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Results: The incidence of dysphonic patients was1.16%, and the yearly prevalence of 33.33%. Out of 1739, the male was 1006 (57.85%), and the female was 733 (42.15%), 50-59 years were highest presentation 488 (28.06%). Among 1739, non-specific chronic laryngitis was 1015 (58.37%), dysphonia without structural change (MTD) 417 (23.98%), and malignancy 90 (5.17%). Off them, smoker was 911 (52.39%), voice abuser 469 (26.97%), industrial worker was 477 (27.43%), teacher 359 (20.64%), singer 151 (8.68%), and slum dweller was 528 (30.36%).

Keywords: *dysphonia, chronic laryngitis, muscle tension dysphonia (MTD), rigid telescopic video laryngoscopy (RTL).*

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Epidemiological Aspects of Dysphonia in Tertiary Care Hospital

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Conclusion: Dysphonia affect more than 33% of people at some point of life. It definitely influences the quality of life and losing patient health and wealth. Early and effective treatment decreases the further loss.

Keywords: dysphonia, chronic laryngitis, muscle tension dysphonia (MTD), rigid telescopic video laryngoscopy (RTL).

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I. Introduction

Normal voice is a key factor to maintain the standard quality of life. Dysphonia makes the patient isolated, which may induce his stress, anxiety, and depression [1]. There are four causes of dysphonia: 1. Inflammatory. 2. Structural or Neoplastic. 3. Neuromuscular. 4. Muscle tension dysphonia [2]. The assessment of singers, teachers, and other professional voice users, an understanding of their Occupational and voice requirements is essential [3] [4] [5]. Chronic laryngitis occurs due to upper and lowers respiratory tract infection gave the decision by Steel and McLoughlin in 1976 in their research paper [6]. Chronic laryngitis is directly related to occupations like excess noise at work [7], asbestos workers [8], cement workers [9], solvents and shoe workers [10]. The allergy is related to chronic laryngitis, which directly affects larynx and lung [11]. Gastro-esophageal (GERD) and laryngopharyngeal reflux (LPR) is one of the debating etiological factors of chronic laryngitis [12]. Candidal infection causes chronic laryngitis, usually seen in patients of post-irradiated, immune-compromise state, diabetes mellitus, after prolonged antibiotic administration [13]. Smoking is the key factor of chronic laryngitis [14]. MTD has multiple primary causes, includes 1. Stress, anxiety and depression. 2. Conversion disorder. 3. Poor vocal hygiene [15]. Laryngeal carcinoma is one of the commonest sites of malignancy which mainly affect men cause dysphonia [16]. A true vocal cord polyp arises from the free edge of vocal cord which size is greater than 03 mm [17]. Vocal cord nodules are small bilateral swelling less than 03 mm size, produce dysphonia and occur in student, teacher, singer, and leader [18]. Vocal cord paralysis is another prime cause of dysphonia, which may be iatrogenic and idiopathic, may be unilateral or bilateral [19]. Reinke's edema is chronically and irreversibly, polypoidal swelling of vocal cords, also known as smoker's larynx [20]. Leukoplakia, TB laryngitis, papilloma, ulcer, and cyst are minor causes of dysphonia.

II. Methods and Materials

The study performed in two tertiary care hospitals. During the three years period, 116128 patients attended in the outpatient department of the Government Comilla Medical College Hospital, and

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33840 in the Private Comilla Medical Centre, concern Clinic of Central Medical College, Comilla. Out of 149968, the laryngeal disarrayed patient was 1739. Firstly, the dysphonic patient consulted with the village doctor (Health Assistant) in the shop of the drug, and Community Health Worker (Government) working in the primary care preventive non-bedded hospital. Secondly, they consulted with the Graduate Doctor who works in the secondary care hospital named 50 bedded Upazilla Health Complex. The patient came to the tertiary care hospital after suffering from dysphonia from one month to one year. We performed the endoscopic assessment of all patients with rigid Hopkin's telescope (RTL). Some patient examined by traditional l/L and FOL. The patient and attended if the patient is children gave written informed consent about the examination procedure. The following information collected about the patient: Gender, age, personal history, occupation, residence, predisposing factor, presenting feature, investigation, disease pattern, and treatment option. Descriptive statistics used to calculate the data. Figures and tables citeted by Microsoft word 2007.

