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Causes and Management of Hoarseness of Voice in Benign Laryngeal Disorders in Azadi Teaching Hospital

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Abstract:

- ***Background***: Hoarseness remain one of the major complain of patients visiting Otolaryngology clinic and regarded as one of the intractable conditions for treatment.It is almost a benign condition and could be treated by medical or surgical treatment according to the severity of symptoms and duration of patient complain.
- ***Patients and Methods:*** A prospective study had been carried out on 120 patients who attended ENT outpatient clinic in Azadi teaching hospital from January 2018 to January 2019. All the cases had been diagnosed with either indirect laryngeal mirror or by flexible laryngoscope. The cases treated in the outpatient as a conservative measure, or the patients had been admitted and treated with a surgical maneuver.
- ***Results***: The patients consisted of 55% (64) males and 45%(56) females with an average age of 40 years. In this study the incidence of chronic hoarseness (65.84%) was more common than acute hoarseness (34.16%) and acute laryngitis (26.66%) was the most common cause of acute hoarseness, while Vocal cord polyp was the most common cause of chronic hoarseness (22.5%) .
- ***Conclusions***: The commonest cause of hoarseness was found to be acute laryngitis of Larynx which predominantly affects young males. The peak age incidence is between 21-30 years, Males are affected more than females.

Keywords: Dysphonia,hoarseness, Acute and chronic laryngitis, Vocal cord polyp and nodule, Psychogenic dysphonia, Reinke's oedema.

INTRODUCTION

Hoarseness is a general term defined as altered rough voice which interfere with vibration, approximation or movements of the vocal cords. Dysphonia is defined as an abnormal voice quality or difficulty in producing voice particularly in patients who are singers, are changes in pitch and abnormal pitch range. human larynx is a specialized organ that enables us to speak & communicate and modulate sound The main functionsin protection of the upper airway, in deglutition, respiration and phonation Voice is the primary means of communication for humans both socially and in the workplace. Voice production can be thought of in terms of three components: generation of airflow, vocal cord vibration that produces sound and shaping of the sound to produce various 2 resonances. The lips, tongue, teeth and palate provide the distinct sounds of speech. The lungs first supply adequate airflow to overcome the resistance of the adducted vocal cords. The vocal cords are finely tuned neuromuscular units that adjust pitch and tone by altering their position, length, tension and mass. (3). Sound production occurs as a result of the vibration of the mucosa at the medial edge of each vocal cord. Thus, any structural, inflammatory or neoplastic lesion of the vocal cord affects voice production and quality.

MATERIALS AND METHODS

One hundred and twenty patients complaining from hoarseness were evaluated prospectively at the department of otolaryngology, at Azadi Teaching Hospital, kirkuk - Iraq, from the period January 2018 to January 2019. The patients aged 3 years to 70 years, they were 66 males and 54 femalesThe plan of evaluation included the following steps:

1. History :

A- * Name * Age * Sex * occupation* Residence *Telephone No. *Date of examination

B- Chief complain and duration: History- History of present illness; including: duration and time course of hoarseness Initiating factors e.g. URTI, Trauma, psychological upset...etc. Exacerbating and relieving factors.

C- Systemic review including all the systems: 1-Respiratory 2. Cardiovascular 3.Gastroenterology.4Haematolo gy 5-Neuroiogy 6.Endocrinolog

D- Past medical history; pulmonary,cardiovascular gastrointestinal ,neurological, autoimmune, endocrine and psychological disorders.

E- Past surgical history; regarding history of intubation, or any neck, heart or pulmonary surgery.

F- Drug history F-History of trauma Blunt or penetrating trauma to neck G- Social history; concerning Cigarette smoking, alchohol intake and feeding habbits.

