

Topographical Distribution of Carcinoma Larynx

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Abstract

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

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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.^{1,2,3,4} It represents world wide approximately 1-2% of all cancers.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.⁶ 30-40% of these are laryngeal cancer.⁷ The American cancer society estimated approximately 12000 new cases of laryngeal cancer in USA in 1996.⁸

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%).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%.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 world wide. In this subcontinent, supraglottic carcinoma is more common.^{2,3} It was found 56%, 67% and 70% of cases in different studies.^{10,11,12} Incidence of supraglottic carcinoma is also higher in European countries like France, Italy.⁹ Where as glottic carcinoma is more prevalent in UK and North America (50% and 60% respectively).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.

Study population: All cases of laryngeal carcinoma in these two hospital during the study period.

Sample size: n=154.

Selection of patients:

Inclusion criteria: Histologically diagnosed case of carcinoma of the larynx.

Exclusion criteria: Cases of pharyngeal tumour extending to larynx.

Results

Table I: Age distribution of patients of carcinoma of larynx (n=154)

Age in years	Number of patients	Percentage
31-40	18	11.69
41-50	30	19.48
51-60	59	38.31
61-70	41	26.62
71-80	6	3.89
Total	154	100

Table II: Sex distribution of patients of carcinoma of larynx (n=154)

Sex of patients	Number of patients	Percentage
Male	149	96.75
Female	5	3.25
Total	154	100

Table III: Personal habits of patients of carcinoma of larynx (n=154)

Type of habit	Number of patients	Percentage
Smoking	61	39.61
Chewing betel leaf with tobacco	16	10.38
Smoking & chewing betel 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- o) (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	Percentage
N ₁	47	65.28
N ₂	16	22.22
N ₃	9	12.50
Total	72	100

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 ₁	T ₂	T ₃	T ₄
Supraglottic N=119	Number	15	43	57	4
	Percentage	12.60	36.10	47.90	3.36
Glottic N=34	Number	4	14	15	1
	percentage	11.76	41.18	44.12	2.94

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.^{1,2,3} 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.¹⁸ 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 statically 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.^{2,3} It was found 56%, 67% and 70% of cases in different studies.^{10,11,12} The incidence of supraglottic is also higher in European countries like France, Italy.⁹ Whereas glottic carcinoma is more prevalent in UK and also in North America (50% and 60% respectively).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,¹ but differ from western world where epiglottis is the common subsite involved in supraglottic carcinoma of larynx.¹³

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

In supraglottic carcinoma larynx, tumour stages at presentation were T₁ (12.60%), T₂ (36.13%), T₃ (47.90%) and T₄ (3.36%). This result is consistent with study performed in our country,¹¹ but differ from subsite in western countries. In glottic carcinoma, the result was T₁(11.76%), T₂(41.18%), T₃(44.18%) and T₄(2.94%). This finding are also similar with the result of Amin et al (1991).¹¹ Our result differ from the studies done 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,¹² but the current study is dissimilar with another study.¹⁰

References

1. Haque S.F. Cancer incidence in Bangladesh. Journal of Bangladesh College of Physician and Surgeon, 1987; 5: 1-7.
2. Chakraborty S., Kar T. K., Ghose I. M. Neoplasm of the Ear, Nose and Throat. The Indian Journal of Otolaryngology and Head and Neck Surgery, 1992; 113-18.
3. Alauddin M., Ahmed K., Chowdhury M. A., Sarker M. R. I. Head and Neck Cancer- A study of 4215 cases. Bangladesh Journal of Otorhinolaryngology, 1997; 3: 39-41.
4. Hoffman H. T., Karnell L. H., Funk G. F., Robinson R. A., Menk H.R. The National Cancer Database Reports of Cancer of the Head and Neck. Archives of Otolaryngology and Head and Neck Surgery, 1998; 124: 951-62.
5. Makitie A., Pukender J., Raitiola H., Hyryn Kangas K., Koivanen P., Virtabiemi J., Grenman J. Changing trend in the occurrence and subsite distribution of laryngeal cancer in Finland. European Archives of Otolaryngology, 1999; 256:277-9.
6. Tobias J. S. Management of Head and Neck Cancer in Britain. British Medical Journal, 1997; 315: 1556-9.
7. Gibson A. R., McCombe A. W. Physiological Morbidity Following Laryngectomy: A Pilot Study. The Journal of Laryngology and Otology, 1999; 113: 349-52.

8. Shah J. P., Karnell L. H., Hoffman H. T., Arian S., Brown S., Fee W. E., Glass A.G., Goepfert H., Ossoff R. H., Fregman A. Pattern of Care for Cancer of the Larynx in the United States. *Archives of Otolaryngology and Head and Neck Surgery*, 1997; 1236: 476-83.
9. Robin P. E., Olofsson J. Tumour of the Larynx. In: J. Hibbert ed. *Laryngology and Head and Neck Surgery*, Scott-Browns *Otolaryngology*: 6th edition. Oxford: Butterworth-Heinemann. 1997; 11/1-43.
10. Verma A., Metha S., Panda N. K., Mann S. B. S., Mehra Y. N. Presentation of Carcinoma of Larynx and Laryngopharynx- An analysis of 840 cases. *Indian Journal of Otolaryngology*, 1990; 42: 50-53.
11. Amin M.N., Datta P.G., Amin A.S.A., Kadir A. Clinical Presentation of Carcinoma of Larynx. *Journal of Bangladesh College of Physician and Surgeon*, 1991; 8: 10-16.
12. Akhter PS, Sharma SK, Chowdhury T. Laryngeal Tumour and Radiation Response-A study of 100 cases. *Journal of Bangladesh College of Physician and Surgeon*, 1993; 11: 82-88.
13. Watkinson J.C., Gaze M.N., Wilson J.A. Tumours of the Larynx. *Stell and Maran's Head and Neck Surgery*. 4th ed. Oxford: Butterworth-Heinemann. 2000, 197-214.
14. Thawley S. E. Cysts and Tumours of the Larynx. In: W. Karnell ed. *Otolaryngology*. 3rd edition. Philadelphia: W B Saunders Company. 1991. 2307-67.
15. Sharma M., Changani D. L. Malignancy of Larynx and Hypopharynx. *Indian Journal of Otolaryngology and Head Neck Surgery*, 1992; 1: 93-5.
16. Alauddin M. Surgical salvage in Cancer of the Larynx. *Journal of Bangladesh College of Physician and Surgeon*, 1992; 10: 69-73.
17. Adams G. L., Maisel R. H. Malignant tumours of Larynx and Hypopharynx. In: W Brothers ed. *Otolaryngology and Head Neck Surgery*. 3rd edition. St. Louis Missouri: Mosby Year book, 1998. 2130-75.
18. Ramadan H., Pukander J. Symptoms of Laryngeal Carcinoma and Their Prognostic Significance. *Acta Otolaryngology*, 2000; 39: 213-6.
19. ESCAP Population Data Sheet. The Population of Rural and Urban Development Division. Economic and Social Commission for Asia and the Pacific, United Nation Building, Bangkok. 2000.