III. Results

The incidence among outpatient was 1.16%, and the yearly prevalence of 33.33%. Among them, the male was 1006 (57.85%), and the female was 733 (42.15%) Figure-1, patient wasn't found between 0-9 years, 10-19 years were 191 (10.98%), 20-29 years 208 (11.96%), 30-39 years 226 (13%), 40-49 years 278 (15.99%), 50-59 years 488 (28.06%), 60-69 years 226 (13%), and above 70 years 122 (7%), whereas mean age 44.34 and the standard deviation 17.247 Figure-1. We also calculate the distribution of dysphonic disorders according to sex. Table-2. Distribution of laryngeal pathology among patient, non-specific chronic laryngitis was 1015 (58.37%), dysphonia without structural change or functional or MTD 417 (23.98%), malignant growth 90 (5.17%), vocal cord polyp 66 (3.79%), vocal cord nodule 55 (3.16%), vocal cord paralysis 35 (2.01%), laryngeal candidiasis 26 (1.49%), reienke's edema 22 (1.27%), vocal cord leukoplakia 04 (0.23%), tubercular laryngitis 04 (0.23%), vocal cord papilloma 02 (0.12%), vocal cord ulcer 02 (0.12%), and cyst on epiglottis 01 (0.6%).Table-1. Personal history exhibited smoker was 911 (52.39%), non-smoker 828 (47.61%), diabetic 796 (45.77%), non-diabetic 943 (54.23%), hypertensive 785 (45.14%), non-hypertensive 954 (54.86%), betel leaf and nut chewer 249 (14.32%), non-chewer 1490 (85.68%), history of previous radiotherapy 19(1.09%), no radiotherapy 1720 (98.91%), previous radioiodine ablation for thyroid carcinoma 13 (0.75%), no ablation 1726 (99.25%), alcoholic 11 (0.63%), and non-alcoholic 1728 (99.37%). Figure-2 Predisposing factor presented voice abuser was 469 (26.97%), reflux related 44 (2.53%), allergic manifestation 35 (2.01%), obesity 17 (0.98%), combined 315 (18.11%) and unknown 859 (49.40%). Figure-2 We calculate the distribution of dysphonic patient's risk factor related to personal history and predisposing factor. Table-3. Occupational status showed industrial worker was 477 (27.43%), teacher 359 (20.64%), singer 151 (8.68%), mothers of young children 128 (7.36%), shopkeeper 127(7.30%), receptionist 123 (7.07%), councilor 121 (6.97%), house wife 117 (6.73%), hawker 65 (3.74%), student 33 (1.90%), leader 31 (1.78%), and retirees 07 (0.40%). Figure-1 Residence of the patient revealed slum dwellers was 528 (30.36%), suburban 519 (29.85%), rural 487 (28%), and urban 205 (11.79%). Figure-2 Presenting features displayed hoarse, rough, and breathy voice was 1721 (99.14%), an inability to raise the voice (reduced loudness) 1652 (94.99%), an increased effort to talking (tiring to talk) 1582 (90.97%), an inability to control the voice (breaking of speech) 606 (34.85%), reduced ability to communicate effectively 539 (30.99%), throat related symptoms (soreness, discomfort and burning sensation) 204 (11.73%), difficulty in singing 151 (8.68%), difficulty in respiration 139 (7.99%), cough and frequent clearing of throat 121 (6.96%) and neck mass 36 (2.07%)Figure-2. Investigations performed l/L was 215 (12.36%), FOL 237 (13.63%), and RTL 1739 (100%).Figure-3 Disease pattern manifested non-neoplastic or non-structural benign lesion was 1497 (86.08%), and suspected malignancy 06 (0.35%), neoplastic or structural benign lesion was 146 (8.4%), and malignant growth 90 (5.17%). Figure-3 Treatment option conveyed medical was 1512 (86.94%), and surgical 227 (13.06%). Figure-3

