

Original Article

Clinicopathological Study of Supraglottic Laryngeal Malignancies

Md. Milon Kazi¹, Md. Iqbal Hossen², Fazle Elahi Jonaed³, IM.Hashim Reza Roktim⁴,
Mirza Kaiser Elahi⁵, M. Alamgir Chowdhury⁶

¹Resident, ENT-HNS, Dhaka Medical College, Dhaka, Bangladesh.

²Registrar, ENT-HNS, Anwer Khan Modern Medical College, Dhaka, Bangladesh.

³Resident, ENT-HNS, Dhaka Medical College, Dhaka, Bangladesh.

⁴Resident, ENT-HNS, Dhaka Medical College, Dhaka, Bangladesh.

⁵Resident, ENT-HNS, Dhaka Medical College, Dhaka, Bangladesh.

⁶Head of Department of ENT-HNS, Anwer Khan Modern Medical College, Dhaka, Bangladesh.

Abstract:

Background: Laryngeal malignancy is the second most common malignancy in head neck region worldwide. Incidence of supraglottic carcinoma is more common in this country which interferes with most vital functions in the sufferers like voice, respiration and swallowing by virtue of its anatomical location, local infiltration and direct extension.

Objectives: To find out the clinicopathological profile of supraglottic laryngeal malignancies of the patients attending in a tertiary level Hospital.

Methods: A cross sectional study was conducted among seventy eight cases of supraglottic carcinoma who were histopathologically proven selected from the in-patient department of ENT and Head -Neck Surgery Dhaka Medical College Hospital, Dhaka during January 2020 to July 2021.

Results: Among 78 cases in this study, male: female ratio 10.1:1 and mean age was 52.1 (\pm 4.6) years with the range from 40 to 78 years. Majority of the patients came from low socio-economic condition (79.5%). Regarding habit 93.6% of cases were smoker and 59% are habituated in chewing betel nut and leaves, 3.8% were with chewing tobacco and alcohol 2.6%. Most of patients presented with more than one symptom and the commonest was change of voice (87.2%), which followed by dysphagia (78.2%), neck swelling (55.1%), irritable cough (32%) and dyspnoea (20.5%). A big portion of the patients (39.7%) had T2 lesion followed by T3 lesion (38.5%), T1 lesion (11.5%) and T4 lesion (10.3%) clinically. Clinical nodal involvement presented in 55.1% cases and there was no distance metastasis. 56 (71.8%) patients had exophytic growth and 22 (28.2%) patients had ulcerative growth. A large portion of the patients (65.4%) had growth in Aryepiglottic fold followed by False Cord (34.6%), arytenoid (29.5%) and Epiglottis (25.6%). On histopathological evaluation, Squamous cell carcinoma (SCC) was present in 85.8% cases, well differentiated (14.1%), moderately differentiated (53.8%), and poorly differentiated (17.9%). While Adenocarcinoma found in 7.7% cases and Non-Hodgkin Lymphoma present in 6.4% cases.

Address of Correspondence: Dr. Md. Milon Kazi, Resident, ENT-HNS, Dhaka Medical College, Dhaka, Bangladesh. Phone: +8801816688330, Email: kazimilon121212@gmail.com

Conclusion: *Supraglottic carcinoma usually occurs in 5th decade with male predominancy in poor socio economic group. Smoking, chewing (tobacco and betel nut) habits and alcohol consumption have got strong relation in the causation of supraglottic carcinoma. More than half of the cases has nodal metastasis and predominant histological type was squamous cell carcinoma.*

Keywords: *Supraglottic malignancy, risk factors, staging, nodal metastasis.*

Introduction:

Supraglottic Carcinoma mostly occurs in advanced age i.e. maximum age incidence 5th decade & almost all were male (Mahfuz et al. 2014)¹. No single specific etiologic factor for this carcinoma has been cited, but Cigarette smoking, tobacco, betel nut and leaf chewing, heavy alcohol consumption were the most frequently identified risk factors (Chauhan et al 2018)².

