

Distribution of Laryngopharyngeal Malignancy in the North-East Part of Bangladesh: Fiberoptic Laryngoscopic (FOL) Study of 300 Cases

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Abstract:

Introduction: In Bangladesh, laryngeal and hypopharyngeal cancers in 2018 were 3.3% and 4.7% of total cancer cases, 2.6% and 2% of total cancer deaths. Fiberoptic laryngoscopy (FOL) has been established as a valuable tool for diagnosis in outpatient department (OPD) setting. The primary objective of this study was to see the distribution of laryngeal and hypopharyngeal cancers and secondary objective was to assess the role of Flexible Endoscopic Biopsy (FEB) in the diagnosis of laryngopharyngeal cancers.

Methods: This descriptive cross-sectional study was performed from March 2020 to March 2021 at Mount Adora Hospital, Sylhet, Bangladesh. All suspected patients attending in this hospital for FOL and FEB were included in this study.

Results: Total 300 patients of laryngopharyngeal growth were included in this study. The age of the patients ranged from 25 to 100 years with a mean age of 58.1 year (SD=11.8).

Male: Female ratio was 4.8:1. Hypopharyngeal growth was

most common (47.3%) followed by laryngeal (31.7%) and tongue base growth (21%). In laryngeal growth, supraglottic was more common (69.47%). In hypopharyngeal growth, pyriform fossa was the most common site (88.3%). Synchronous pathology was found in two patients (0.67%). FEB was obtained from 95% of cases. Histopathological examination showed 95.85% positive for malignancy. Sensitivity of FEB was 95.8%. All malignancies were squamous cell carcinoma (100%).

Conclusion: Supraglottic region is the most common site for laryngeal cancers and pyriform sinus is the most common site for hypopharyngeal cancers. FEB is highly sensitive in acquiring a definite diagnosis.

Key words: Laryngeal cancer, Hypopharyngeal cancer, Laryngoscopy, Endoscopic biopsy.

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Introduction:

Laryngeal cancer is the second most common head and neck cancer with >1, 59,000 new cases and 90,000 cancer deaths worldwide and it forms 2% of all cancers with a higher incidence in South Asia¹. The incidence of hypopharyngeal cancer is relatively high in India, approximately 11% against 1% worldwide¹. In

Bangladesh, laryngeal and hypopharyngeal cancers in 2018 were 3.3% and 4.7% of total cancer cases, 2.6% and 2% of total cancer deaths².

In the larynx, glottic region is by far the most common site for primary malignant tumors followed by supraglottic and subglottic region³. In hypopharyngeal cancers, the most common site is the pyriform sinus followed by posterior pharyngeal wall and post-cricoid region⁴. In Bangladesh, unlike the western world, supraglottic region is the most common site for primary laryngeal cancers followed by glottic and subglottic region^{5, 6}. Distribution of hypopharyngeal cancers is like that of western world i.e., pyriform sinus is the most common site followed by posterior pharyngeal wall and post-cricoid region^{7, 8}.

Biopsy is essential for the histological diagnosis of cancer. Traditionally, biopsy of Laryngopharyngeal lesions are performed by rigid direct laryngoscopy under general anaesthesia. Some of the tumor patients may not be fit for general anaesthesia due to co-morbid conditions. Fiber optic laryngoscopy (FOL) has been

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established as a valuable diagnostic tool and is feasible at a very early stage and in critically ill patients, it is noninvasive and frequently repeatable⁹. FOL enables the clinicians to perform Flexible Endoscopic Biopsy (FEB) under topical anaesthesia in outpatient department (OPD) setting. FEB is safe, feasible, cost-effective, easy to perform and 92.5% successful in acquiring a definite diagnosis¹⁰. The primary objective of this study was to see the distribution of laryngeal and hypopharyngeal cancers and secondary objective was to assess the role of Flexible Endoscopic Biopsy (FEB) in the diagnosis of Laryngopharyngeal cancers. This study will help the otolaryngologists in early diagnosis of Laryngopharyngeal cancers and to obviate the need of rigid direct laryngoscopic biopsy under general anaesthesia.

