The larynx is the most common site for primary tumour of the head and neck region. It represents world wide approximately 1-2% of all cancers. A cross sectional study of 154 cases of laryngeal carcinoma was carried out in the in-patient department of Bangabandhu Sheikh Mujib Medical University and Dhaka Medical College during the period of two years with an aim to find out the frequency of site and subsite involvement of carcinoma of the larynx. The age range is 33-80 years and the over all male to female ratio is 29.8:1. Smoking and chewing habit are the most important associated factors. Majority of growths are found to be exophytic and most of the patients present at advanced stage. The commonest site of laryngeal carcinoma is supraglottic region and occurrence of supraglottic carcinoma than glottic carcinoma is statistically highly significant.

Keywords: Carcinoma, larynx, supraglottic, glottic

Introduction

Carcinoma of the larynx is not an uncommon disease. The larynx is the most common site for primary malignant tumour in head and neck region.\textsuperscript{1,2,3,4} It represents world wide approximately 1-2% of all cancers.\textsuperscript{5} It has been estimated that in Britain, there are about 5000 new cases of head and neck cancer each year, excluding superficial skin cancer.\textsuperscript{6} 30-40\% of these are laryngeal cancer.\textsuperscript{7} The American cancer society estimated approximately 12000 new cases of laryngeal cancer in USA in 1996.\textsuperscript{8}

A higher incidence of laryngeal cancer has been reported from Asian population. In a study in Dhaka Medical College Hospital, it was seen that 35.32\% of all body cancers in head and neck region and carcinoma of larynx was the commonest in head and neck region (31.58\%).\textsuperscript{3} Laryngeal cancer was one of only a few type of cancer with high rate of cure which, in certain subsite, may reach over 85\% and overall exceeds 50\%.\textsuperscript{9} Carcinoma of the larynx, therefore places upon the clinician a much greater responsibility than usual, for careful evaluation and treatment offer a possibility of cure while, in common with a number of other head and neck cancer, failure may be followed by a relatively uncomfortable death.
Subsite distribution of carcinoma of larynx varies worldwide. In this subcontinent, supraglottic carcinoma is more common.\textsuperscript{2,3} It was found 56\%, 67\% and 70\% of cases in different studies.\textsuperscript{10,11,12} Incidence of supraglottic carcinoma is also higher in European countries like France, Italy.\textsuperscript{9} Where as glottic carcinoma is more prevalent in UK and North America (50\% and 60\% respectively).\textsuperscript{13}

Previous studies in our country showed that supraglottic carcinoma topped the list among all types of carcinoma of the larynx. Although numerous studies on carcinoma of the larynx have been done in different countries, a few data are available on topographical distribution in our population.

Our present study is intended to outline the distribution of laryngeal carcinoma in different anatomical regions and sites according to frequency. The result 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 values. We will also try to reveal the association of causative factors like smoking, tobacco chewing and ingestion of alcohol or any other new factors and carcinoma of the larynx in this study.

**Objectives**

1. To find out the frequency of site of involvement of carcinoma of the larynx.
2. To identify carcinoma of larynx by direct laryngoscopy and detect primary
3. To confirm the diagnosis by histological examination.

**Methods**

Type of study: Cross sectional.

Place of study: Department of Otolaryngology-Head and Neck surgery of Bangabandhu Sheikh Mujib Medical University Hospital and Dhaka Medical College Hospital.

Period of study: July 2005 to June 2007.
Table III: Personal habits of patients of carcinoma of larynx (n=154)

| Type of habit | Number of patients | Percentage |
|---------------|--------------------|------------|
| Smoking       | 61                 | 39.61      |
| Chewing leaf with tobacco | 16             | 10.38      |
| Smoking & chewing leaf with tobacco | 69             | 44.81      |
| Smoking, tobacco chewing and alcohol | 3             | 1.95       |
| Smoking and alcohol | 1            | 0.65       |
| None          | 4                  | 2.60       |
| Total         | 154                | 100        |