Supraglottic cancer is also associated with exposure to environmental toxins and chemical carcinogens such as asbestos, wood dust, cement, polycyclic aromatic hydrocarbons and therapeutic radiation as well. Gastroesophageal reflux disease (GERD), nutritional deficiencies particularly that of vitamins and iron has been linked with hypo-pharyngeal and laryngeal carcinoma. Human papilloma virus (HPV) is considered as a new etiological factor (Ahmed et al. 2009)³. The risk is 5.4 times higher in people with HPV infection & risk is higher with HPV type 16 than HPV type 18 (Chauhan et al. 2018)². Almost all patients present with more than one symptom. The commonest symptoms was change of voice (82%) which was followed by dysphagia (76%), respiratory distress (54%) and neck swelling (42%). 32 (64%) cases had enlarged cervical lymph nodes out of which 27 (84.37%) were homolateral (Hossain et al. 2010)⁴. This carcinoma interferes with most vital functions in the sufferers like voice, respiration and swallowing by virtue of its anatomical location, local infiltration and direct extension. The incidence of lymph node metastasis in

supraglottic carcinoma is also more common than glottis one.

Cancer of the supraglottis is almost exclusively squamous cell carcinoma which is radiosensitive. So, for early stages with small tumour bulk, surgery can be avoided and thus laryngeal function can be preserved. In our country most of the cases of supraglottic carcinoma are at an advanced stage at the time of their presentation. Poverty, illiteracy of the general population as well as paucity of centers which can deal with the throat cancer are responsible for usual delay at presentation. Although sometimes we need help of imaging and direct laryngoscopic findings, we mainly depend on clinical findings for staging of supraglottic carcinoma.

The present study will be undertaken as description of laryngeal masses particularly supraglottic laryngeal masses among the patients of various socio-economic background attending in the ENT department of Dhaka Medical College with a view to describing clinico-pathological profile of Supraglottic laryngeal tumour. The results of this study will provide some knowledge that may help in the early diagnosis and choice of treatment modalities. It may also have some prognostic value as well.

This study will give us information about the sociodemographic features, aetiological factors and clinical presentation of supraglottic carcinoma and will be able to compare the findings with those of previous studies carried out at home and abroad.

Methods:

Study design:

Descriptive Cross-sectional study.

Place of the study:

Department of ENT and Head -Neck Surgery
Dhaka Medical College Hospital, Dhaka.

Duration of the study:

1.5 year from January 2020 to July 2021.

Study population:

All cases of Supraglottic Laryngeal carcinoma admitted in the Department of ENT and Head -Neck Surgery of Dhaka Medical College Hospital, Dhaka

Sampling technique:

Purposive sampling.

Sample size: Sample size of this study was 78

Data collection technique: Semi structured questionnaire was prepared and pre-tested was done and modified accordingly. The study participants were explained about the study and written informed consent was obtained. Face to face interview was done by the researchers using semi structured questionnaire among the population who fulfill the selection criteria.

Data collection tools: On the basis of objective and variables of study, a semi structured questionnaire was prepared.

Questionnaire was checked by Department of ENT and Head-Neck Surgery, Dhaka Medical College Hospital before collecting the data and designed according to the objectives to get the information of different variables.

Data entry: After collection of data from the respondents, all data were checked and made entry in SPSS software. All data input were done with proper caution.

Data Cleaning: After completing entry of data in software, cleaning was done in order find out the error of input or any data missing during entry.

Presentation and interpretation:

All data were analyzed after through the checking, cleaning, editing and compiling by the 25th version of SPSS. Descriptive statistics was done first; frequency tables and figures will present accordingly.

Results:

This cross-sectional study was conducted to find out the clinico-pathological profile of supraglottic laryngeal malignancies of the patients attending in a tertiary level Hospital. Total sample size was 78.

Age of the patients was divided into 6 categories. The highest 32.1% of the patients were between 50-54 years old. The second highest 21.8% patients were between 40-44 years old followed by 18.0% patients from 60-64 years old and the lowest 6.3% patients were more than 65 years old. The mean age of the patients was 52.1 (\pm 4.6) Years

Table I :

Distribution of the patients by risk factors of laryngeal cancer: (n=78)

Risk Factors	Frequency	Percentage (%)
Only Smoking	27	34.6
Smoking, Chewing betel leaves and nuts	41	52.6
Chewing betel leaves and nuts	5	6.4
Smoking, Chewing Tobacco	3	3.8
Smoking and Alcohol consumption	2	2.6
Total	78	100

Table II :

Distribution of the patients by clinical symptoms: (n= multiple response)

Clinical Symptoms	Frequency	Percentage
Change of voice	68	87.2
Dysphagia	61	78.2
Neck swelling	43	55.1
Irritable cough	25	32
Dyspnoea	16	20.5

Table III :

Distribution of the patients with Supraglottic carcinoma according to pattern of growth in Indirect laryngoscopy: (n=78)

Pattern of growth	Frequency (n)	Percentage (%)
Exophytic	56	71.2
Ulcerative	22	28.2

Majority of the tumour surface of the patients was exophytic (71.8%). Others surface type was ulcerative (28.2%). No infiltrative lesion was found.

