DIRECT LARYNGOSCOPIC OBSERVATIONS IN PROGRESSIVE HOARSENESS OF VOICE

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Abstract : Hoarseness is a common disorder of voice which indicates abnormality at the level of glottis. We present our study of forty cases of progressive hoarseness of voice who underwent direct laryngoscopy during a period of January 2003 to January 2004 in our hospital. The observations were recorded and the data was evaluated.

Keywords: Progressive Hoarseness.

INTRODUCTION

Phonation is similar in physical principle to the production of sound in certain musical instruments. In both instances air is set into periodic vibration, which becomes audible as a specific sound¹.

Through Muller's (1837)⁸ studies on artificial phonation of human cadavers and on mechanical larynx, the classic myoelastic or aerodynamic theory of phonation evolved. Bernoulli's principle explains how a sound is produced in the larynx. According to this principle when air passes from one large space to another (i.e. from lung to pharynx) a vibratory pattern is developed at the vocal cords and the resultant sound is what we appreciate as voice⁷ When the regularity of vibratory pattern is lost i.e. becomes random the resulting vocal sound is heard as hoarseness²

Hoarseness indicates an abnormality at the level of the glottis. This symptom may result from either structural or physiologic disorders. The differential diagnosis is lengthy and includes both benign and malignant diseases. History taking and physical examination, particularly laryngeal visualization, provide key clues. Careful and complete examination is always recommended, because airway obstruction can in some situations quickly follow hoarseness⁴

C'est le ton qui fait la musique (the tone makes the music) is a French expression meaning that the contents of a message depend on the way it is delivered. Throat and voice complaints are often non-verbal messages of emotional (psychological) disturbance and the specialist must be able to identify them as such.³

The underlying cause of a voice disorder may be obscure or obvious, but prolonged abuse may result in the development of nodules, polyps, ulcers or granulomas of the vocal cords.⁶

Any disease or condition in the larynx that changes the size, stiffness or surface characteristics of one or both vocal cords, or that causes excessive squeezing of one cord against the other, may create the conditions for hoarseness. Enlargement due to tumour or oedema, reduction resulting from surgery or atrophy,

flaccidity subsequent to neural involvement or functional hypercontraction of the adductor muscles represent the kinds of changes to which reference has been made.²

MATERIAL AND METHODS

The material for the present study, included 40 patients of hoarseness of voice. The patients were selected randomly from the outpatient Department of Ram Lal Eye/E.N.T. Hospital/Medical College, Amritsar over a period of 1 year, January 2003- January 2004. A detailed history was taken and complete general physical and E.N.T. examination was done. Routine investigations were carried out in each patient.

Direct Laryngoscopy

The patients were admitted in ENT ward and kept fasting overnight and direct laryngoscopy or suspension laryngoscopy was done in ENT OT as described under. Premedication in the form of glycopyrrolate and pentazocine parenterally was given. All the patients were put under general anaesthesia. Suspension laryngoscopy was done with laryngoscope suspended with the cross piece placed on a stand over the chest of the patients. For magnification, microscope fitted with a 400 mm objective piece was used. While microlaryngoscopy was the procedure of choice in the assessment of benign disease, in the assessment of cancer the broader view given by direct laryngoscopy was probably of more value. Whole of the larynx was examined thoroughly, lesion found were excised and subjected to histopathological examination. In highly suspected cases like leucoplakia, erythroplakia, diffuse thickening of vocal cord, toluidine blue method was used¹⁰. The area stained after thorough washing was biopsied for any suspected premalignant lesion. The tissue obtained was sent for histopathological examination to the Department of Pathology, Government Medical College, Amritsar.

OBSERVATIONS

We observed that progressive hoarseness was seen in all the age groups after twenty. Maximum cases (34) were recorded in the age group of 30 years to 70 years. Only two cases were above the age group of 70 years. Four cases were between 21 years to 30 years. Males (26) were more affected than females (14) almost double the number. 12 patients were housewives while others

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Fig 1 : Photograph showing Vocal Nodule

Fig 2 : Photograph showing Vocal polyp

were exposed to one kind of occupation or the other where bread and butter was completely dependent upon voice production. None of the patients was of industrial hazard group. 30 cases belonged to middle income group while 6 cases belonged to low income group and remaining 4 cases belonged to high socioeconomic status.

