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Study of epidemiology on hoarseness of voice among patients at a tertiary hospital

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Abstract
Hoarseness refers to abnormal vocal alterations. Pathologic alterations brought on by irritants and inflammatory processes, neuromuscular and mental problems, systemic disorders, and neoplasms are some of the causes of hoarseness. Present study was aimed to study epidemiology on hoarseness of voice among patients at a tertiary hospital. Present study was single-center, prospective, observational study, conducted in cases visiting ENT OPD with hoarseness of voice or change in voice, willing to participate in present study. Among 123 patients majority were from 56 -65 years age group, were males (64.2%), from rural area (71.5%), from low Socio economic status (66.7%), had mixed diet (63.4%) & had addictions (61%). 18 (14.6%) pts had voice abuse history & 22 (17.9%) patients with voice change also had chief complaint of Dysphagia. 27 (22%) pts had hoarseness of voice for <1 month, 94 (76.4%) pts had Hoarseness of voice for < 1 month- 1year, 2 (1.6%) pts had Hoarseness of voice for > 1 year. 94 (76.4%) had no co-morbidities. Biopsy was not required in 93 (75.6%) patients. Inflammatory polyp seen in HPE of 6 (4.9%) cases and SCC was seen in 24 (19.5%) cases. Carcinoma larynx was most common diagnosis, includes carcinoma supraglottis (10.56%), carcinoma glottis (5.69%) & carcinoma hypopharynx (5.69%). Hoarseness of voice is seen in all patients with wide range of diagnoses from simple laryngitis to malignancy. Hoarseness should therefore not be disregarded, and a full examination, inquiry, and appropriate history should be taken.

Keywords: Hoarseness of voice, dysphagia, carcinoma larynx, vocal alterations

Introduction

Hoarseness refers to abnormal vocal alterations. The voice may become breathy, raspy, strained, or vary in volume or pitch when hoarse (depending on how high or low the voice is). Voice alterations are linked to issues with the voice box's vocal folds, which produce sound (larynx). Vocal quality, loudness, and pitch are altered when vocal folds are swollen or lumpy [1, 2].

There are several causes of hoarseness. A neurologic or psychological cause rather than an intrinsic lesion is more likely to be to blame for the sudden onset of full voice loss during phonation, or aphonia [3]. Vocal symptoms from vocal fold lesions more usually have a slow onset, frequently starting out infrequently before becoming constant and occasionally getting worse over time. Due to the presence of a vocal fold lesion or paralysis that prevents glottic closure, patients may have trouble projecting their voice.

The vocal disturbance that is currently present may be primarily caused by psychological issues, which frequently manifest in the voice. For instance, the volume and prosody of depressed patients' voices are often diminished. Pathologic alterations brought on by irritants and inflammatory processes, neuromuscular and mental problems, systemic disorders, and neoplasms are some of the causes of hoarseness [3, 4]. Laryngoscopic changes caused by many of these processes can help establish a precise diagnosis [4]. Present study was aimed to study epidemiology on hoarseness of voice among patients at a tertiary hospital.

Materials and Methods

Present study was single-center, prospective, observational study, conducted in department of ENT, at XXX medical college & hospital, XXX, India. Study duration was of 2 years (January 2021- December 2021). Study approval was obtained from institutional ethical committee.

Inclusion criteria

- All cases visiting ENT OPD with hoarseness of voice or change in voice, willing to participate in present study

Exclusion criteria

- Cases of age below 10 years
- Cases with change in voice due to Congenital diseases
- Change in voice due to Nasal or nasopharyngeal pathology
- Voice change due to oral or oropharyngeal pathology
- Pregnant women
- Speech defect due to CNS lesion except vocal cord palsy
- Patients not willing to give informed consent
- Speech articulatory disorder

Study was explained to patients in local language & written consent was taken for participation & study. All patients provided a thorough case history, underwent a thorough ENT examination, and the results were meticulously recorded. All of the patients who were present had their previous histories taken and were evaluated. Using a standard proforma, general and ENT examinations were performed to determine the clinical reasons of voice issue. Where appropriate, particular focus was placed on the evaluation of the neck, cardiovascular system, respiratory system, and central nervous system. In certain patients who had earlier admissions histories provided, old case sheets were referred to and significant case history information was gathered through investigations. Detail history taking, indirect laryngoscopy, direct laryngoscopy, doctor speech software, Voice handicap index, are all included in the investigation profile. Only after telling the patients and receiving their written agreement for surgical treatments was this study carried out.

Data was entered into Microsoft excel data sheet and was analyzed using SPSS 22 version software. Statistical analysis was done using descriptive statistics.

Results

A total of 123 patients were analysed. Majority were from 56 -65 years (27.6%) followed by > 65 years (26.8%) & 46-55 years (21.1%). In this study, 44 (35.8%) were females and 79 (64.2%) were males. Male: Female ratio 1.79. Majority patients were from rural area (71.5%), from low Socio economic status (66.7%), had mixed diet (63.4%).