Table IV: Distribution of site of involvement of carcinoma of larynx according to International Classification of Diseases for Oncology (ICD-0) (n=154)

| ICD-O site code | Site     | No of patient | Percentage |
|-----------------|----------|---------------|------------|
| C 32.1          | Supraglottic | 119           | 77.27      |
| C 32.0          | Glottic   | 34            | 22.08      |
| C 32.2          | Subglottic | 1             | 0.65       |
| Total           |          | 154           | 100        |

Table V: Distribution of nodal involvement of patients of carcinoma of larynx(n=154)

| Neck node status | Number of patients | Percentage |
|------------------|--------------------|------------|
| Node involved    | 72                 | 46.75      |
| Node not involved| 82                 | 53.25      |

Table VI: Lymph node involvement according to site of carcinoma of larynx (n=154)

| Site               | Number of patients with neck node involvement | Percentage |
|--------------------|-----------------------------------------------|------------|
| Supraglottic (119) | 71                                            | 98.61      |
| Glottic (34)       | 1                                             | 1.39       |
| Total              | 72                                            | 100        |

Table VII: Distribution of status of involved neck node (n=72)

| Status of neck node | Number of patients |
|---------------------|--------------------|
| N<sub>1</sub>       | 47                 |
| N<sub>2</sub>       | 16                 |
| N<sub>3</sub>       | 9                  |
| Total               | 72                 |

Table VIII: Pattern of growth of carcinoma of the larynx (n=153)

| Type of growth | Number of patients | Percentage |
|----------------|--------------------|------------|
| Exophytic      | 111                | 72.55      |
| Ulcerative     | 42                 | 27.45      |
| Total          | 153                | 100        |

Table IX: Comparison of extension of carcinoma of larynx: Supraglottic Vs Glottic (n=153)

| Site               | T<sub>1</sub> | T<sub>2</sub> | T<sub>3</sub> | T<sub>4</sub> |
|--------------------|---------------|---------------|---------------|---------------|
| Supraglottic N=119 | 15            | 43            | 57            | 4             |
|                     | 12.6          | 36.1          | 47.9          | 3.3           |
| Glottic N=34        | 4             | 14            | 15            | 1             |
|                     | 11.7          | 41.1          | 44.1          | 2.9           |
Table X: Histological grading of carcinoma of larynx (n=154)

| Degree of differentiation | Grading | No. of patients | Percentage |
|---------------------------|---------|-----------------|------------|
| Well differentiated        | Grade I | 67              | 43.50      |
| Moderately differentiated  | Grade II| 79              | 51.30      |
| Poorly differentiated      | Grade III| 8               | 5.20       |

Table XI: Clinical staging of patients of carcinoma of larynx by TNM classification. (n=154)

| Clinical staging | Number of patients | Percentage |
|-----------------|--------------------|------------|
| Stage I         | 16                 | 10.39      |
| Stage II        | 33                 | 21.43      |
| Stage III       | 76                 | 49.35      |
| Stage IV        | 29                 | 18.83      |
| Total           | 154                | 100        |

Discussion

Larynx is the most common site of head and malignancies. The incidence of laryngeal carcinoma varies from country to country. It represent 1.3% of all malignancies in male and 0.4% of all malignant tumours in female excluding basal cell and squamous cell carcinoma of skin.14

The age of the patients ranged from 33 to 80 years, and the mean age was 55.37% (±12.36) years in this study. Two previous studies in Bangladesh also found similar age distribution.11,12

Here the peak incidence of laryngeal carcinoma were at sixth (38.31%) and seventh (26.62%) decades respectively. Other studies also support that the peak incidence of laryngeal carcinoma is at the 6th or 7th decade.12,15,16,17 However the peak incidence of laryngeal carcinoma may not indicate that the risk is lower at higher age groups. Rather it is due to reducing number of person surviving as age progresses; the actual number of cases falls with age. In Bangladesh the relative frequency of people above the age of 65 years is only 3%.19