Of all the 40 cases, twelve cases were chain smokers and ten cases were chronic alcoholics. Six cases were addicted to both smoking and chronic alcohol intake. 28 out of 40 cases were talkative either because of their habit or because of their profession. The onset and progression of hoarseness of voice was 1 year or less in thirty cases and ten cases had onset and progression period of more than 1 year. Of the 30 cases having duration less than 1 year 14 had malignancy and of the 10 cases having duration more than 1 year had malignancy only in 4.

The associated symptoms with progressive hoarseness of voice were dyspnoea in 6 cases, dysphagia in 14 cases and 2 cases also complained of sore throat. Of the 6 dyspnoeic cases, 4 cases were subjected to tracheostomy.

In Table I, of the 10 cases of vocal nodule, 2 had nodules on both the vocal cords. Vocal polyp was also seen in 12 and all had unilateral lesion. 18 cases had a clinical diagnosis of malignancy larynx/epilarynx.

None of the patients complained of bleeding per orum. Palpable lymph nodes were seen in 10 cases. These were deep cervical lymph nodes and were fixed to the underlying structures.

Table I : Showing findings recorded on direct Laryngoscopy

Causes	No. of Cases	%
Vocal Nodules	10	25
Vocal Polyps	12	30
Malignancy Larynx/Epilarynx	18	45

In Table II, true vocal cords were affected in all the 40 cases. Right vocal cord was affected in 18, the left vocal cord was affected in 20 cases and both the vocal cords were affected in 2 cases. The maximum predilection was at the junction of anterior 1/3 with that of posterior 2/3 of membranous vocal cord.

Table II: Showing site of lesion

Site of Lesion	No. of Cases	%
True Vocal cord		
Right	18	45
Left	20	50
Both	2	5
Anterior 1/3	10	25
Middle 1/3	2	5
Posterior 1/3	2	5
Junction of anterior 1/3 & posterior 2/3	12	30
Diffuse	14	35

In Table III, all the 40 cases were investigated and subjected to either punch biopsy or excision biopsy under endolaryngeal microscopic surgery. In 32 cases toluidine blue as a supravital staining agent was used to take biopsy from the stained area. Incidentally polyps and nodules did not pick up the stains while cases having clinical diagnosis of malignancy picked up the stain and turned out to be malignant lesions.

Table III : Showing histopathological diagnosis

Diagnosis	No. of Cases	%
Polyps	12	30
Nodules	10	25
Squamous Cell carcinoma	18	45

Although the aim of the present study was to know about the pathological nature of the lesion yet treatment part was also given to almost all the cases in the form of excisional biopsy or punch biopsy. Cases having malignant lesions were advised radiotherapy. It had been quite encouraging that histopathological diagnosis tallied with the clinical diagnosis thereby suggesting that sharp eyes can delineate between

Fig 3 : Photograph showing histopathology of vocal polyp with H & E stain at 40X magnification

Fig 4 : Photograph showing histopathology of squamous cell carcinoma with H & E stain at 100X magnification

benign and malignant lesions. None of the patients had specific or non-specific granulomatous disease.

DISCUSSION

Hoarseness of voice can occur due to local as well as systemic disorders. A hoarse voice may recover completely with the medical treatment, may remain static or may remain progressive. More predominantly a progressive hoarse voice is of great concern wherein malignancy is the most dangerous cause and furthermore topographically from where it is arising. Although a change in voice, due to any cause, is alarming and manifests as early as possible yet many patients inspite of awareness prefer to live without any consultation and report sufficiently late when nothing can be done, virtually such patients deliberately harbour a snake in the throat. However, even in late cases surgical excision is possible but is not without extensive morbidity or mortality. The study included forty patients who were selected at random but does not unleash all the known causes of progressive hoarseness reported in the literature.

Patients in the present study were between the age of 20 years to 70 years or above. Majority of the patients were in the age group of 31 years to 70 years. So causes of progressive hoarseness below the age of 20 years and above the age of 70 years could not be seen.

All the patients of the present study were subjected to complete ENT and neck examination. On direct laryngoscopy, vocal nodules were seen in ten cases (25%), vocal polyp in twelve cases (30%) and malignancy larynx/epilarynx/laryngopharynx were seen in eighteen (45%) cases.