G- Familly history of the same condition

2- Physical examination* Physical examination; include A-General examination for signs of systemic disease e.g. general condition of the patient, level of consciousness and nutritional state B-Systemic Examiation including: 1-Respiratory. 2.Cardiovascular. 3-Abdominal. 4. Neurology and other systems should also be examined carefully including full otolaryngology examination and laryngeal examination starting from surface and external examination and lastly laryngeal iternal examination by both indirect laryngoscopy and flexible endoscopic examination of the larynx and the patient should be carefully prepared for the examination and the larynx should be carefully anaesthetized in order to prevent gag reflex and to be properly examined and in order to not missing any area of the larynx. Visualization of larynx by indirect Laryngoscopy, and those who fail mirror examination (even with the application of topical anesthetic) are assessed by flexible nasolaryngoscopy. The patients were divided into 2 groups according to the duration of hoarseness.

- Acute hoarseness (less than 2 weeks); Patients are examined by indirect laryngoscopy and if it was difficult due to strong gag reflex or difficult anatomy then the patient was examined by flexible laryngoscopy.If only a self- limiting lesion was seen e.g. Acute laryngitis or voice strain and there is no feature of serious pathology ; then no further investigation done.But if a mass or impaired mobility of vocal cords were detected then a plan of investigations was followed as in chronic hoarseness.
- Chronichoarseness (more than 2 weeks); Patients are also assessed by indirect laryngoscopy and if it was difficult then by flexible laryngoscopy and general impression of the lesion was obtained. Direct laryngoscopy under general anesthesia should be done in all cases of chronic hoarseness (either for diagnostic or therapeutic purposes). The plan of investigations include: Baseline investigations: CBP , ESR, prothrombin time, partial thromboplastin time, lateral X- ray of neck and chest X-ray. Additional investigations ; includes: fasting blood sugar , thyroid function test, rheumatoid factor, barium swallow, sputum for AFB. These investigations are only done when there are associatedfeatures suggestive of other diseases like TB ; and goitre as a cause of hoarseness.
- In the present study, 74 patients were examined satisfactorily by indirect laryngoscopy.The remaining 46 patients who failed examination by indirect laryngoscopy even after application of topical anesthesia, were examined by flexible nasolaryngoscope, But this was found to be difficult in 7 patients due to either patient uncooperation or difficult anatomy. Direct laryngoscopy was required for 58 patients, either for diagnostic purposes (in 18 patients) or for therapeutic purposes (in 40 patients).

RESULTS

1 - Distribution of patients according to duration of hoarseness: The patients were divided according to the duration of hoarseness into acute were more in compares with cases with acute hoarseness (34.16).

2- Causes of hoarseness: (Table 2) (fig2) The commonest cause of hoarseness in the present study was found to be acute Laryngitis (26.66%) followed by vocal cord polyp(22.5%) and vocal cord nodule(18.33%).3- Distribution of causes of hoarseness cross-sex(table3 figure3)Analysis of sex data using chi-square test revealed that acute laryngitis vocal cord , nodule and chronic nonspecific laryngitis affects significantly males more than females (P-value < 0.001). In contrast to vocal cord polyp, which significantly affects females more than males (P - value < 0.0001). Regarding the remaining causes of hoarseness, there is no significant difference in incidence between males and females Table (3) distribution of cases of hoarseness across sex Wile figure 3 showing that the incidence of hoarseness is more common between male (55%) hoarseness presenting in less than 2 weeks and chronic hoarseness presenting for more than 2 weeks.as shown in figure 1, cases with chronic hoarseness (65.83) gender than female gender (45%) 4. Distribution of causes of hoarseness across age groups: (Table 4) Patients were categorized into seven age groups (0-10, 11-20, 21- 30, 31- 40, 41-50,51-60,and 61- 70).Analysis of data shows that the mean age of presentation, in the present study is 40 years for the total sample, About 55.5% of patients were younger than 40 years and,44.5% were older than 40 years. For the total sample, Regarding acute Laryngitis of cases fall in two age groups (21- 30 and 31-40 years),In vocal cord polyp, maximum of cases occur in age group (31-40years) .5- Patients' residence : Whether urban or rural is shown in figure and table (5) which clearly demonstrates that laryngeal pathologies which cause hoarseness affect predominantly those who live in urban59.16% rather than rural area 40.83%),,6- Prevalence across occupational groups, Table (6)and fig(6) shows that maximum incidence of hoarseness where between teachers(20%)and house wives(16.66%) and less between engineer and military men7- Relationship between smoking and vocal abuse and the development of laryngeal pathologies causing hoarseness of voice : (Table 7)A significant relationship has been found between smoking

