IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 23, Issue 2 Ser. 4 (February. 2024), PP 53-59
www.iosrjournals.org

A Study Of Clinicopathological Profile Of Patients Of Horsness Of Voice

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Abstract:
Background:
"the human voice is the most perfect instrument of all"- by arvo part.otorhinolaryngologists are the first ones to encounter any defect in this instrument. Any abnormality in that can affect quality of life in a major way. So prompt & early diagnosis of the disease is essential to decreased morbidity and have post treatment good quality of voice. So this study was conducted to know the clinicopathological profile in patients of horsness of voice.
Material and methods:
This study data was collected from 100 patients presenting with chief complaint of hoarseness of voice to ent opd in our hospital from may 2017 to october 2019.patients with functional disorder, neurological condition & those treated conservatively were excluded. Detailed history, clinical examination, 90 degree scopy and surgical intervention done followed by record of histopathological report, as per performa and evaluated.
Result:
Incidence of hoarseness of voice is 62% in males. Maximum number of patients seen in age group of 21 to 60 years. For laryngeal lesions, vocal abuse (60%), smoking (37%), tobacco (31%) are found to be the most common etiological factors. Vocal nodules are more common in females (65%).whereas laryngeal carcinoma (90%), juvenile laryngeal papillomatosis (86%), vocal polyp (57%) are more seen in males. Among all laryngeal pathologies, vocal polyps (30%) are most common followed by laryngeal carcinoma(28%). Most common associated symptom was difficulty in swallowing (23%) followed by throat pain (13%), neck swelling (6%) & difficulty in breathing (4%). Laryngeal carcinoma is most commonly seen in supraglottic region (68%) followed by glottic (32%).nodal metastasis is commoly seen in supraglottic carcinoma.out of 100 cases, clinical and pathological examination was correlating in 89 cases.
Conclusion:
All age groups of males and females are affected in various laryngeal pathologies.
Patients have wide range of lesions from benign to malignant, causing hoarseness of voice. Clinical examination by means of laryngoscopy is a good tool to reach to a diagnosis, but rare causes should be kept in mind & can be diagnosed by histopathological examination.

Keywords: *Larynx, nodules, polyp , hoarseness of voice , vocal cords , histopathology*

Date of Submission: 09-02-2024 Date of Acceptance: 19-02-2024

I. Introduction :

Speech of a person should be clear to express him/herself. Any abnormality in that can affect quality of life in a major way. Hoarseness of voice can be seen commonly in today's era due to high stressed life, frequent junk food intake, increasing usage of addictive substances, unhealthy environment, poor general health of population especially in developing countries like India.

Disease profile of patients with hoarseness has very wide spectrum ranging from minor inflammatory condition to benign lesions up to malignancy. And in malignancy, diagnoses of early stage lesions give excellent results with preservation of normal voice.

So prompt & early diagnosis of the disease is essential to decreased morbidity and have post treatment good quality of voice. In this context I undertake this study to analyze clinical profile of hoarseness, to study

various etiological factors for hoarseness of voice and compare clinical diagnosis with histopathological diagnosis.

II. Material And Methods:

We conducted the study to compare clinical and histopathological profile of horseness of voice patients.This study data was collected from 100 patients presenting with chief complaint of hoarseness of voice to ENT OPD in our hospital from May 2017 to October 2019.

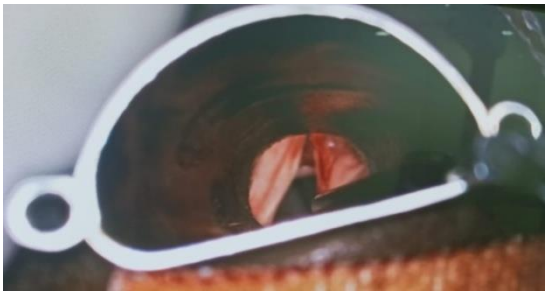
Inclusion criteria:
All patients of hoarseness of voice underwent surgery & subsequent histopathological examination.

Exclusion criteria:
Patients with functional disorders.neurological condition causing hoarseness of voice.all those patients treated conservatively.