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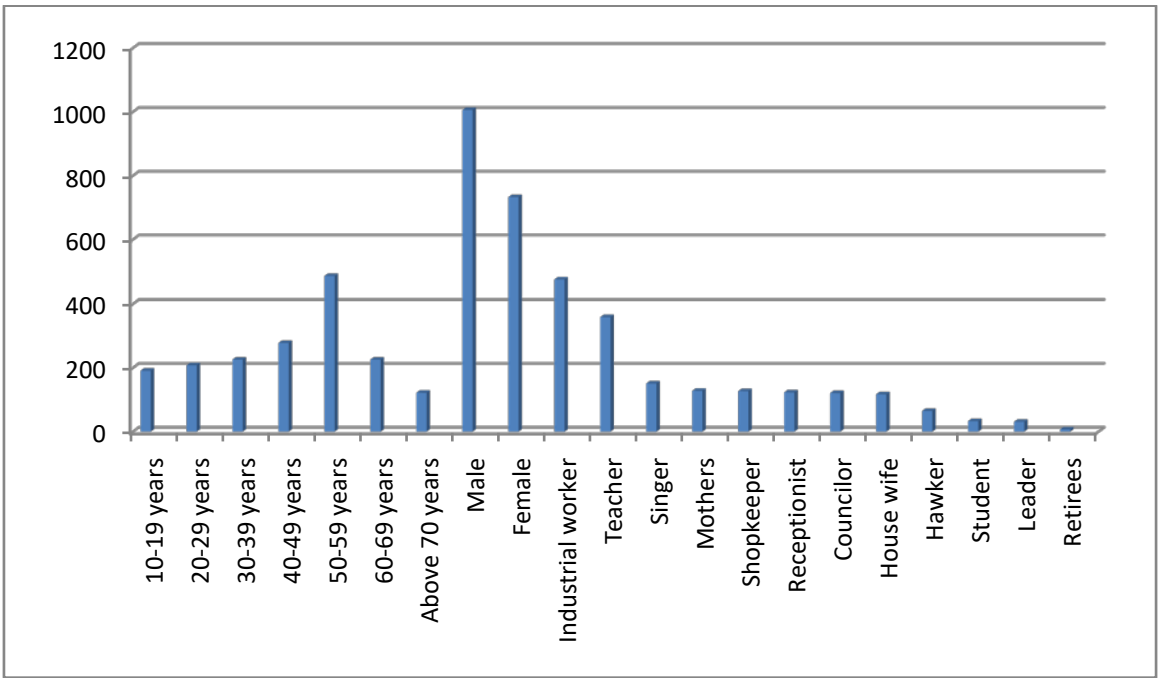

Figure-1: Age, Sex and Occupation.

