

A Prospective Study to Determine Clinico-Etiological Factors in Hoarseness of Voice

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ABSTRACT

BACKGROUND

Hoarseness of voice is a very common symptom and needs thorough clinical examination and investigation to determine the underlying cause in every patient. The spectrum of the symptom ranges from minor infections to life threatening malignancies. Acute onset causes may be due to secondary viral infections, voice abuse, smoking, trauma to the larynx during thyroid surgeries. Chronic onset may be due to vocal polyp, vocal cord nodules, laryngeal papillomatosis, laryngeal neoplasms, tumours of the vocal cord, functional dysphonia, smoking, gastro-oesophageal reflux, malignancy of thyroid, oesophagus, lungs and neurological involvement by systemic disease like diabetes and TB. We wanted to evaluate the common causes of hoarseness of voice.

METHODS

This was a longitudinal study conducted among 100 patients with benign laryngeal lesions attending the Department of ENT-HNS of Rajarajeswari Medical College and Hospital, from 1st December 2015 to 31st November 2016. A detailed history including information on patient's demographics, clinical presentation, history of trauma, along with history of associated medical and surgical condition was obtained. A thorough systemic examination and laryngeal examination was done.

RESULTS

Male:Female ratio was noted to be 1.7:1. Labourers constituted the single largest group of patients comprising of about 36% of cases. Three fourth of patients were from the rural area. Duration of hoarseness ranged from 1 day (acute onset) to 5 yrs. (mean - 3 months). Septic foci in oral cavity and oropharynx were noted in 42% cases. Apart from change in voice other common symptoms were cough, fever and vocal fatigue. Signs of chronic laryngitis were noted in majority of the cases (22%).

CONCLUSIONS

The spectrum of etiological factors for hoarseness varies from minor functional voice disorders to major pathological conditions such as malignancy. Septic foci are important predisposing factor for chronic laryngitis.

KEY WORDS

Dysphonia, Hoarseness, Gastro Oesophageal Reflux, Change in Voice

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BACKGROUND

Human voice is an exceptional gift and in a world of complex environment it is almost impossible to think of a life without communication. Human voice is not only used for dialogue but to express various thoughts and emotions. Various aspect of human voice includes crying, singing, and expression. Hoarseness is the term used to describe a change in normal voice quality. Hoarseness may imply breathiness, roughness, voice breaks or unnatural changes in pitch. In other words, "Hoarseness is a symptom of utmost significance and calls for a separate consideration as a subject because of the frequency of its occurrence as a distant signal of malignancy and other conditions".¹ Voice production in humans is a complex mechanism involving phonation, respiration and articulation. Voice disorders are most commonly divided into functional and organic. Functional group of voice disorders involves in voice abnormalities where vocal cord structure and Reinke's space morphology remain normal, and voice abnormalities are secondary to muscle tension disorders.² Evaluation of a patient with hoarseness includes a careful history, physical examination, and in many cases, laryngoscopy. Any patient with hoarseness lasting longer than two weeks in the absence of an apparent benign cause requires a thorough evaluation of the larynx by direct or indirect laryngoscopy. The management of hoarseness includes identification and treatment of any underlying conditions, vocal hygiene, voice therapy, and specific treatment of vocal cord lesions. The common factors responsible for the development of benign lesions are vocal abuse, misuse, overuse, speaking in unnatural tones, exposure to various irritants like smoke, dust fumes, alcohol etc. Allergy and infective conditions of larynx (as Human papilloma virus in respiratory papillomatosis) are also responsible alone or in combination with other factors for the development of such lesions.³ The main aim of our study was to find the common etiological causes of hoarseness of voice.

METHODS

A prospective clinical study of hoarseness of voice was carried out in the Department of ENT-HNS Rajarajeswari Medical College and Hospital, from 1st December 2015 to 31st November 2016. A total of 22560 cases attended the ENT OPD (12580 new and 9980 old) from 1st December 2015 to 31st November 2016, out of these 165 patients presented with hoarseness of voice. Patient below 5 yrs. patients with voice disorders like rhinolalia clausa, rhinolalia aperta, and articulation disorder, neurological causes like bulbar palsy, multiple sclerosis and Parkinson's disease were excluded from the study. A total of 100 patients were included in our study who met the inclusion criteria. Informed consent was obtained from all the patients included in the study for publishing the details. Study was carried out with the permission of institutional ethical committee and written informed consent was taken from the patients. The study was carried out to evaluate common etiological causes of hoarseness of voice. The evaluation of hoarseness involves assessment of the anatomic, physiologic, and behavioural factors that influence overall vocal production. Assessment

begins with a description of the voice, symptomatology, and a medical and social history. Investigations like indirect laryngoscopic examination and laryngeal endoscopic examination was done to determine the status of the vocal folds and larynx. In general, laryngeal examination should be performed whenever hoarseness persists longer than 2 weeks. Radiological investigations like CT was done in cases of vocal cord paralysis. Vocal quality can be perceptually described using a variety of subjective terms including hoarse, harsh, raspy, breathy, and gravelly.