100 patients were randomly selected who fulfilled above criteria. A performa was prepared for all cases-findings were noted; treatment and histopathological report were charted. Detailed history was taken in all the patients followed by proper ENT examination. All routine blood investigations were carried out in all the patients. Larynx was examined by indirect laryngoscopy; 90 degree laryngoscope. Patients underwent microlarygeal surgery or direct laryngoscopy amd biopsy, according to the need of the case - as curative treatment or a part of diagnostic workup. And the specimens were sent for the histopathological examination.The results were compared accordingly.

All Surgeries were performed under general anesthesia .Kleinsasser laryngoscope introduced and fixed with the help of chest arm. In case of gross suspicious lesions biopsy were taken under Kleinsasser Laryngoscopic vision. In case of Small suspicious lesions of vocal cord & benign lesions of vocal cords –lesions were excised under microscopic vision (400 mm lens). Tissue sent for histopathological examination.

Set up for microlaryngeal surgery



Microscopic vision of laryngeal pathology

III. RESULT:

Results are as follows

TABLE 1: GENDER DISTRIBUTION OF LARYNGEAL PATHOLOGY

Gender	Current Study	Shivdas et al study(2017)(11)	Gaurav et al study(2015)(12)	Kamana et al study(2013)(13)
Male	62(62%)	31(62%)	113(62.78%)	60(60%)
Female	38(38%)	19(38%)	67(37.22%)	40(40%)
Total	**100**	**50**	**180**	**100**

In our study maximum laryngeal pathologies were seen in males (62%).This finding coincides with all above described studies. Causes of male predominance are occupational hazards including voice overuse, smoking, and tobacco & drinking alcohol habits.

TABLE 2: AGE GROUP DISTRIBUTION IN LARYNGEAL PATHOLOGY

	1-20 Years	21-40 Years	41-60 Years	>61 Years
Current Study	15%	30%	42%	13%
Gaurav et al Study	10%	46%	36%	8%

In our study patients with hoarseness of voice range from 5 years to 70 years. 21-60 years age group was most common for presentation of laryngeal pathologies as this is the active age group.In a study by

Baitha(14) & Ghosh(15)majority of patients-28.18%& 28%respectively were in the age group of 31-40 years. In study of Amarnath(31) et al Majority of patients (26.66%) fall in 41-50 years age group.

TABLE 3: PERCENTAGE OF VARIOUS LARYNGEAL PATHOLOGY

Pathology	Total (%)
Vocal Polyp	30
Laryngeal Carcinoma	28
Vocal Nodule	20
Juvenile Laryngeal Papilloma	7
Vocal Cyst	5
Keratosis Without Dysplasia	4
Keratosis With Dysplasia	4
Laryngeal Mucormycosis	1
TB Larynx	1

Vocal polyp & laryngeal carcinoma were most common pathologies, as vocal abuse & habits like tobacco chewing and smoking were present in significant number of people. In Amaranth et al (16) most common etiology was Laryngeal carcinoma(40%).

