

Original Article

Pattern of lymph node metastasis in supraglottic carcinoma

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Abstract:

Objectives: To find out the frequency and distribution of lymph node metastasis in supraglottic carcinoma.

Study Design: Cross sectional study.

Methods: 50 cases are included in this study (male-45 and female-5) between the ages of 40-80 years who were treated from September 2007 to February 2008. Study based on history, clinical, radiological, laboratory and histopathological examination.

Results: Highest number of patients was in the age group 50-60 years. Male and female ratio was 9:1. Commonest occupational group was cultivators and most patients come from poor socio-economic class. Smoking was commonest (70%). Out of 50 patients 20 (40%) had their regional lymph node involved. Level-II lymph nodes were involved in higher number of cases. Nodes in advanced stage of involvement were found in most cases. Homolateral involvement of nodes was in most cases (84.21%). Most of the patients present with more than one symptom and the commonest presenting symptoms of supraglottic carcinoma was cough and irritation (90%) followed by dysphagia (76%) and change of voice (72%). Most of the supraglottic growth was exophytic in appearance. The common site involve (50%) in the study were aryepiglottic fold and arytenoids. 80% of patients were present with T₂ tumours. Patients were staged according to the TNM feature. Most of the patients (40%) were in stage-III followed by stage-II (24%).

Conclusion: Lymphadenopathy is present much higher frequency in supraglottic carcinoma than glottic carcinoma.

Key words: Supraglottic Carcinoma, Lymph node.

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Introduction:

The larynx is the most common site for primary malignant tumour in the head and neck region.¹ Cancer of hypopharynx and larynx constitute 21.07% of all malignancy in male.² Laryngeal carcinoma increases with increasing age.³ Laryngeal carcinoma is 1% of all malignancy in man.⁴ Among laryngeal carcinoma most of the patients (67.2%) has supraglottic lesion.^{1,4}

71.11% of supraglottic growth presented with neck mass.⁵ Cancer of the supraglottis is

almost exclusively squamous cell carcinoma.⁶ Carcinoma other than squamous cell origin e.g. verrucous carcinoma, adenoid cystic carcinoma seldom metastasise in neck.⁷

Squamous cell carcinoma is radio-sensitive so for early stages with small tumour surgery can be avoided and thus laryngeal function can be preserved. Despite the severity of clinical presentation, it is a potentially curable disease, especially when diagnosed at early stages.⁸

In our country poverty, illiteracy of the general population as well as very little number of centre which can deal with the tumour cancer is responsible for usual delay in presentation. Male female ratio is 9:1.^{2, 10}

Supraglottic laryngeal squamous cell carcinoma (SCC) has a great propensity to metastasise to regional neck lymph nodes. These metastases are of great concern, as it is related to the prognosis and general outcome of the disease. Correct assessment of the lymph nodes and prediction of lymph node metastases can greatly improved the treatment of the disease, as well as the chances of management.¹¹

There was no difference in metastases rate between marginal versus vestibular and central versus lateral neoplasm, where as bilateral metastases were more frequent in central tumours. Level IV was involved only in association with level II and/or level III. Level I and level V were rarely involved whenever metastases were present and never by occult metastases.¹²

Lymphatic vascularity in the supraglottis is much denser than in the glottis and subglottis. This leads to a significantly higher incidence of cervical lymph node metastases in tumours of this subsite.⁶

Supra-glottic carcinoma has the worse prognosis in that when presenting, they have more advanced disease with cervical lymph node metastasis the reason being glottic cancers usually affect voice and are picked up earlier on.¹³

Lymphadenopathy is present in a much higher frequency in supraglottic carcinoma (65.58%) than in glottic carcinoma (10.91%).¹⁴

The overall 5 years survival rate of patient with supraglottic laryngeal carcinoma is 52.7%.^{15, 16, 17}

The study is expected to show the pattern of lymph node metastasis in supraglottic carcinoma in larynx.

Aims and Objectives: To find out the frequency and distribution of lymphatic metastasis in supraglottic carcinoma.