Table IV :

Distribution of the patients by TNM staging (Tumour size) in Fibre Optic Laryngoscopy: (n=78)

Tumour stage	Frequency	Percentage
T1	9	11.5
T2	31	39.7
T3	30	38.5
T4	8	10.3

A big portion of the patients (39.7%) had T2 level involvement in Fibre optic Laryngoscopy followed by T3 (38.5%).

Table V :

Distribution of the patients by subsite involvement in Direct Laryngoscopy: (n= multiple response)

Area Involved	Frequency	Percentage
Epiglottis	20	25.6
Arytenoid	23	29.5
Aryepiglottic fold	51	65.4
False cord	27	34.6

Table VI :

Distribution of the patients by lymph node metastasis: (n=78)

Nodal Involvement	Frequency	Percentage
N0	35	44.9
N1	6	7.7
N2	34	43.6
N3	3	3.8
Total	78	100

About (44.9%) had no lymph node metastasis. Almost half of the patients (43.6%) had N2 level of lymph node metastasis. Rest of the patients (7.7%) and (3.8%) had N1 and N3 level of metastasis.

Table VII :

Histopathological findings of the patients: (n=78)

Histological type	Frequency	Percentage
Well differentiated squamous cell carcinoma	11	14.1
Moderately differentiated squamous cell carcinoma	42	53.8
Poorly differentiated squamous cell carcinoma	14	17.9
Adenocarcinoma	6	7.7
Non-hodgkin Lymphoma	5	6.4
Total	78	100

Discussion:

In Larynx supraglottic part is one of the commonest sites for carcinoma. Supraglottic cancer, is associated with exposure to environmental toxins and chemical carcinogens such as tobacco, alcohol, silica dust, asbestos, polycyclic aromatic hydrocarbons and therapeutic radiation. Risk of cancer is substantially higher in people who smoke tobacco and drink alcohol. These risk factors seem to be synergistic and results in multiplicative increase in the risk of developing supraglottic cancer. Advanced disease has poor prognosis.

This current descriptive type of cross-sectional study was performed to find out the clinicopathological profile of supraglottic laryngeal malignancies of the patients attending Department of ENT & Head-Neck Surgery in Dhaka Medical College Hospital (DMCH). This study was done in patients who admitted in at Department of ENT & Head-Neck Surgery in Dhaka Medical College Hospital (DMCH) with supraglottic carcinoma during the period of 1.5 years from 1st January 2020 to 30th June 2021. A total of 78 patients of all age and sex were selected fulfilling the inclusion and exclusion criteria. The present study findings were discussed and compared with previously published relevant studies.

In this study, highest 32.1% of the patients were between 50-54 years old. The second highest 21.8% patients were between 40-44 years old followed by 18% patients from 60-64 years old and the lowest 6.3% patients were more than 65 years old. The mean age of the patients was 52.1 (\pm 4.6) years. Age range and mean age comparable with other studies^{4,5}. Study⁴ showed that mean age of the patient was 55 years. Study⁵ reveals that most vulnerable age group was in 5th decade. But this study findings had disagreements with some studies^{6,7}. Both studies showed that older age group patients

were more prone to laryngeal carcinoma and around 65 years of age was the mean age of their studies.

Sex was the one of important socio-demographic factor of this study and the majority of the patients (91%) were male which may indicate less consumption of tobacco which is uncommon in female in this country. Studies^{8,9} showed that male was the predominant sex as well. Though the result differs from other study 73%.⁶

Socio-economic condition of the patient had a vital role in this study. Majority (79.5%) of the patient were came from poor family followed by middle class (17.9%). Only a very few (2.6%) came from upper class family which is similar to study⁹ which is 70%. Study¹⁰ also showed that in India supraglottic carcinoma was more in poor people which agree with this study.