In this study, 18 (14.6%) pts had voice abuse history & 22 (17.9%) patients with voice change also had chief complaint of Dysphagia. In this study, 27 (22%) pts had hoarseness of voice for <1 month, 94 (76.4%) pts had Hoarseness of voice for 1 month- 1year, 2 (1.6%) pts had Hoarseness of voice for > 1 year.

Table 1: General characteristics

Characteristics	No. of patients	Percentage
Age groups (in years)		
25-35 Years	15	12.2
36-45 Years	15	12.2
46-55 Years	26	21.1
56-65 Years	34	27.6
>65 Years	33	26.8
Gender		
Male	79	64.2
Female	44	35.8
Location		
Rural	88	71.5
Urban	35	28.5
Diet		
Mixed	78	63.4
Vegetarian	45	36.6
Other		
Voice abuse	18	14.6
Dysphagia	22	17.9
Duration of Hoarseness		
< 1 month	27	22.0
1 month - 1 year	94	76.4
> 1 year	2	1.6

In present study, 48 (39%) patients had no addictions, 75 (61%) pts had addiction. Common addictions were tobacco smoking (20.3%) followed by tobacco smoking and alcohol (14.6%) & tobacco chewing (12.2%). In this study, in 9 (12.3%) pts, Duration of Addiction was < 10 years. In 29 (39.7%) pts it was since 10-20 years and 35 (47.9%) pts had it from > 20 years.

Table 2: Addictions

Type	No. of patients	Percent
None	48	39.0
Only Tobacco smoking	25	20.3
Tobacco smoking and alcohol	18	14.6
Only Tobacco chewing	15	12.2
All	7	5.7
Alcohol	4	3.3
Tobacco chewing and alcohol	4	3.3
Tobacco smoking and chewing	2	1.6
Duration of Addiction		
< 10 years	9	12.3
10-20 years	29	39.7
>20 years	35	47.9

In this study, 94 (76.4%) had no co-morbidities. Common co-morbidities were hypertension (11.4%), allergic rhinitis (5.69%), asthma (4.9%) & diabetes mellites (4.1%).

Table 3: Comorbidities associated

Comorbidities	No. of patients	Percent
Nil	94	76.4
Hypertension	14	11.4
Allergic Rhinitis	7	5.69
Asthma	6	4.9
Diabetes Mellites	5	4.1
Pulmonary TB	2	1.6
Thyroid	1	0.8

Biopsy was not required in 93 (75.6%) patients. Inflammatory polyp seen in HPE of 6 (4.9%) cases and SCC was seen in 24 (19.5%) cases.

Table 4: Biopsy reports

Biopsy	N	%
Not done	93	75.6
SCC	24	19.5
Inflammatory polyp	6	4.9

Carcinoma larynx was most common diagnosis, includes carcinoma supraglottis (10.56%), carcinoma glottis (5.69%) & carcinoma hypopharynx (5.69%). Other common causes were chronic laryngitis (8.94%), vocal nodule (8.94%), left vocal cord palsy (8.13%), vocal polyp (7.31%), LPR (7.31%), spasmodic dysphonia (5.69%), right vocal cord palsy (4.87%), acute laryngitis (4.06%) & leukoplakia (3.25%).

Table 5: Final diagnosis

Diagnosis	No. of patients	Percentage
Ca larynx		
ca supraglottis	13	10.56
ca glottis	7	5.69
ca hypopharynx	7	5.69
Chronic laryngitis	11	8.94
Vocal nodule	11	8.94
Left vocal cord palsy	10	8.13
Vocal polyp	9	7.31
LPR	9	7.31
Spasmodic dysphonia	7	5.69
Right vocal cord palsy	6	4.87
Acute laryngitis	5	4.06
Leukoplakia	4	3.25
Presbylaryngis	3	2.43
Vocal paresis	3	2.43
Contact ulcer	3	2.43
Laryngeal tuberculosis	2	1.62
Post trauma	2	1.62
Intubation trauma	2	1.62
Sulcus vocalis	2	1.62
Reinke's oedema	2	1.62
Pachyderma laryngis	2	1.62
Puberphonia	1	0.81
Laryngeal candidiasis	1	0.81

Discussion

Assessment of the anatomical, physiological, and behavioural aspects that affect overall voice production is required for the evaluation of hoarseness. An evaluation starts with a voice description, symptomatology, and a review of the patient's medical and social histories. It is vital to visualise the larynx to assess the condition of the vocal folds. Anytime hoarseness lasts more than two weeks, a laryngeal examination should be done. More complex diagnostic methods may be required in certain circumstances. Hoarse, harsh, raspy, breathy, and gravelly are just a few of the subjective words that can be used to characterise vocal quality [5, 6].

Now that advanced microlaryngeal surgical techniques and high-tech computerised assessment facilities are available, early detection of vocal cord lesions and precise surgical excision of lesions without significantly damaging the surrounding tissues are routine procedures for all body types, and voice preservation techniques have never been better.