In a study of 100 cases reported progressive hoarseness of voice in chronic laryngitis⁹ (48%), tubercular laryngitis (23%), cancer of larynx (12%), benign tumours (3%) and 50% cases of chronic laryngitis had vocal nodule followed by polyps and cysts (30.5%).

Ghosh et al (2001)⁵ reported vocal nodule in 30%, vocal polyp in 23%, papilloma 10%, Reinke's edema 9%, squamous cell carcinoma 8%, fibroangioma 8%, chronic hyperplastic laryngitis 6%,

keratosis 3%, laryngeal web in 2% and laryngeal tuberculosis 1%. These findings are in agreement with the present study considering the number of cases studied.

After conventional investigations, all the cases were subjected to microendolaryngeal surgery for excisional biopsy or punch biopsy depending upon the clinical diagnosis. The clinical diagnosis tallied with histopathological diagnosis in all the cases. All the nine cases having malignancy larynx/epilarynx/laryngopharynx were of the nature of squamous cell carcinomas. These were advised treatment depending upon the stage and histopathological diagnosis.

SUMMARY AND CONCLUSIONS

The present study, was undertaken to know about the nature of the disease. Only common disorders producing progressive hoarseness of voice could be detected clinically and correlated pathologically.

Hoarseness in general is a disease of all age groups. Progressive hoarseness of voice though can occur below the age of 20 years caused by human papilloma virus 6 and 11 yet no case reported with this disease in the present study. The commonest age group of progressive hoarseness of voice is in the range of 21 years to 70 years. Male: Female ratio was almost 2:1. This is totally the reverse to the concept of female being more talkative. Female patients who had hoarseness of voice was because of either a professional hazard or because of some intralaryngeal lesion. The affliction of males is much more may be because of the exposure to carcinogenics, professional hazard and their outdoor activities.

Habit of smoking and/or addiction to alcohol or both had high predilection for chronic laryngitis and resultant simple or dangerous pathologies. Undoubtedly smoking has a definite role in the pathogenesis and progression of hoarseness. Alcohol had an indirect role. Misuse of voice by both male and female produced chronic non-specific laryngitis and resultant pathological lesions like nodule or polyp, thickening of true vocal cords. Laryngeal lesions can produce dyspnoea and dysphagia depending upon

the structural involvement relating to larynx. Four cases had to undergo tracheostomy to relieve the respiratory obstruction.

A catchy eye with a sharp vision is a must to see the normal or pathological structures. Indirect laryngoscopy even today is the best for the clinical examination of larynx and epilarynx. Experience could make the clinical diagnosis with eyes only. Lesions having a treacherous outlook rarely may deceive the clinical observations. That is why excisional or punch biopsy with or without toluidine blue staining was undertaken for the stained areas to be biopsied.

Vocal nodule and vocal polyp were the commonest causes of progressive hoarseness of voice (55%). 45% cases had malignancy of either larynx alone (10%) and epilarynx (35%). Benign lesions like vocal nodule and/or vocal polyp were still the commonest cause of progressive hoarseness of voice. Epilaryngeal lesions which looked like malignant lesions were diffuse. The diagnosis of diffuse lesions to be malignant was further corroborated by the enlargement of lymph nodes. Microendolaryngeal surgery of the larynx has replaced the old conventional direct laryngoscopy (Jackson and Negus endoscopes).

Pathological examination is still an important diagnostic tool for the final diagnosis of different lesions of the larynx. Excisional biopsy should always be planned and done in clinically benign looking lesions. Squamous cell carcinoma was the commonest malignant laryngeal tumour. Although the main objective of present study was to know the causes of progressive hoarseness of voice yet needed treatment was given to the patients in the form of excision biopsy or punch biopsy.

The cases having benign lesions did not show any evidence of start of recurrence or of recurrence during follow up period of 3 months. Cases getting radiotherapy for their malignant lesions did not show any improvement in their voice nor there was any discernible reduction in their sizes. Cases having glottic lesions also behaved in the similar way. All the patients were advised periodic follow ups because depending upon the effectiveness of radiotherapy and behaviour of the primary disease line of treatment might change.

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