Materials and methods: This descriptive cross-sectional study was performed from March 2020 to March 2021 at Mount Adora Hospital, Sylhet, Bangladesh. Sylhet city is the catchment area for the patients of four districts of northeast part of Bangladesh- Sylhet, Moulvibazar, Habiganj, Sunamganj. Suspected laryngopharyngeal cancer patients were referred to this hospital by the Otolaryngologists practicing in Sylhet division for FOL and FEB. All the FOL and FEB were performed by the first author. All suspected patients attending in this hospital for FOL and FEB were included in this study in a convenient sampling method. Recurrence and residual cases were excluded from this study.

Sterilization of equipments and precautions: For the endoscopes we used soap water first for cleaning, then 2.45% w/v glutaraldehyde for manual disinfection, 10 minutes' immersion before the session and between patients. Adequate personal protective equipments were ensured before every procedure. N95 mask, gown and gloves were used by consultant and endoscopy assistant. KN95 masks, gloves and surgical gowns were ensured for the supporting stuffs and surgical masks for the patients.

Equipment:

1. CV-170 videoscope processor,
2. ENF-VT3 Rhino-laryngovideoscope with 4.8 mm distal end diameter and 2 mm inner diameter instrument channel,

3. GIF-Q150 Gastrointestinal videoscope with 9.2 mm distal end diameter and 2.8 mm inner diameter instrument channel,
4. FB-241 K.A biopsy forceps with 1.8mm diameter,
5. FB-240 K.A biopsy forceps with 2.8mm diameter (OLYMPUS MEDICAL SYSTEMS CORP, JAPAN).

Biopsy technique: All FOL were performed in endoscopy room at the OPD. Nasal cavity was packed with adrenaline plus lidocaine hydrochloride (5mcg+10mg/ml) soaked ribbon gauze 10-20 minutes before procedure. The pharynx and larynx were sprayed with 10% lidocaine hydrochloride spray transorally 10 minutes and immediate before the procedure.

Flexible Endoscopic Biopsy(FEB)were obtained from all suspected lesions except in patients with severely compromised airway, non-cooperative patients and patients who could not tolerate the procedure due to excessive cough or pharyngeal reflex. Biopsy from base of the tongue, pyriform fossa and most of the supraglottic growths were taken by gastrointestinal videoscope and biopsy forceps with 2.8mm diameter. Biopsy from glottic and few supraglottic growths were taken by Rhino-laryngovideoscope and biopsy forceps with 1.8mm diameter. Average three biopsies were taken from each suspected lesion. The tissues were collected in a designated pathology plastic cup containing 10% formalin and were sent for histopathological examination in a recognized diagnostic center of Sylhet. In case of inconsistency with the clinical findings, FEB was repeated or biopsy under general anaesthesia was advised. All patients tolerated the procedure well. There were no complications related to FEB except minor bleeding which was alleviated by gargle with cold water. Staging of the cancers was done according to American Joint Committee on Cancers (AJCC) staging manual, 8th edition, 2016.

Data analysis: Data were analyzed by Statistical Package for Social Sciences [SPSS version 20]. Qualitative data were expressed by frequency and percentage, whereas quantitative data were expressed by mean, median, mode and standard deviation.

Results:

Total 300 patients of Laryngopharyngeal growth were included in this study. The age of the patients ranged from 25 to 100 years with a mean age of 58.1 year

(SD=11.8). The commonest age group was 60-69 years (35.3%). Majority (82.67%) of the patients were male. Male: Female ratio was 4.8:1. [Table-I].