Majority were from 56 -65 years (27.6%) followed by > 65 years (26.8%) & 46-55 years (21.1%). 44 (35.8%) were females and 79 (64.2%) were males. Male: female ratio was 1.79. In Zada B *et al*., [7] study, 98 (72%) were males, 52 (28%) were females with a M: F proportion of 1.45: 1. Adamu A *et al*., [8] observed that mean age was 40.1 ± 14.8 years and there were 51 (56.7%) males and 39 (43.3%) females. All findings of our study were in line with other studies.

Hoarseness of voice is seen in all patients. Adamu A *et al*., [8] also had hoarseness complaint in their entire study sample of 90 subjects. About 46 (51.2%) of them had intermittent hoarseness, whereas 44 (48.8%) had persistent hoarseness. According to Zada B *et al*., [7] the causes of hoarseness range from mild laryngitis to malignant neoplasms. Hoarseness should therefore not be disregarded, and a full examination, inquiry, and appropriate history should be taken. Speech and swallowing issues are the initial signs of ALS in 25% of patients [9[.

In this study, 94 (76.4%) participants had no co-morbid conditions, 1 (0.8%) had allergic rhinitis, 6 (4.9%) had asthma, 5 (4.1%) had diabetes, 14 (11.4%) had high blood pressure, 2 (1.6%) had pulmonary tuberculosis, and 1 (0.8%) had a thyroid condition. Our findings imply that lower airway illness may impair phonation. In our investigation, asthma patients had high breathiness, roughness, hoarseness and S/Z ratio.

We might be able to comprehend the biology of lower airway illnesses and how they affect voice parameters with more research. The fact that asthma patients had aberrant levels of breathiness, harshness, hoarseness and S/Z ratio leads us to believe that the lower airway does contribute to the phonation process by producing positive air pressure in the subglottic region. With increased air loss (a higher breathiness score) and decreased phonation time at the larynx (A higher S/Z ratio), abnormalities in the lower airway may cause a voice that is rough and harsh. An irregular pattern of glottic closure might cause air loss in asthmatics. [10] As a result, there may be larger voice energy losses in the form of noise.

Williamson IJ *et al*., [11] discovered that 58% of asthma patients who were taking an inhaled corticosteroid had dysphonia. Women experienced symptoms more frequently than males did. More severe symptoms were linked to higher steroid doses, and few asthma patients reported coughing due to aerosols.

In present study, Carcinoma larynx was most common diagnosis, includes carcinoma supraglottis (10.56%), carcinoma glottis (5.69%) & carcinoma hypopharynx (5.69%)

(figure1). Other common causes were chronic laryngitis (8.94%), vocal nodule (8.94%), left vocal cord palsy (8.13%), vocal polyp (7.31%), LPR (7.31%), spasmodic dysphonia (5.69%), right vocal cord palsy (4.87%) (Figure 2), acute laryngitis (4.06%) & leukoplakia (3.25%).

Fig 1: 70^0: Laryngeal endoscopic picture showing laryngeal glottic carcinoma

Fig 2: 70^0: Laryngeal endoscopic picture showing vocal fold paralysis

According to Zada B *et al*., [7] the most common aetiology was acute laryngitis (30%), which was followed by acid peptic laryngitis (25.3%), laryngeal neoplasms (8.7%), laryngeal tuberculosis (LTB), intubation granuloma, and extremely infrequently trauma(figure 3). In Adamu A *et al*., [8] fibreoptic laryngoscopic study, the findings included non-specific laryngitis in 49 (54.5%) cases, laryngeal tumours in 20, vocal cord polyps in 7, laryngeal papillomas in 6, vocal cord palsy in 5, and others in 3 (3.3%). The most frequent causes of hoarseness, according to Orellana Zambrano *et al*., [9] are acute (42.1%) and chronic (9.7%) laryngitis, functional vocal abnormalities (30%), and benign tumours (10.7-31%). Malignant tumours (2.2-3%), neurogenic disorders such vocal fold paresis (2.8-8%), presbyphonia (2%) and psychogenic variables (2-2.2%) are less common aetiologies. They also discovered that voice quality can be affected by neurological diseases like Parkinson's disease, myasthenia gravis, multiple sclerosis, dementia, and amyotrophic lateral sclerosis (ALS).

Fig 3: 70^0 laryngeal endoscopic picture showing vocal fold haemorrhage

We recommend that there is a need to conduct further large-scale studies on the subject to enhance our understanding of the various aspects hoarseness evaluation and management. Also, there is need to establish all necessary facilities at each healthcare facility level to achieve better outcomes.

Hoarseness of voice was common in > 55 years age, in males, among rural residents, in low Socio economic status persons & individuals with addictions, voice abuse history & patients with dysphagia. Hoarseness of voice is seen in all patients with wide range of diagnoses from simple laryngitis to malignancy. Hoarseness should therefore not be disregarded, and a full examination, inquiry, and appropriate history should be taken.

Conflict of Interest

Not available

Financial Support

Not available

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