,vocal abuse and development of laryngeal polyp, acute laryngitis vocal cord nodule and chronic nonspecific laryngitis (p-value < 0.0001) in contrast to the remaining conditions which show no significant relationship.

table 1 acute and chronic hoarseness

Type of hoarseness	Number of patients	Percentage
Acute hoarseness	41	34.16%
Chronic hoarseness	79	65.84%

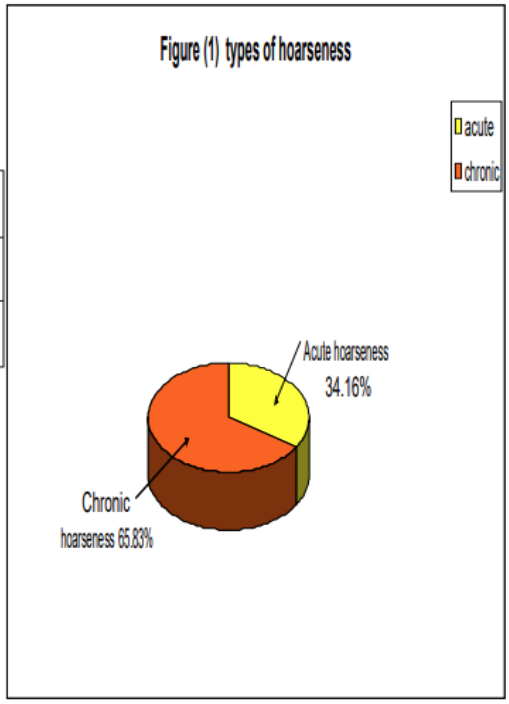
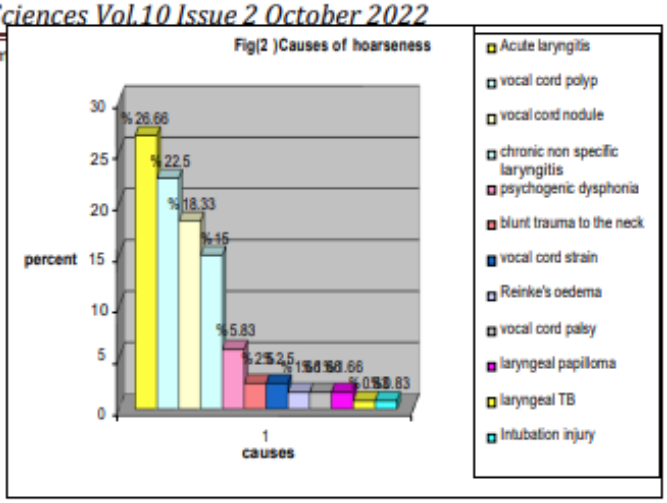


table 2 causes of hoarseness

Cause	No.	%
Acute laryngitis	32	26.66
vocal cord polyp	27	22.5
vocal cord nodule	22	18.33
chronic non specific laryngitis	18	15
psychogenic dysphonia	7	5.83
vocal cord strain	3	2.5
blunt trauma to the neck	3	2.5
vocal cord palsy	2	1.66
Reinke's oedema	2	1.66
laryngeal papilloma	2	1.66
Intubation injury	1	0.83
laryngeal TB	1	0.83
Total	120	100%