Table-I

<i>Demographic characteristics of the patients(n=300):</i>	
Characteristics	Number (%)
Age (in years)	
<40	18(6%)
40-49	42 (14%)
50-59	76 (25.3%)
60-69	106 (35.3%)
70-79	45(15%)
≥80	13(4.3%)
Sex	
Male	248(82.67%)
Female	52 (17.33%)

Both laryngeal and hypopharyngeal growth were common in male. In female patients, hypopharyngeal growth were more common (p-0.002). [Table-II]

Table-II

<i>Bi-variant analysis of gender with Laryngopharyngeal growth.</i>			
Growth	Male	Female	p-value
Laryngeal	85(34.1%)	10(19.6%)	0.04
Hypopharyngeal	108(43.4%)	34(66.7%)	0.002
Base of the tongue	55(22.1%)	8(15.7%)	0.31

Hypopharyngeal growth were more common (47.3%) followed by laryngeal (31.7%) and tongue base growth (21%). In laryngeal growth, supraglottic was more common (69.47%) than glottic (30.53%). Right side of supraglottic region was more involved (65.15%) than left (27.27%) and right glottis was more (55.2%) involved than the left (44.8%). Epiglottic growth were 7.58% with no side differentiation. No subglottic growth was found. [Table-III]

Among hypopharyngeal growth, pyriform fossa was the most common site (88.3%) followed by post- cricoid region (6.345%) and posterior pharyngeal wall (5.63%). In pyriform fossa, right side was commonly involved

(64%). Synchronous pathology was found in two patients (0.67%). [Table-III]

Table-III

<i>Clinical characteristics of the growth(n=300):</i>	
Characteristics	Number (%)
Laryngeal growth.	95(31.7%)
Supraglottic	66(69.47%)
Right	43(65.15%)
Left	18(27.27%)
Glottic	29(30.53%)
Right	16(55.2)
Left	13(44.8)
Subglottic	0(0%)
Hypopharyngeal growth.	142(47.3%)
Pyriform sinus	125(88.03%)
Right	80(64%)
Left	45(36%)
Posterior pharyngeal wall	8(5.63%)
Post-cricoid	9(6.34%)
Tongue base growth.	63(21%)

Flexible Endoscopic Biopsy (FEB) was taken from 95% of cases. Histopathological examination of biopsy specimen showed malignancy in 95.85% of cases. Sensitivity of FEB was 95.8%. All malignancies were squamous cell carcinoma (100%) [Table-IV].

Table-IV

<i>Results of FOL, FEB and Histopathology:</i>	
Characteristics	Number (%)
FOL (n=300)	
Biopsy taken	285(95%)
Biopsy not taken	15(5%)
Histopathology (n=285)	
Positive for Malignancy	273(95.8%)
Negative for Malignancy	12(4.2%)
Tissue Diagnosis (n=273)	
Squamous cell carcinoma	273(100%)

About half (47.37%) of the laryngeal cancer patients presented with T3 disease followed by T2 (35.79%) and T1 (16.84%) disease. Majority (60.56%) of the hypopharyngeal cancer patients presented with T3 disease followed by T1 (23.24%) and T2 (16.20%) disease. [Table-V]

Table-V*Clinical T stage distribution at presentation (n=237).*

Sites	T1	T2	T3
Larynx	16 (16.84%)	34 (35.79%)	45 (47.37%)
Hypopharynx	33 (23.24%)	23 (16.20%)	86 (60.56%)

Discussion:

In our study, mean age of the patients was 58.1 year, commonest age group was 60-69 (35.3%). This is consistent with Jyoti D et al¹¹ who found mean age 57.9, commonest age group 61-70(25%) and Chauhan et al¹² who found mean age 58.85, commonest age group 51-60(30.8%).

Majority of the patients were male. Male: Female ratio was 4.8:1. Both laryngeal and hypopharyngeal growth were common in male. Among the female patients, hypopharyngeal growth were more common. Jyoti D et al¹¹ reported male, female ratio 9:1, Laryngeal growth were more common both in males and females.

We have done FOL of 300 cases of Laryngopharyngeal growth. Hypopharyngeal growth was most common (47.3%) followed by laryngeal (31.7%) and tongue base growth (21%). Synchronous pathology was found in two patients (0.67%). These findings are not consistent with the findings of other researchers who reported laryngeal growth as the most frequent diagnosis. Schutte HW et al¹⁰ reported hypopharyngeal 30.85%, laryngeal 38.82% and tongue base growth 28.19%. Wellenstein DJ et al¹⁴ reported hypopharyngeal 9.5%, laryngeal 68.7% and tongue base growth 17.9%. Schimberg AS et al¹⁵ reported hypopharyngeal 15.3%, laryngeal 63.5% and tongue base growth 18.2%.