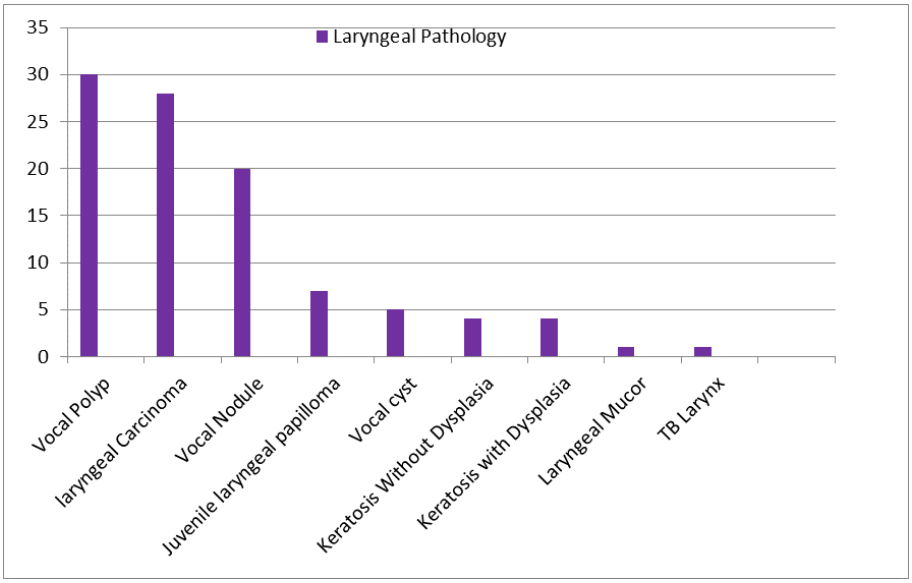


Chart: 1 various laryngeal pathologies

TABLE 4: GENDER DISTRIBUTION IN INDIVIDUAL LARYNGEAL PATHOLOGY

Pathology	Male	Female
Laryngeal Carcinoma	**25**	**3**
Vocal Polyp	**17**	**13**
Vocal Nodule	**7**	**13**
Juvenile Laryngeal Papilloma	**6**	**1**
Vocal Cyst	**2**	**3**
Keratosis Without Dysplsia	**3**	**1**
Keratosis With Dysplsia	**4**	**0**
Laryngeal Mucormycosis	**0**	**1**
TB Larynx	**0**	**1**

Laryngeal carcinoma in present study was seen in most of the Male patients 25(89%). This corresponds with Amarnath et al. (16) study where 75% patients were males and rest were females.The reason being consumption of tobacco, smoking, alcohol & more exposure to chemicals in male population.

In our study vocal nodules were seen more in females (65%), due to vocal abuse in females. This correlates with Ghosh et al (15) study in which vocal nodules were seen more common in females (56.7%) than in males (43.3%).

Vocal cord Polyps were more common in smokers, this explains predominance of this pathology in males.

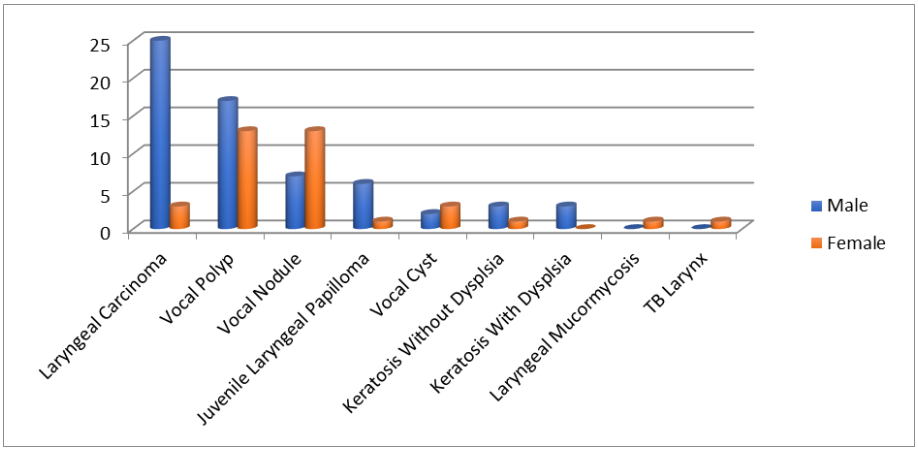


Chart 2: distribution of males and females in various laryngeal pathology

TABLE 5: AGE DISTRIBUTION IN VARIOUS PATHOLOGY-ACCORDING TO HPE REPORT

Pathology	1-20 Years	21-40 Years	41-60 Years	>61 Years	Total
Vocal Polyp	1	17	6	6	30
Laryngeal Carcinoma	0	2	19	7	28
Vocal Nodule	8	8	4	0	20
Juvenile Laryngeal Papilloma	6	1	0	0	7
Vocal Cyst	0	3	2	0	5
Keratosis Without Dysplasia	0	0	4	0	4
Keratosis With Dysplasia	0	0	4	0	4
Laryngeal Mucormycosis	0	0	1	0	1
TB Larynx	0	1	0	0	1

Vocal nodules & Vocal polyps were more common in younger age group as vocal abuse is a common factor seen in voice users. Whereas laryngeal carcinoma was more common in middle & older age groups as effect of long term consumption of addictive substance and exposure to various chemicals causes carcinomatous changes.