Cause	*Males*	*P-value*	*females*	*P value*
Acute laryngitis	*20*	*0.0001*	*12*	*0.001*
vocal cord polyp	*12*	*0.0001*	*15*	*0.0001*
vocal cord nodule	*13*	*0.0001*	*9*	*0.003*
chronic non specific laryngitis	*11*	*0.001*	*7*	*0.05*
psychogenic dysphonia	*3*	*0.006*	*4*	*0.0022*
vocal cord strain	*1*	*0.2*	*2*	*0.09*
blunt trauma to the neck	*2*	*0.09*	*1*	*0.2*
vocal cord palsy	*0*	*-------*	*2*	*0.09*
Reinke's oedema	*1*	*0.29*	*1*	*0.29*
laryngeal papilloma	*1*	*0.29*	*1*	*0.29*
Intubation injury	*0*	*--------*	*1*	*0.29*
laryngeal TB	*0*	*--------*	*1*	*0.29*
Total	*64*		*56*	

table 3 the differences between male and female in the incidence of hoarseness

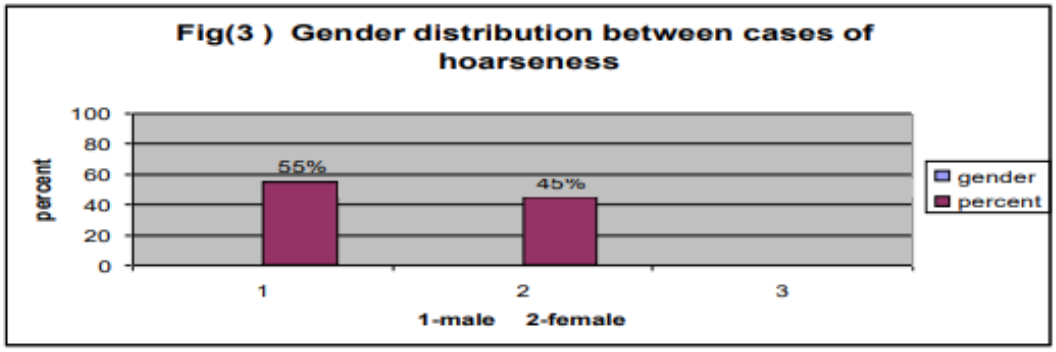
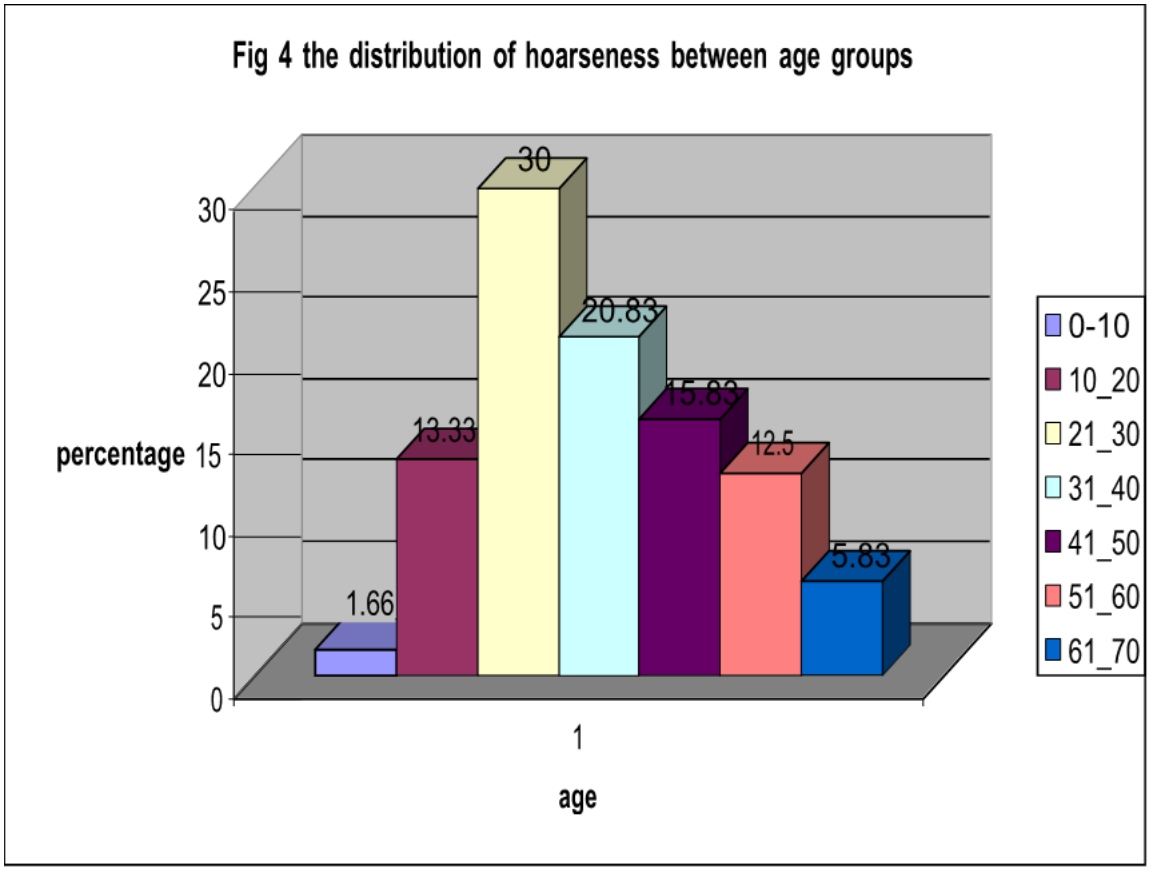
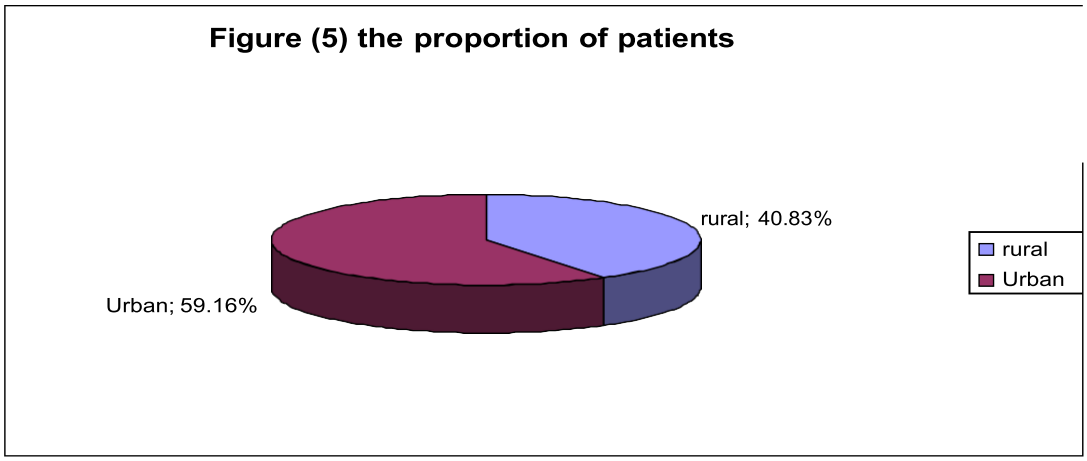


Table 4 distribution between age groupes

Cause	0-10	11-20	21-30	31-40	41-50	51-60	61-70	total
Acute Laryngitis	*0*	*4*	12	6	3	2	5	32
vocal cord nodule	0	0	6	9	7	2	3	27
Vocal cord strain	0	0	2	1	0	0	3	22
Chronic nonspecific laryngitis	0	0	1	3	9	2	3	18
Psychogenic dysphonia	0	0	3	2	1	1	0	7
vocal cord strain	0	0	2	1	0	0	0	3
blunt trauma to the neck	0	0	1	1	1	0	0	3
vocal cord palsy	0	0	0	1	1	0	0	2
Reinke's oedema	0	0	0	1	1	0	0	2
laryngeal papilloma	2	0	0	0	0	0	0	2
Intubation injury	0	0	0	1	0	0	0	1
laryngeal TB	0	0	0	1	0	0	0	1
Total	2	4	35	31	25	10	13	120