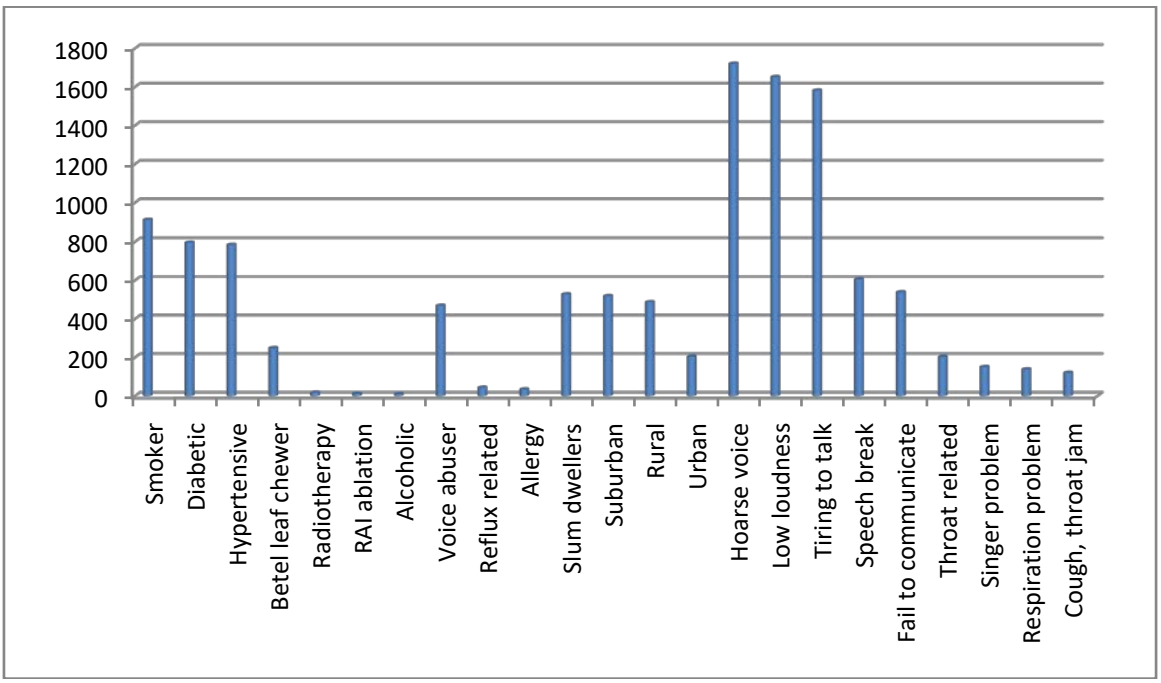

Figure-2: Personal history, predisposing factor, residence and well known presenting feature.

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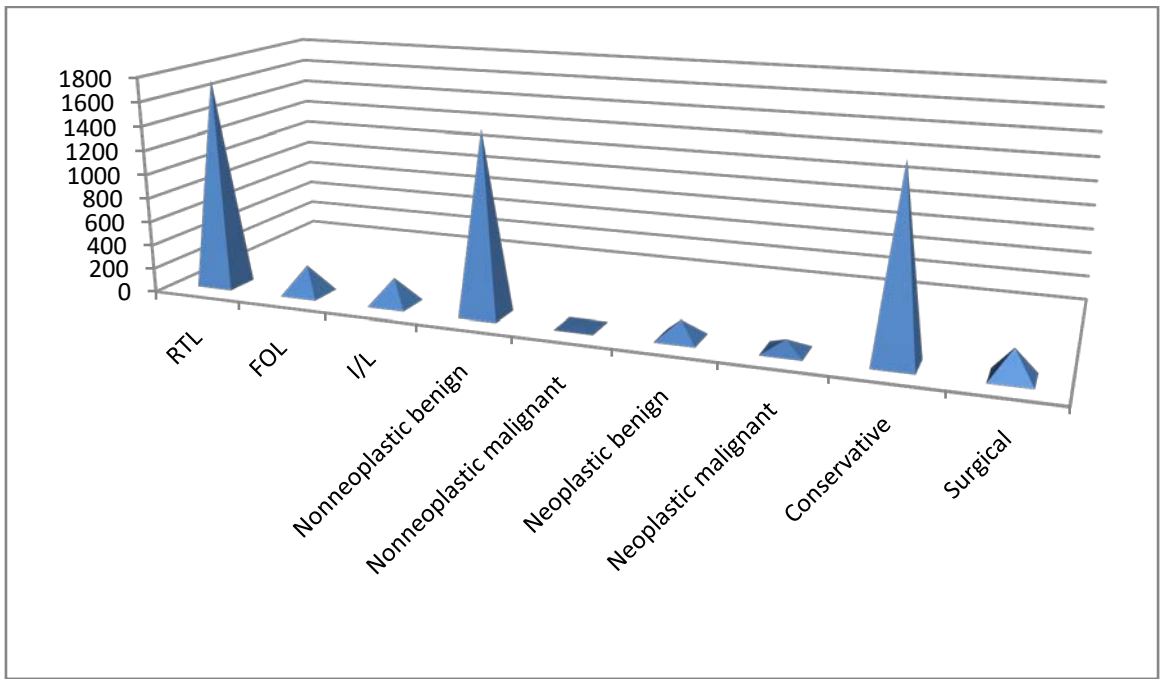