Juvenile laryngeal papillomatosis as name suggest seen in most of the patients with age of less than 20 years. As the viral infection is transmitted at the time of birth, the presenting age is usually younger.

A rare case of laryngeal mucormycosis was seen in middle age group female with uncontrolled diabetes mellitus.

TABLE 6: OCCUPATION DISTRIBUTION IN INDIVIDUAL LARYNGEAL PATHOLOGY

Level (Acco. To Koufman& Isaacson Class.)(5)	Current Study	Kamana et al Study(13)	Batra et al. Study(17)	Hansa et al. Study(18)
I.	4%	3%	15.7%	1.59%
II.	8%	15%	15.7%	3.59%
III.	9%	9%	15.7%	9.56%
IV.	79%	73%	52.9%	85.26%

Koufman& Isaacson(19) Classification of vocal professionals based on their voice use and risk.

Level I: Vocal performers (Singers)

Level ll : Professional voice users(Businessmen)

Level lll: Non Vocal Professionals (Teachers)

Level lV: Nonvocal non-professional(Labourer, Housewives, Students, Farmers)

(Level IV) have highest vocal cord lesions , reason being consumption of addictive substance, neglected behavior , more exposure to wood dust, coal dust in farms, Anemia and habits of shouting.

TABLE 7: ASSOCIATION OF OCCUPATION WITH DURATION OF HOARSENESS OF VOICE

Level (Acco. To Koufman& Isaacson Class.)(19)	<3 Months	3-6 Months	6m-1Year	>1Year
I.	100%	0	0	0
II.	62.5%	25%	0	12.5%
III.	66.66%	22.22%	11.11%	0
IV.	45.5%	50.6%	8.8%	11.3%

All of the (100%) Level l Vocal professionals were presented to hospital within 3 months of developing hoarseness of voice as even a slight vocal difficulty caused serious consequences to them. Whereas in Level IV group majority members(50.6%) presented to hospital from 3 months to 6 months. As people in this group (labourer/farmer, housewives) may not bother about minor change in their voice at early stage &also have less access to health care system.

TABLE 8: CHIEF COMPLAINS IN PATIENTS WITH LARYNGEAL PATHOLOGY

Chief Complains	Current Study	Gaurav et al Study(2015)[12]	Kamana et al Study(2013)[13]	Kumar et al Study(2010)[20]
Change of Voice	100%	100%	92%	100%
Difficulty in Swallowing	23%	15.55%	8%	24%
Throat Pain	13%	24%	25%	23%
Neck Swelling	6%	8.89%	10%	12%
Difficulty in Breathing	4%	4.44%	6%	4%

Present study is correlating with other studies. As any lesion involving vocal cord or other parts of larynx give rise to minor discomfort to hoarseness up to dyspnoea. Large supraglottic growth can cause difficulty in swallowing. Large growth /laryngeal papillomatosis obstructing laryngeal airway can cause difficulty in breathing. Patients with metastatic neck nodes presented with neck swelling.

TABLE 9: CORRELATION OF LARYNGEAL PATHOLOGY & AETIOLOGY.

Pathology (Total cases)	Vocal abuse	Tobacco	Smoking	Alcohol
Vocal Polyp(30)	26	8	14	1
Laryngeal Carcinoma(28)	7	15	20	6
Vocal Nodule(20)	20	2	0	0
Juvenile Laryngeal Papilloma(7)	0	0	0	0
Vocal Cyst(5)	5	0	1	0
Keratosis Without Dysplasia(4)	2	3	1	0
Keratosis With Dysplasia(4)	0	3	1	0
Laryngeal Mucormycosis(1)	0	0	0	0
TB Larynx(1)	0	0	0	0
	60%	**31%**	**37%**	**7%**

More than one factor was seen in cases of vocal polyp, like vocal abuse & smoking. Most of the patients with vocal nodules had history of vocal abuse.In patients with laryngeal carcinoma most common etiological factor was smoking. This correlates with Kamana et al. (13) study where majority of patients (43.75%) with laryngeal carcinoma had history of smoking followed by alcohol.