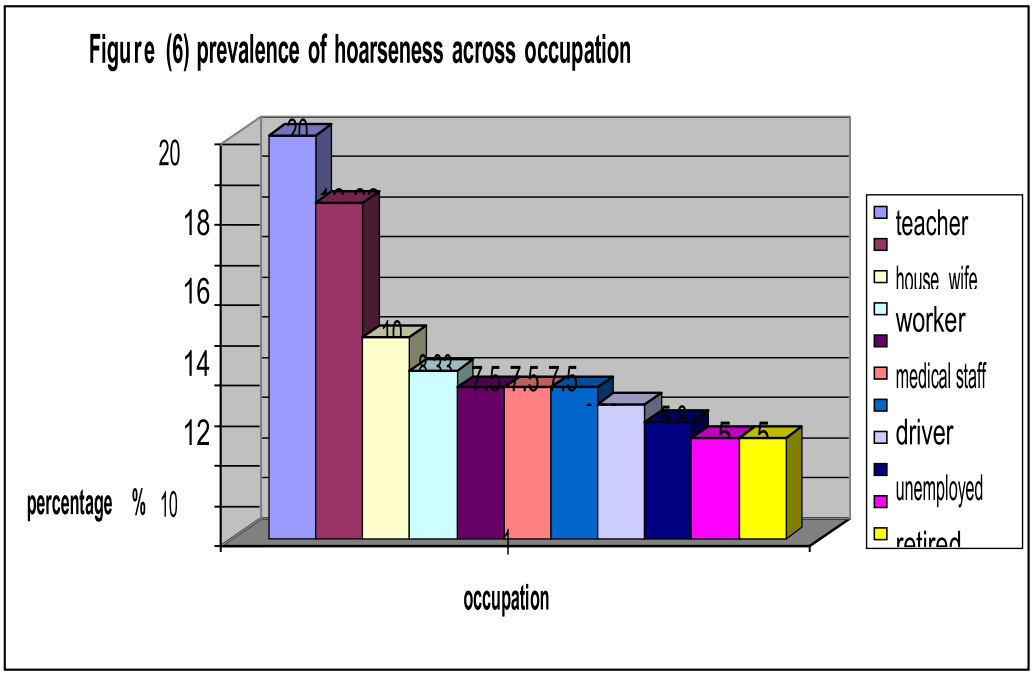


Table 6 hoarseness and occupations

Occupation	No. of patients	%
Teachers	24	20%
Housewives	20	16.66%
Students	12	10%
Workers	10	8.33%
Medical staff	9	7.5%
Driver	9	7.5%
Unemployed	9	7.5%
Retired	8	6.66%
Farmers	7	5.8%
Engineer	6	5%
Military man	6	5%
Total	120	100%

Table7 the relationship of smoking and voice abuse and

Cause	No. of patients	No. of smokers	p-value	No. of vocal abuse	P-value
Acute laryngitis	32	11	0.0001	8	0.0001
vocal cord polyp	27	15	0.0001	10	0.0001
vocal cord nodule	22	6	0.0001	18	0.0001
chronic non specific laryngitis	18	11	0.0001	2	0.0031
psychogenic dysphonia	7	2	0.0198	5	0.00091
vocal cord strain	3	0	--------	3	0.05
blunt trauma to the neck	3	1	0.2	0	------
vocal cord palsy	2	0	-------	2	0.18
Reinke's oedema	2	2	0.18	2	0.18
laryngeal papilloma	2	0	-------	0	-------
Intubation injury	1	0	-------	0	--------
laryngeal TB	1	0	-------	0	--------
Total	120	47		50	