In laryngeal growth, supraglottic were more frequent (69.47%) followed by glottic (30.53%). Similar findings were observed by Jyoti D et al¹¹ who found supraglottic -71.79%, glottic -23.08%, subglottic- 5.13% and Chauhan et al¹² who found supraglottic-69.23%, glottic -27.69%, subglottic-3.07% but dissimilar with other researchers who found glottic as the most frequent such as Adeel M et al¹⁶ found supraglottic -10.9%, glottic-87.8%, subglottic-1.4%, Markou K¹⁷ found supraglottic-32.8%, glottic-62.2%, subglottic- 1.1%, transglottic -5.9% and Boci B¹⁸ found supraglottic -36.4%, glottic-49.5%, subglottic- 1.6%, transglottic -5.6%.

In hypopharyngeal growth, pyriform fossa was the most common site (88.03%) followed by post cricoid (6.345%) and posterior pharyngeal wall (5.63%). This result is consistent with Islam MN et al⁸ who found 83.3% in pyriform fossa, 12.7% in posterior pharyngeal wall, 4% in post cricoid region and FrancisDA¹³ who reported 80% in pyriform fossa, 10% in posterior pharyngeal wall, 10% in post cricoid region.

Flexible Endoscopic Biopsy (FEB) was obtained from 95% cases of FOL procedure. FEB was not obtained in 5% of cases due to severely compromised airway, non-cooperative patients and patients who could not tolerate the procedure due to excessive cough or pharyngeal reflex. This is similar with the other researchers who obtained biopsies such as Wellenstein DJ et al¹⁴ 97.5%, Cohen JT et al¹⁹ 94.1%, Cohen JT and Benyamini L¹⁰ 94%.

In the current study, diagnostic sensitivity of FEB for malignancy was 95.8%. This finding is not consistent with other researchers who found low sensitivity such as Cohen JT¹⁹ 69.2%, Cohen JT and Benyamini L²⁰ 70.6%, Refaat AM and Negm A²¹ 23.6%, Uys HK et al²² 77.1% and Richards AL²³ 60%.

All malignancies were squamous cell carcinoma (100%). Similar finding was observed by Islam MN et al⁸ and Jyoti D et al¹¹. But Fasanla AJ et al²⁴ found squamous cell carcinoma in 96.9%, other histopathological types were synovial sarcoma, chondrosarcoma, adenoid cystic carcinoma. Jakobsen KK et al²⁵ reported squamous cell carcinoma 90.3%, adenocarcinoma 3.6%, and other rare histology 6.1%.

In our study, about half (47.37%) of the laryngeal carcinoma patients presented with T3 disease followed by T2 (35.79%) and T1 (16.84%) disease. Majority (60.56%) of the hypopharyngeal carcinoma patients presented with T3 disease followed by T1 (23.24%) and T2 (16.20%) disease. Jyoti D et al¹¹ found that about half (44.87%) of the laryngeal carcinoma patients presented with T2 disease followed by T3 (30.77%), T4

(14.10%) and T1 (10.26%) disease, whereas hypopharyngeal carcinoma patients commonly presented with T2 (35.29) disease followed by T1 (29.41%), T3 (26.47%) and T4 (8.84%) disease.

Conclusion: Both laryngeal and hypopharyngeal malignancies are common in male. In female, hypopharyngeal malignancy is more common. Supraglottic region is the most common site for primary laryngeal cancers and pyriform sinus is the most common site for hypopharyngeal cancers. Flexible Endoscopic Biopsy (FEB) is safe, well tolerated, easy to perform and highly sensitive in acquiring a definite diagnosis. FOL should be used in outpatient department (OPD) setting as a primary diagnostic tool in all suspected laryngopharyngeal cancer cases.

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