Methods:

Type of Study : Cross sectional study

Sampling Method : Random Sampling

Sample Size : 50 cases

Duration of Study : September 2007 to February 2008

Place of Study : Department of Otolaryngology – Head & neck Surgery of Bangabandhu Sheikh Mujib Medical University (BSMMU) and Dhaka Medical College Hospital (DMCH), Dhaka, Bangladesh.

Inclusion Criteria : Supraglottic laryngeal cancer proved histopathologically.

Exclusion Criteria : 1. Carcinoma larynx other than supraglottic carcinoma.

2. Carcinoma larynx where the site of origin is in confusion.

Data collection procedure : 1. In a prescribed data sheet
2. Collected data was analyzed and were presented in tables in simplified manner.

Results:

Highest number of patients was in the age group 50-60 years. In this study male and female ratio was 9:1. The commonest occupational group was cultivators (40%). Most of the patients came from poor socio-economic class (60%).

Table-I
Personal habit of patients with supraglottic carcinoma (n-50)

Personal habit	No. of cases	Percentage (%)
Smoking	35	70%
Chewing tobacco	7	14%
Smoking and chewing tobacco	5	10%
Smoking and chewing tobacco and Alcohol	2	4%
Smoking and Alcohol	1	2%

Smoking was the commonest (70%) personal habit. The other common personal habits were chewing betel nut (14%).

Table-II
Frequency of cervical lymph node metastasis (n-50)

Cervical nodal metastasis	No. of cases	Percentage (%)
Present	20	40%
Absent	30	60%

Out of 50 patients, 20 (40%) had their regional lymph nodes involved.

Table-III
Level of lymph node involved (n-20)

Level of lymph node involved	No. of cases	Percentage (%)
Level-I	Nil	Nil
Level-II	11	55%
Level-III	6	30%
Level-IV	2	10.0%
Level-V	1	5 %
Level-VI	Nil	Nil

Level-II lymph nodes were involved in higher number of cases.

Table-IV
Status of involved node (n-20)

Status of involved	No. of cases node	Percentage (%)
N ₁	3	15%
N ₂	14	70%
N ₃	3	15%

Nodes in advanced stage of involvement were found in most cases.

Table-V
Involvement of neck node (n-20)

Neck node	No. of cases	Percentage (%)
Homolateral	16	80%
Bilateral	4	20%

Homolateral nodal involvement was more.

Table-VI
Presenting symptoms of supraglottic carcinoma (n-50)

Symptoms	No. of cases	Percentage (%)
Cough and irritation	45	90%
Dysphagia	38	76%
Change of voice	36	72%
Foreign body sensation	27	54%
Neck swelling	19	38%
Respiratory distress	9	18%
Neck pain	8	16%
Stridor	6	12%
Loss of weight	6	12%

Most of the patients present with more than one symptom and the commonest presenting symptoms of supraglottic carcinoma was cough and irritation (90%) followed by dysphagia (76%) and change of voice (72%).

Table-VII
Macroscopic appearance of growth in supraglottic larynx (n-50)

Macroscopic appearance of growth	No. of cases	Percentage (%)
Exophytic	30	60%
Ulcerative	16	32%
Infiltrative	4	8%

Most of supraglottic growth was exophytic in appearance.

Table-VIII
Site of involvement of growth supraglottic larynx (n-50)

Distribution of cases	No. of cases	Percentage (%)
Aryepiglottic folds and arytenoids	25	50%
Epiglottis with right sided vestibule	14	28%
False cord	7	14%
Epiglottis	4	8%

The common site of supraglottic carcinoma (50%) in this study was aryepiglottic folds and arytenoids.

Table-IX
Tumour size (n-50)

Size	No. of cases	Percentage (%)
T ₁	9	18%
T ₂	40	80%
T ₃	1	2%

80% of patients presented with T₂ tumours.

Table-X
Staging of patients (n-50)

Stage	No. of cases	Percentage (%)
Stage-I	10	20%
Stage-II	12	24%
Stage-III	20	40%
Stage-IV	8	16%

Patients were staged according to the TNM system taking the TNM features together. Most of the patients (40%) were in stage-III followed by stage-II (24%).