Figure-3: Investigation, disease pattern and treatment option of dysphonia.

Table-1: Distribution of laryngeal disorder due to Dysphonia.

Serial Number	Laryngeal Disorders	Patient in Govt. hospital	Patient in Private hospital	Total patient	Percentage
1	Non-specific chronic laryngitis	420	595	1015	58.37%
2	Dysphonia without structural change/Functional/MTD	230	187	417	23.98%
3	Malignant growth	69	21	90	5.17%
4	Vocal cord polyp	61	05	66	3.79%
5	Vocal cord nodule	38	17	55	3.16%
6	Vocal cord paralysis	34	01	35	2.01%
7	Candidiasis	09	17	26	1.49%
8	Reinke's edema	21	01	22	1.27%
9	Vocal cord leukoplakia	03	01	04	0.23%
10	Laryngeal TB	03	01	04	0.23%
11	Vocal cord Papilloma	02	00	02	0.12%
12	Vocal cord ulcer	02	00	02	0.12%
13	Cyst on epiglottis	01	00	01	0.06%
T0tal		893	846	1739	100%

Table-2: Distribution of laryngeal disorders according to sex.

Serial	Laryngeal disorders	Male	Percentage	Female	Percentage
1	Chronic laryngitis (1015)	580	57.14%	435	42.86%
2	Functional/MTD (417)	238	57.07%	179	42.93%
3	Malignancy (90)	88	97.78%	02	2.22%
4	Vocal cord polyp (66)	38	57.58%	28	42.42%
5	Vocal nodule (55)	15	27.27%	40	72.73%
6	Vocal paralysis (35)	14	40%	21	60%
7	Candidiasis (26)	05	19.23%	21	80.77%
8	Reinke's edema (22)	18	81.82%	04	18.18%
9	Leukoplakia (04)	03	75%	01	25%
10	TB laryngitis	03	75%	01	25%
11	Vocal Papilloma (02)	02	100%	00	00%
12	Vocal Ulcer (02)	02	100%	00	00%
13	Cyst (01)	00	00%	01	100%
Total	1739	1006	57.85%	733	42.15%

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Table-3: Distribution of risk factor of laryngeal disorder according to personal history and predisposing factor.

Serial	No. of patient	Laryngeal disorders	Smoking	Voice abuser	Alcohol	Betel leaf	Allergic disorder	Reflux related	Other
1	1015	Chronic laryngitis	494	302	00	190	20	09	00
2	417	Functional	252	102	00	32	12	19	00
3	90	Malignancy	88	00	00	02	00	00	00
4	66	Vocal polyp	30	18	00	10	00	08	00
5	55	Vocal nodule	10	35	05	00	00	05	00
6	35	Vocal paralysis	10	00	05	00	00	00	20
7	26	Candidiasis	00	05	00	15	03	03	00
8	22	Reinke's edema	17	04	01	00	00	00	00
9	04	Leukoplakia	03	01	00	00	00	00	00
10	04	TB Laryngitis	03	01	00	00	00	00	00
11	02	Papilloma	02	00	00	00	00	00	00
12	02	Ulcer	02	00	00	00	00	00	00
13	01	cyst	00	01	00	00	00	00	00
Total	1739		911	469	11	249	35	44	20
	100%		52.39%	26.97%	0.63%	14.32%	2.01%	2.53%	1.15%