In this study, 96.75% were male whereas female were 3.25%. The overall male to female ratio was 29.8:1. Review of literature reveals that there is wide geographical variation in sex distribution of laryngeal carcinoma. The ratio was described as 2:1 in Scotland and 3:1 in UK and 9:1 in France.13 In Canada and Italy, the ratio was found to be 6:1 and 32:1 respectively.9

In this study, 87.02% of the patients had the habit of smoking. Other personal habits were chewing betel leaf (64.28%), chewing tobacco (57.14%) and alcohol consumption (2.6%). It has been described in different studies that tobacco and alcohol are clearly associated with laryngeal carcinoma.13

Neck swelling as a leading symptom was present in 27.45% of patients. In most cases, the swelling was painless (due to enlarged cervical lymph node). It occurs more frequently in supraglottic carcinoma. Neck swelling as a presenting symptom was found in other studies as 13.4% and 44.16% of cases.8,10

Cervical lymphadenopathy as a sign was third commonest one in the series. 46.75% of total patients had cervical lymphadenopathy. Commonest stage of lymphadenopathy was N1 (65.28%). Relative frequency of N2 and N3 stage were 22.22% and 12.50% respectively among the cases of lymphadenopathies. Lymphadenopathy was present in a much higher frequencies in supraglottic carcinoma (59.66%) than in glottic carcinoma (12.54%). The difference is stastically highly significant (p<0.001). This is similar to distribution of lymphadenopathy in supraglottic and glottic carcinoma.9

In this study incidence of supraglottic carcinoma was found 77.27% of cases which clearly predominant over glottic carcinoma (22.08%). Only one case of subglottic carcinoma was found(0.65%). The occurrence of supraglottic than glottic carcinoma is statistically highly
significant (p < 0.001). It is very much similar with the studies done in this subcontinent. In this subcontinent supraglottic carcinoma is more common.\textsuperscript{2,3} It was found 56\%, 67\% and 70\% of cases in different studies.\textsuperscript{10,11,12} The incidence of supraglottic is also higher in European countries like France, Italy.\textsuperscript{9} Where as glottic carcinoma is more prevalent in UK and also in North America (50\% and 60\% respectively).\textsuperscript{13} Incidence of subglottic is very insignificant world wide. Our study also consistent with this finding.

In our study, sub sites involvement of supraglottic carcinoma showed that involvement of combined location was significantly higher than other subsites (p<0.001). Involvement of epiglottis (3.56\%), aryepiglottic fold (5.88\%), arytenoid (2.52\%), ventricular band (0.84\%) were much lower than the combined site. Involvement of the combined site is frequently higher than single subsite involvement (P<0.001). This finding is consistent with the study in Bangladesh,\textsuperscript{1} but differ from western world where epiglottis is the common subsite involved in supraglottic carcinoma of larynx.\textsuperscript{13}

Majority of growths were exophytic (72.55\%). Ulcerative lesions were (27.45\%). Similar observation was made by a study in Bangladesh.\textsuperscript{11}

In supraglottic carcinoma larynx, tumour stages at presentation were T\textsubscript{1} (12.60\%), T\textsubscript{2} (36.13\%), T\textsubscript{3} (47.90\%) and T\textsubscript{4} (3.36\%). This result is consistent with study performed in our country,\textsuperscript{11} but differ from subsite in western countries. In glottic carcinoma, the result was T\textsubscript{1}(11.76\%), T\textsubscript{2}(41.18\%), T\textsubscript{3}(44.18\%) and T\textsubscript{4}(2.94\%). This finding are also similar with the result of Amin et al (1991).\textsuperscript{11} Our result differ from the studies abroad as our patients seek medical advice late for various factors.

Regarding staging, our study revealed that most of the patients present at stage III (49.35\%), followed by stage II (21.43\%), stage IV (18.83\%), and stage I (10.39\%). So most of the patients present at advanced stage (68.18\%).

In this study the commonest type was moderately differentiated (Grade II) carcinoma (51.30\%). Finding in this study was consistent with a previous study done in Dhaka,\textsuperscript{12} but the current study is dissimilar with another study.\textsuperscript{10}

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