Discussion:

Supra-glottic carcinoma larynx is a common disease in otolaryngology in our country. We carried out the study to find out the pattern of lymph node metastasis in supraglottic carcinoma.¹⁸

In this study 50 patients of supraglottic carcinoma were collected from the inpatients department of the Bangabandhu Sheikh Mujib Medical University (BSMMU) and Dhaka Medical College Hospital (DMCH). Detail history was taken. General examination and ENT examination was done thoroughly. Examination of neck was done in all patients. The nodal metastases, level of nodal involvement, size of the neck node, site of involvement of the nodes were thoroughly checked.^{19, 20}

The age range of the patients was from 40-80 years with an average age of 52 years. Highest number of patients was in the age group 5th and 6th decades. In a study the peak incidence of supraglottic carcinoma is 6th decade. The male to female ratio was 9:1. The age and sex incidence is consistent with these authors.^{21, 22, 23}

Tobacco is a known risk factor for head and neck cancer. In this study, majority of patients had the habit of smoking (70%), chewing betel nut (14%).

Socioeconomic status has got marked association with incidence of laryngeal carcinoma. Most of the patients 60% came from poor socio-economic group in this study.

Lymphatics vascularity in the supraglottic is much denser than in the glottis. This leads to a significant higher incidence of cervical lymph node metastases in tumour of this site. In this study, incidence of lymphnode involvement was 40%. It was similar found in another study. But one author SOM quoted lower (32%) and another author Baclesse shown higher (75%) lymphnode involvement in their study.²⁴

The presence of massive nodes is an uncommon event. In this study, most patients were in N₂ stage of lymph node in size (70%). It is more in N₁ stage (15%).

Among the 20 cases with neck node 16 cases had homolateral neck node and 4 cases (20%) had bilateral neck node. Bilateral neck node are uncommon and occur in about 5% head neck cancer overall. Bilateral metastases were more frequent in midline tumours (20% V. 5%).

The supraglottic larynx drains through thyrohyoid membrane to reach upper deep cervical lymph node. (Level II/III). But in palpable neck disease all five levels may be involved. In this study, level-II lymph nodes were (55%) involved in higher number of cases. Level-II is higher involved group in another study.²⁵

Among all the patients presented with one or more symptoms we found cough and irritation in the throat was the commonest symptom (90%), dysphagia (76%), change of voice (72%), foreign body sensation 54%, and respiratory distress 18%. But another study at Dhaka found presenting symptom was change of voice (85.71%). In another study commonest symptom was change of voice (96.8%).²⁶

Supraglottic carcinoma most commonly occurs in the centre of intrathyroid epiglottis. In this study out of 50 patients 25 (50%) had lesions involving aryepiglottic folds with arytenoids, 14 (28%) had lesion at epiglottis of right sided vestibule, 7 cases (14%) in false cord, 4 cases (8%) had lesions involving epiglottis. In another study involving aryepiglottic fold with arytenoids 50%, epiglottis with vestibule is 28.33% and false cord is 13.33%.

The supraglottic carcinoma is of three types macroscopically. We found three types of growth here. In out of 50 patients, exophytic 30 (60%) 16 (32%) ulcerated and 4 (8%) had infiltrative growth.

Regarding extension of tumour, maximum number of patients 40 cases (80%) had T₂ lesions and 9 cases (18%) had T₁ -lesions, and 1 case (2%) T₃ lesion.

Study of Bhowmik B T₂ was 78.33%; T₁ was 21.66%. Some patients presented with neck swelling only. No other symptoms such as cough dysphagia or change of voice were present.

Squamous cell carcinoma forms vast majority of malignant laryngeal tumour. In our study all cases were histopathologically confirmed Squamous Cell Carcinoma. In this series, distant metastasis was not found. So, all were in M₀ state which were similar study by others.²⁸

Most of the cases of supraglottic carcinoma presented at stage-III (40%), stage-II 24%, stage-I 20% and stage-IV 16%. In study by Sheikh HR. stage-III was 27%, stage-I was 61.90%.

In this series advanced staged was found less in comparison to study by other group may be due to increase awareness among the people and also increase health delivery service in rural area by increasing number of ENT & Head-Neck surgeons.^{27, 28, 29}

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