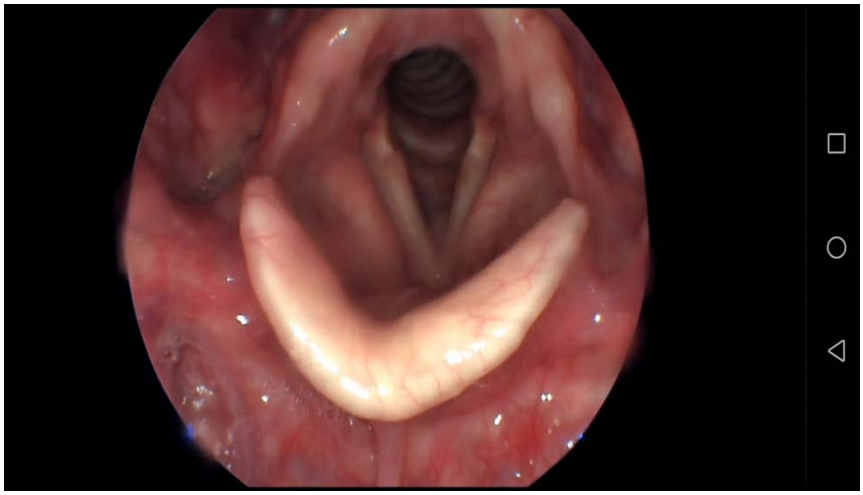

Figure-4: Normal Larynx.

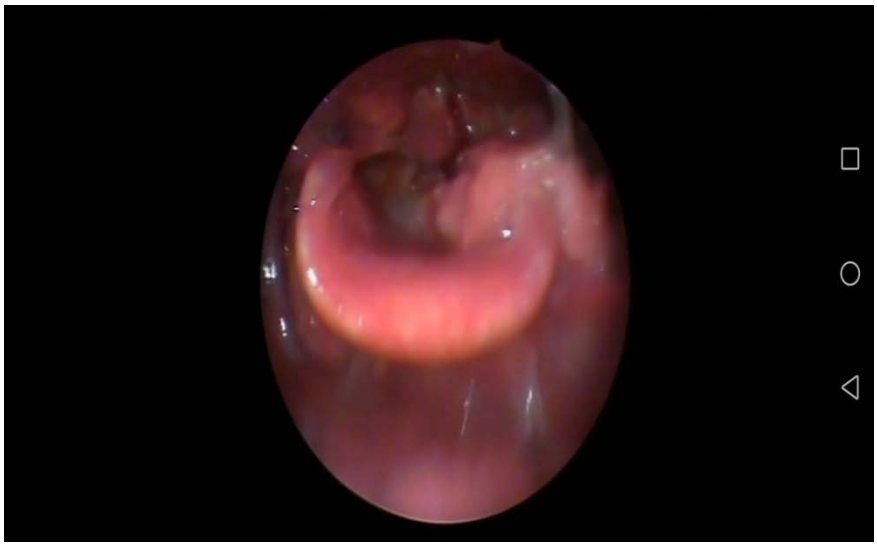

Figure-5: Supraglottic huge growth.

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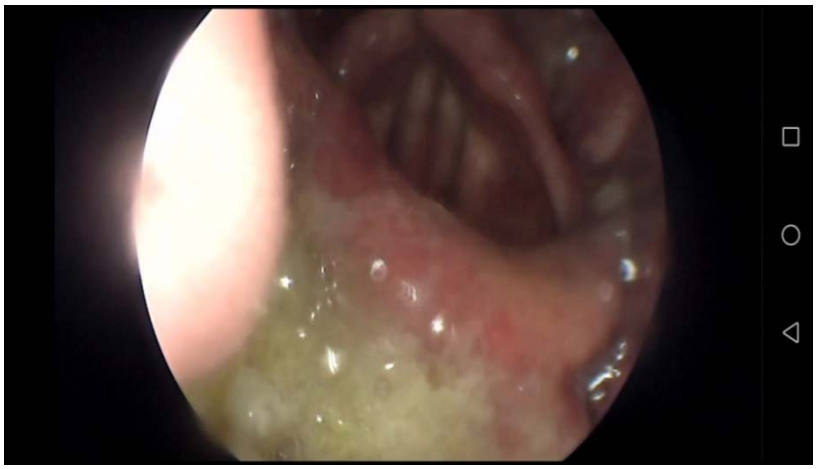

Figure-6: Growth on lingual surface of epiglottis.