Statistical Analysis

Descriptive and inferential statistical analysis has been carried out in the present study. Significance is assessed at 5 % level of significance. Chi-square/ Fisher Exact test has been used to find the significance of study parameters on categorical scale between two or more groups, Non-parametric setting for Qualitative data analysis. Collected data was analysed using Microsoft excel.

RESULTS

Age distribution of patients studied: In our study of 100 patients, the majority of the patient were seen in the age group of 31-40 yrs. (30%) and 21-30 yrs. (28%) followed by 41-50 yrs. (19%). Gender distribution of patients studied: In the present study, male predominance was seen and male and female ratio of 1.7:1 was observed. Occupational distribution of patients studied: In our study, labourers (36%) constituted single largest group followed by housewives (23%), teachers (21%), students (14%) and farmers (6%). Distribution of patients according to clinical Diagnosis: Patients with clinical diagnosis of chronic laryngitis (22%) was found as the most common aetiology followed by acute laryngitis (21%), vocal nodule and vocal polyp constituted 12% and 5% respectively, tubercular larynx (6%), vocal cord paralysis (10%), benign tumours i.e. vocal cord cyst and papilloma (10%), carcinoma larynx (3%), senile laryngitis (4%) and functional dysphonia (2%).

Occupation	Gender		Total
	Female	Male	
Labourer	0(0%)	36(57.1%)	36(36%)
Housewife	23(62.2%)	0(0%)	23(23%)
Teacher	14(37.8%)	7(11.1%)	21(21%)
Student	0(0%)	14(22.2%)	14(14%)
Farmer	0(0%)	6(9.5%)	6(6%)
Total	37(100%)	63(100%)	100(100%)

Table 1. Occupation Distribution of Patients Studied

Septic Foci	No	Yes
Acute laryngitis	9(15.5%)	12(28.6%)
Chronic simple laryngitis	5(8.6%)	5(11.9%)
Chronic hyperplastic laryngitis	2(3.4%)	10(23.8%)
Vocal nodule	7(12.1%)	5(11.9%)
Vocal polyp	3(5.2%)	2(4.8%)
TB larynx	6(10.3%)	0(0%)
Vocal cord palsy	9(15.5%)	1(2.4%)
Carcinoma of larynx	3(5.2%)	0(0%)
Total	58	42

Table 2. Frequency of Septic Foci in Patients with Various Aetiologies

Distribution of patients in accordance to their personal habits and aetiology: In our study, habit of alcohol consumption was seen in 16% of the patients and alcohol consumption was found to be a significant precipitating

factor in carcinoma of larynx (18.8%) and TB laryngitis (18.8%). Habit of smoking was observed in 26% of the patients and it was also found to be a significant precipitating factor in TB laryngitis (15.4%) and carcinoma of larynx (11.5%). Incidence of tobacco chewing was found to be 18% and was associated with acute (27.8%) and chronic laryngitis (22.2%). Habit of betel nut chewing was observed in 5% of patients out of which majority were females. Vocal nodules (30.6%) was seen in patients with history of vocal abuse and in our study septic foci was an important precipitating factor in acute (28.6%) and chronic laryngitis (23.8%).

DISCUSSION

A total of 100 patients were included in our study out of which 63 patients were males and 37 were females, male predominance was seen and male to female ratio of 1.7:1. In a study by Gaurav Kataria et al, study population was 180, and male: female ratio was 1.7:1.⁴ Parikh et al study of 100 patients, showed a ratio of 2:1.¹ In a study by Baitha et al, study done on 110 patients showed male: female ratio of 2:1.⁵ Majority of studies in literature on hoarseness of voice also showed male predominance. In our study majority of the patient were seen in the age group of 31-40 years (30%) and 21-30 years (28%) followed by 41-50 years (19%) Baitha et al in their study also found majority of the patient 28.18% in the age group 31-40 years.⁵ In a study by Kumar et al, majority of the patients were in the age group of 31-40 years (31%).⁶ Gaurav Kataria et al, study done on 180 patients showed age group of 31-40 years (29.44%) as a majority group.⁴ In our study, labourer (36%) constituted single largest group followed by housewives (23%), teacher (21%), students (14%) farmer (6%). Gaurav Kataria et al study also showed labourer 26.11% the largest group followed by Housewives 23.89% and Farmer 14.44%.⁴ Baitha et al study done on 110 patients showed that labourer 36.36%, Housewives 21.81 %, Student 14.54% and Teacher 10%.⁵