There are several risk factors of supraglottic laryngeal carcinoma. In this study, 4 major risk factors were found: smoking, betel nut and leaf chewing, chewing tobacco and alcohol consumption. The most common risk factor among the patients was smoking (93.6%), 59% are habituated in chewing betel nut and leaves, 3.8% were with chewing tobacco and alcohol consumption 2.6%. Studies^{2,4} showed near result. may be due to less availability of alcohol in the country. The study² showed that 85% patients with the history of tobacco consumption in the form of cigarette, bidi and hukka. Addiction to alcohol was observed in 27% cases and surprisingly 8% patients had no history of any addiction. The contribution of occupational exposure (i.e., asbestos or sulfuric acid) is estimated at around 6%. Study¹¹ also showed that smoking and alcohol consumption were the main cause of laryngeal carcinoma in Bhutan.

In this study many clinical symptoms and its duration of onset were recorded. The most common presentation of this study was change of voice (87.2%). Duration of change of voice was varying from 10 days to 90 days before admitted in hospital, but most common duration was around 30 days. Dysphagia found in 61 (78.2%) cases and neck swelling presented in 43 (55.1%) cases. Duration of dysphagia was varying from 10 days to 60 days, but most common duration was around 30 days. Duration of neck swelling was relatively shorter than voice change and dysphagia and it was 1 to 30 days. Most of the patients came within 2 weeks of neck swelling. Irritable cough 25(32%), respiratory distress 16(20.5%) and Others symptoms were earache, weight loss etc. These results almost reflect the other studies^{4,12} where change of voice were predominant. But studies^{13,14} showed different result , where Irritable cough was common with 90% and 83.33% respectively. Study¹⁵ also showed that change of voice and dysphagia were the commonest symptoms among the patients.

Regarding extension of tumour, maximum number of cases 31(39.7%) had T2 lesion followed by 30(38.5%) T3 lesion, 9(11.5%) T1 lesion and 8(10.3%) T4 lesion. This result is similar to study⁶ where T2 lesion (40%) was highest followed by T3(34%) but differs from study⁴ where T3 was 44% and T2 36%. Among the 78 patients, 56(71.8%) patients had exophytic growth and 22(28.2%) patients had ulcerative growth which is similar to study⁸.

Supraglottic carcinoma has higher percentage of lymph node metastasis. This study also showed the same with having 55.1% nodal metastasis, among them N2 in 43.6%, N1 in 7.7% , N3 in 3.8% and N0 in 44.9% cases which is similar to study⁶ but

differs from others^{13,16} where N0 was 84% and 60% respectively. Study⁴ showed that N0 in 43.08% cases, N1 in 33.85% cases, N2 in 9.23% cases and N3 in 13.85% cases. 100% patient had no clinical distant metastasis.

A larger portion of the patients (65.4%) had growth in Aryepiglottic fold found in Laryngoscopy. Next common sites were False Cord (34.6%), Arytenoid (29.5%) and Epiglottis (25.6%). Among the 78 patients, 56(71.8%) patients had exophytic growth and 22(28.2%) patients had ulcerative growth which is similar to study⁸.

Histopathological evaluation by biopsies showed that Squamous cell carcinoma (SCC) was present in 85.8% cases, among them Well differentiated type in 14.1%, Moderately differentiated in 53.8% and Poorly differentiated in 17.9% patients which was similar to study¹. Adenocarcinoma found in 7.7% cases and Non-Hodgkin Lymphoma present in 6.4% cases. This study differs from study² which reveals that Squamous cell carcinoma (SCC) was present in 64 cases (98.46%), well differentiated type in 30.77%, moderately differentiated in 49.23% and poorly differentiated in 18.46% patients. Adenocarcinoma found only in 1.54% patients. Studies^{11,12} also showed that squamous cell carcinoma was the predominant type of carcinoma.

Conclusion:

Supraglottic carcinoma usually occurs in 5th decade. Smoking and chewing (tobacco and betel nut) habits have got relation in the causation of supraglottic carcinoma. This carcinoma has got marked association with poor socio economic group. Almost 56% cases has nodal metastasis. With the above findings, one can clearly say that, chewing

betel nut and tobacco should be avoided to reduce the risk of supraglottic carcinoma and early presentation & diagnosis will improve the prognosis of patients.

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