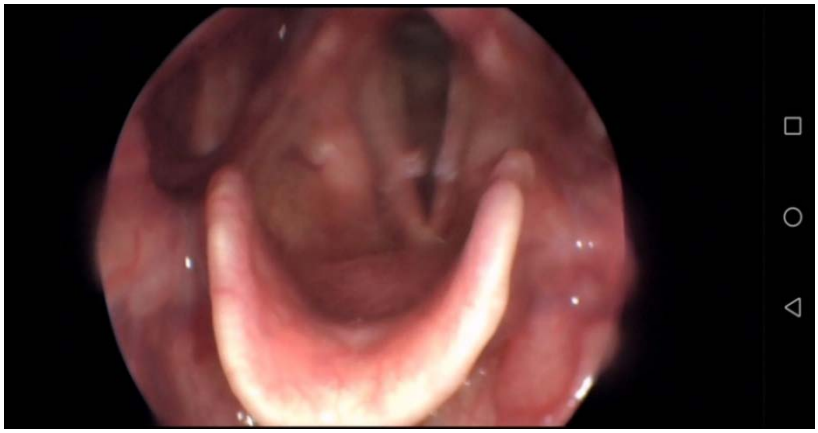

Figure-7: Vocal cord nodule.

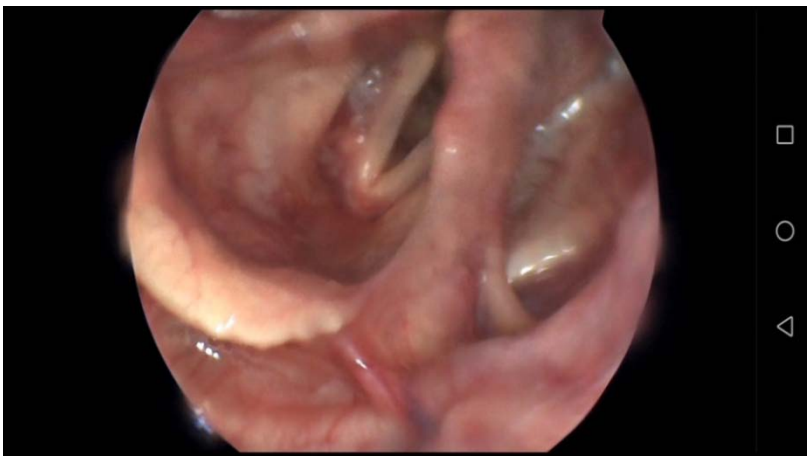

Figure-8: Functional dysphonia.

IV. Discussion

Distribution of laryngeal pathology due to symptoms of dysphonia among our patient was seventeen hundreds thirty nine. Incidence of dysphonia was 1.16% among outpatient department and the yearly prevalence of 33.33 % in our study consistent with Roy et al. series, showed 30% prevalence rate [21].

In the present study, non-specific chronic laryngitis was the most common disease-producing dysphonia 1015 (58.37%) kept up by Khammas AH, Abodamen, and Kataria et al. series, reported the highest occurrence of chronic laryngitis accordingly 19.11%, 27.91% and 20.55% [22] [23] [24]. The patient was mostly male, 57.14 %, also supported by Goswami S et al. showed 62% patient was male [25]. About predisposing factors, allergic manifestation was the second most causes in our results 2.01% held up by Hamdan AL et al. also reported 15-25% singers to have dysphonia with allergic rhinitis [26]. Reflux originated

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chronic laryngitis was 2.53% in our study against Jacob et al. showed 25% patient of chronic laryngitis was associated with reflux-related [27].