TABLE 10: CARCINOMA INVOLVING DIFFERENT REGIONS OF LARYNX

Site of Involvement	No. of Cases	Ahsan et al.(21) study
Supraglottic	19(68%)	72%
Glottic	9(32%)	26%
Subglottic	0	2%
Total	**28(100%)**	**100%**

In India, supraglotticareais the commonest site of origin which is about 57% (21).From 19 cases of supraglottic carcinoma, 6 had neck nodes on presentation. As lymphatic drainage of supraglottic region is higher than glottis and subglottic region, incidence of metastasis is seen more with supraglottic carcinoma.

TABLE 11: CORRELATION OF CLINICAL DIAGNOSIS WITH HISTOPATHOLOGICAL DIAGNOSIS

Pathology according to HPE	Total No. of Cases	Clinical diagnosis matched with HPE Reports(No. of Cases)	Clinical diagnosis doesn't matched with HPE Reports(No. of Cases)
Vocal Polyp	30	25	5
Laryngeal Carcinoma	28	27	1
Vocal Nodule	20	19	1
Juvenile Laryngeal Papilloma	7	7	0
Vocal Cyst	5	5	0
Keratosis	8	5	3
Laryngeal Mucormycosis	1	0	1
TB Larynx	1	1	0
Total	**100**	**89**	**11**

According to our study, around 90% of clinical diagnosis matched with histopathological diagnosis. In Wallis et al. correlation of clinical to pathological diagnosis is 91.5%. Nunes RB et al. found 93.18% correlation between these two.

In most of the Laryngeal carcinoma & Laryngeal papillomatosis, clinical and histopathological diagnoses matched with each other. From 30 cases of vocal polyp 5 were not correlating with Histopathological examination, 3 of them were diagnosed as cyst and 2 as nodules. The differentiation between nodules, cyst and polyps is the most difficult to perform in laryngeal biopsies, which may be the cause on our study also. So, interactive relationship between the clinician and the pathologist is necessary for making a final diagnosis (22).

Presentation of laryngeal mucormycosis was in form of laryngeal mass with edematous surrounding tissue which was diagnosed to have mucormycosis on histopathological examination.

IV. Discussion:

The present study carried out at our hospital includes 100 cases of hoarseness of voice.The incidence of hoarseness of voice is 62% in males. Male to female ratio varies according to the pathology. Vocal nodules are more common in females (65%). Whereas laryngeal carcinoma (90%), juvenile laryngeal papillomatosis (86%), vocal polyp (57%) are more seen in males.42% of laryngeal lesions are found in the age group of 41-60 years. From total cases of Vocal polyps 17(57%) and 8 cases (30%) of vocal nodules are belongs to 21-40 years age group. Whereas laryngeal carcinomas predominantly seen in 41-60 years age group.Among all laryngeal pathologies, vocal polyps(30%) are most common followed by laryngeal carcinoma(28%).Largest group affected by laryngeal pathology is labourer/ farmers (39%) followed by house wives (22%) (Level lV: Nonvocal nonprofessional according to Koufman& Isaacson Classification).Most of the patients (54%) came to the hospital within 3 months.All vocal performers like singers, 100% of them were presented to hospital within 3 months of hoarseness, where as others took many months to years to come to the hospital.Most common associated symptom was difficulty in swallowing (23%) followed by throat pain (13%), neck swelling (6%) & difficulty in breathing (4%).For laryngeal lesions, vocal abuse (60%), smoking (37%), tobacco (31%) are found to be the most common etiological factors. For carcinoma smoking is found in 71 % of cases followed by tobacco in 54% of cases.Laryngeal carcinoma is most commonly seen in supraglottic region (68%) followed by glottic (32%).Nodal metastasis is commoly seen in supraglottic carcinoma.Out of 100 cases, clinical and pathological examination was correlating in 89 cases.

V. Conclusion:

All age groups of males and females are affected in various laryngeal pathologies.Patients have wide range of lesions from benign to malignant, causing hoarseness of voice. Voice overuse, addiction & chemical exposure are important etiological factors causing hoarseness of voice. Clinical examination by means of laryngoscopy is a good tool to reach to a diagnosis, but rare causes should be kept in mind & can be diagnosed by histopathological examination.

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