DISCUSSION

1-Causes of hoarseness: In the present study, acute laryngitis was found to be the most common cause of hoarseness accounting for 26.66% of total sample. This agrees with AL-Samarrae study - (8) (18.75%). But disagrees with Herrington - Hall et al ((9) who stated that vocal cord nodule is the commonest presentation which predominates in winter months in association with upper respiratory tract infectio. 2-Sex distribution: The male to female ratio for the total study was found to be1:2 in cotntrast to Hemngton-Hall et al(9) , found that laryngeal pathologies were more common in females than males cause of hoarseness (21.5%) .But this Laryngeal pathologies which were found

and vocal cord palsy(2:0) 3- Age distribution The mean age at presentation in the present study was 40 years which is close to that of AL- Samarrae study (38 years) About 55.5% of patients were younger than 45 years and 44.5% of patients were older than this age in our study in comparison to Herrington-Hall et al (9) in which 57% of patients were over 45 years old and group like recurrent respiratory papillomatosis occur mainly in pediatric age groups 4- Patients' residence In our study, residents in urban area constituted 59.16% against 40.83% who live in rural area. This most probably reflects the effect of environmental pollution and working

conditions as predisposing factors to vocal pathology in urban areas more than in rural areas5- Distribution 43% younger than this age. But it is across occupations in the present study, important to notice that certain diseases occur predominantly in certain age

group followed by, housewives 16.66%, and students10% Herrington- Hall et al (9) showed that retired persons are most frequently involved in voice disorders, followed by housewives , workers,and unemployed. Teachers and housewives may abuse their voice, and this may be the predominant cause of hoarseness. patients in our study. With significant association found between vocal abuse and the development of, vocal cord polyp. acute laryngitis, vocal cord nodule, 6- Relationship with smoking and vocal abuse: In the present study, teachers20% were the most frequently affected occupational smokers represented 47% of total sample similarly, AL-Samarrae(8) reported that 57.5% of his series were smokers. Smoking has been shown to be significantly related to Acute laryngitis,chronic Laryngitis vocal cord polyp and vocal cord nodule (P-value < 0.0001) which is agreed by many authors Vocal abusers constituted 50% of total number of of patients in our study. With significant association found between vocal abuse and the development of , acute laryngitis, vocal cord nodule, and vocal cord polyp (P- value < 0.0001). Again these findings correlate positively with the opinions of Paul van der Broek and P.H. Damste(4) 7- Associated symptoms The most frequently associated symptom in the present study was sore throat which accounted for 63% of cases .While in AL-Samarrae(8) series cough was the commonest associated symptom and it accounts for only46.2% of cases value is mostly an underestimate of the real prevalence of this condition, probably because most patients complaining from acute laryngitis were treated by general practitioners without being referred to otolaryngologists, in addition to seasonal variation of

CONCLUSIONS

1. The mean age of patients in the present study was 40 years at presentation.2. The peak age incidence is between 21-30 years at presentation. 3. The commonest cause of hoarseness was found to be acute laryngitis of Larynx which predominantly affects young
males.4. Males are affected more than females by Laryngeal pathologies which may present with hoarseness of voice. 5. The commonest occupational group presenting as hoarseness was teachers persons followed by housewives.6.
Gastroesophageal reflux should not be overlooked as a predisposing factor to chronic Laryngitis

RECOMMENDATIONS

1. Further studies on a larger sample conducted over time may provide better understanding of the distribution of laryngeal pathologies among voice disordered population.
2. Education for vocal hygiene and preventive management is warranted for those patients at high risk of developing voice disorders, namely elderly, factory workers, housewives and proffessional voiceusers.
3. Avoidance of smoking and vocal abuse play an important role in the management of hoarseness.
4. Early management of hoarseness carry better prognosis and easier in the management.

The study is self-funded

There is no conflict of interest

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