The second most common cause of dysphonia was functional or MTD in our work. Out of 417 (23.98%) MTD patients, the male was 238 (57.07%), and the female 179 (42.93%), opposite to Altman KW et al. series, they observed 60% were female and 40% male [15]. Personal history revealed in our work, previous radiotherapy was 19 (1.09%) and radioiodine ablation 13(0.75%) who suffered from anxiety, tension and mood disorder always about their future handicap supported by House A. et al. study showed one-third of functional dysphonic patients abide by anxiety and mood disorder [28].

The third most common cause malignant lesion was 5.17% in our paper persistent with Khammas AH and Kataria et al. study, reported third common cause was malignancy accordingly 16.9% and 11.67% [22] [24]. Kiakojoury K et al. also supported our research, showed laryngeal cancer caused dysphonia was 2.5% [29]. Smoking is the prime risk factor of our study 52.39%, supported by all other studies like Goswami S and Khammas AH et al. reported accordingly 100% and 53.68% [25] [22].

Vocal cord polyp was 3.79% dysphonia in our series against Goswami S et al. paper, showed 16.9% case [25]. Sex distribution in our study the male was 57.58%, and the female was 42.42% near to Singh R et al. research revealed male, the female ratio was 2:1[30]. Vocal cord nodule was 55 (3.16%) in the present study isn't compatible with Babu VS et al. series, showed vocal nodule 11.95% [31]. The female was 72.73%, and the male 27.27% kept up by Goswami S et al. reported 67.86% was female, and 32.14% was male [25].

Vocal cord paralysis was 35 (2.01%) in our research consistent with Roy D et al. work, Presented a 2.9% case was paralysis [32]. Gender distribution displayed the female was 20 (58.82%), and the male 14 (41.18%)-, due to female thyroidectomy was 08 times more than male in our hospitals held up by Ko HC et al. series [33].

In our paper, 26 (1.49%) was a fungal infection in which the female was 21 (80.77%) and the male 05 (19.25%). It is associated with an immuno-compromised patients like post-irradiated, radioiodine ablation, frequently received antibiotics. In our work post-irradiated 19 (1.09%) and radioiodine ablation 13 (0.75%) supported by Vrabec DP's study [13].

Reinke's edema was in our work 21 (1.27%) held up by Singh R et al. reported 2% whereas Goswami S et al. against our study showed 26.7% [30] [25]. Smoking (52.39%) was the main risk factor for Reinke's edema in our research kept up by Ballenger JJ. series [34].

Vocal cord leukoplakia is the premalignant condition. Among 04 (0.23%), the male was 03(75%), and the female 01 (25%) in this work. The risk factor for it in our report was smoking (52.39%) and voice abuse (26.97%) kept up by Sing R et al. series [30].

Laryngeal TB is secondary to pulmonary TB. Smoking (52.39%) is another risk factor held up by Chopra H et al. paper [35], reported 03 (4.48%) patients of laryngeal TB.

In our study, only 02 (0.12%) cases of adult papilloma whereas Goswami S showed JRRP patient was 11 (1.4%) [25].

The ulcer may be a premalignant condition or due to TB and Syphilis supported by Bhat VK et al. series [36].

Cyst of the epiglottis is a rare condition. Only one female patient found epiglottis cyst which was mucous retention cyst [2]

V. Conclusion

Dysphonia is one of the prime symptoms of the laryngeal disorder. The rigid RTL is available for accurate and safe examination, and assessment of the disease condition. Proper treatment and management can be reduced the morbidity and mortality rate of the patient suffering from various laryngeal diseases that causes dysphonia.

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Ethical Approval

The Institutional Review Committee approved the study, headed by the Principal of the Medical College, chief editor of the Journal of comilla medical college teachers association is secretary and all head of the department was member named Journal Review Ethics Committee.

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