In our study chronic laryngitis (22%) was found as the most common aetiology followed by acute laryngitis (21%) vocal nodule and vocal polyp constituted 12% and 5% respectively, tubercular larynx (6%), vocal cord paralysis (10%), benign tumours (10%), carcinoma (3%), senile laryngitis (4%) and functional dysphonia (2%). Gaurav et al study showed chronic laryngitis 20.5%, acute laryngitis 8.89%, vocal cord paralysis 11.11%, carcinoma 11.67%, and functional laryngitis 7.22%.⁴ Baitha et al study showed chronic laryngitis 43.63%, acute laryngitis 23.63%, vocal cord paralysis 9.09%, TB laryngitis 5.40%, carcinoma 14.54%, senile laryngitis 1.8%.⁵ Mehta et al showed chronic laryngitis 42.50%, vocal cord paralysis 9.16%.⁷ In our study vocal cord nodules was found to be 10% bilateral and 2% on the right side. In a study by Kumar et al, 18% of total population presented with vocal nodules.⁶ Banjara et al study showed vocal nodules in 11.95% of total population.⁸ Vocal abuse was the single most common precipitating factor for vocal nodules whereas history of smoking was present in only one case in our study. In our study vocal cord polyps were seen in 5% of patients, right side and left side constituted 2% each and bilateral in 1% of patients. Banjara et al showed 3.59% incidence of vocal polyp in their study.⁸ Study of Baitha et al

showed vocal cord polyp in 4.54% among the total study population.⁵ In our study vocal cord palsy was seen in 10% of patients, left side vocal cord palsy was seen in 7% of patients and right side vocal cord palsy was seen in 3% of patients. Studies of both Parikh et al and Mehta et al have found right vocal cord palsy more common.^{1,7} Gaurav et al, study showed incidence of vocal cord palsy to be 11.11% of the 180 study population.⁴ Banjara et al, study showed 9.09% cases of vocal cord palsy cases.⁸ In a study by Syed M et al, 9% incidence of vocal cord palsy among the total study population was seen.⁹ In our study 3% of the patients presented with carcinoma of larynx. Gaurav et al study showed 11.67% patients with carcinoma of larynx.⁴ Banjara et al, study showed 9.56% patients of carcinoma larynx.⁸ Baitha et al study showed 16% patient with carcinoma of larynx in a study population.⁵ Syed M et al, study showed 11% of carcinoma larynx cases among the study population.⁹ In our study all the three carcinoma of larynx patients were smokers and alcoholic. Laryngeal cancer is extremely rare in non-smokers and its incidence increase with increase in number of cigarettes smoked per day. Smoking increase the risk of cancer by 4 to 40 times than the non-smokers.¹⁰ Consumption of alcohol along with cigarette smoking increases the relative risk by 50% above that predicted by simple additive effect.

In our study incidence of precipitating factors in patients with hoarseness of voice, Septic foci (42%) was most common followed by vocal abuse (36%), smoking (26%), tobacco chewing (18%), alcohol (16%), and betel nut chewing (5%) was observed. 42% of the patients presented with septic foci in the form of tonsillitis, chronic sinusitis, dental caries, and pharyngitis. Baitha et al study showed septic foci in oral cavity and oropharynx 41.8%.⁵ Mehta et al, study showed-43% of the patients with septic foci.⁷ In a study by Kaluskar et al, septic foci was seen in 59% of the patients.¹¹ In our study incidence of smoking was seen in 26% patients. In a study by Gaurav et al, smoking habit was seen in 41.67% of the patients.⁴ Banjara et al, study showed the incidence of smoking to be 43% of the total study population.⁸ In a study by Broek et al, he has mentioned inhaled irritant especially cigarette smoke as important predisposing factor for hoarseness.¹² In our study 36% patients presented with vocal abuse. In a study by Kaluskar et al, 62.5% cases of vocal abuse were seen among the study population.¹¹ Mehta et al, study presented with 49% cases of vocal abuse.⁷ Rosen et al, mentioned vocal abuse as one of the commonest cause of hoarseness and it can lead to other vocal pathologies.¹³ In our study there were 21 patients of acute laryngitis, most of the patients had septic foci in the form of dental caries, pharyngitis and symptomatic deviated nasal septum, and some patients had history of smoking. Broek et al observed that acute laryngitis is often associated with and is secondary to acute infection of nose, throat or PNS, viral or bacterial isolated pyogenic infections of larynx are unknown.¹² In our study 22% of patients had chronic laryngitis, vocal abuse was seen in 23% cases, smoking 8%, tobacco chewing 10%, septic foci 24%, alcohol 6% and betel nut chewing in 4% of the study population. Chronic laryngitis is more frequently found in the patients suffering from chronic infections of upper and lower respiratory tract. In the study 12 cases of vocal nodule, 11 cases had history of vocal abuse, one case with septic foci and one case with smoking. We have found vocal abuse as the single most important

precipitating factor for vocal nodule. In case of vocal polyp out of 5 cases 3 patients had history of vocal abuse, 2 cases had history of smoking and 2 cases with septic foci. Parikh et al, observed that in India and other developing countries the prevailing lower economic status, poor nutrition, poor general health of the population, different food habits, vocal habits, smoking and drinking habits, unhealthy environment and different social customs influence the incidence of hoarseness.¹ Henry Shaw (1979) concluded that chronic mucosal irritation by heavy smoking, excessive intake of alcohol and chewing of tobacco and areca nut in Asian countries play significant role in the aetiology of hoarseness.¹⁴

CONCLUSIONS

A sequential history, physical examination and appropriate investigations can lead to appropriate diagnosis. Cessation of smoking and usage of other tobacco preparations and alcohol can lead to significant reduction in the incidence of laryngitis and carcinoma of larynx and in turn will reduce the burden of hoarseness. Avoidance of vocal abuse can also lead to decrease in the burden of hoarseness.

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