarding sex, there was a male preponderance with a male-to-female ratio of 1.96:1 in the present study. The male preponderance seems to relate to the social habit of smoking, which is rare in women in this geographic region. Male predominance was also observed in the study of Uddin et al. (93.75%), Ghosh et al. (96%), and Chauhan et al (92.3%).¹⁰⁻¹²

Generally, in public hospitals, people from lower socioeconomic conditions take their healthcare services; it can be assumed that the majority are from poorer sections of society. In the current study, most patients belonged to either middle class (46%) or poor social class (44%), and only five (10%) were from the high social class, which agrees with a previous study from Bangladesh.¹⁰

The global incidence of LC has decreased, a trend that parallels the marked reduction in smoking rates observed in developing countries. However, tobacco use continues to rise in low socioeconomic countries, potentially leading to an increased burden of laryngeal cancer in this regions in the near future.¹⁴ Smoking is a common habit among the male in this part of the world.¹⁵ Since LC is a male-dominant disease, smoking may likely be a predisposing risk factor for the disease. In the present study, 62% of the patients reported smoking tobacco.

The tumor's location inside the larynx is an essential factor to consider from a clinical and prognostic point of view.¹⁴ Carcinoma arising in the glottic part produces voice changes. Hence,

even small lesions are detected in the early course of the disease. On the other hand, the supraglottic and subglottic tumors are challenging to detect because tumors in those locations do not affect the voice.¹⁵ In this series, the most standard site of LSCC was the supraglottic region at 62%, and the relative frequency of glottic carcinoma was 38%. The frequency distribution of supraglottic and glottic carcinoma has wide geographical variation and may change with time in the same geographical area. In two recent studies from Bangladesh and India, supraglottic were found to be 75% and 34%, respectively.^{10,11}

In agreement with several other studies, majority of our patients presented late with T3 disease.^{16,17} In contrast to this, Nachalon et al.¹⁸ reported that most of their patients were diagnosed at Stage I and II disease. This late diagnosis might be because early symptoms look like common cold, limited public awareness and shortage of trained healthcare professional capable of suspecting and identifying LC in the study site.

The incidence of lymph node metastasis varies with the location of primary tumour. The high incidence of metastasis in supraglottic cancer is due to rich lymphatics supply in the supraglottic region of larynx. In our analysis, cervical node metastasis was present in 31 (62%) cases at time of presentation, which was 56.92% and 35% in the study of Chauhan et al.¹², and Shuaibu et al.¹⁶, respectively.

In this study, the most frequent histopathological Grade was well-differentiated (48%), followed by moderately differentiated (42%) and poorly differentiated (10%). This was similar to the study of Ghosh et al, which found that most of the LSCC were well-differentiated (54%). The remaining cases were moderately differentiated (36%) and poorly differentiated (10%) LSCC.¹¹

Limitations:

Study samples were obtained from a single institute, leading to concerns about the generalizability of the findings nationwide.

Conclusion and recommendation:

A significant proportion of the patients were male, smoker, and presented at a relatively advanced stage with neoplasms involving the

supraglottic region. Cigarette smoking was the most common risk factor. Public awareness towards the avoidance of smoking will reduce the risk of development of LSCC and head and neck cancers overall in developing countries like Bangladesh. Future prospective studies on the independent prognostic factors and predictors of recurrence in LSCC are desirable to help inform clinical treatment and prognosis guidelines.

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