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RESEARCH ARTICLE

PROSPECTIVE STUDY OF THERAPUETIC EFFECTS OF VOICE THERAPY IN BENIGN VOCAL CORD LESIONS

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Maximum Phonatory Duration (Mpd), Voice Handicap Index-10, Indirect Laryngoscopy, Benign Vocal Cordlesions, Voicetherapy

Abstract

Objective: To analyse the treatment outcomes of patients undergoing voice therapy in terms of maximum phonatory duration (MPD),Voice Handicap Index-10(VHI-10), indirect laryngoscopy.

Methods: 44 patients who had benign lesions of vocal cord, who underwent voice therapy were studied. Detailed proforma was filled. Pre-treatment VHI-10, MPD and VLS were noted. Post treatment VHI-10, MPD and indirect laryngoscopy (I/L) findings were noted at 1 month and 3months.

Results: 44 patients were studied. Majority 36 (81%) were females and 8 (18%) were males. 15(34%) of patients werein the age group 31-40 years. The mean pre-treatment baseline VHI-10 was 21.10 which was reduced to 10.77 at the end of 1 month and to 8.23 at the end of 3 months. The mean pre-treatment MPD was 8.5 which was increased to 11 after 1 month and 11.72 after 3 months. 27(61.36%) had excellent prognosis, 9 (20.45%) had better prognosis and 8(18.18%) had worse or same (group III) prognosis at the end of 3 months. In our study 40 (91 %) were extroverts, 39(88.6%) had voice abuse, 32 (72 %) patient had acid reflux symptoms, 17 (38%) patients gave history of allergic symptoms

Conclusion: Extrovert personality and voice abuse are the most common risk factors for benign lesions of vocal cord.There is significant reduction in the VHI-10 scores and improvement in the MPD after voice therapy.

Introduction:-

Speech and voice represents mood personality and intent.Our speech and voice provide indications about our education, social status emotional state and personality. Voice impairment may result in severe levels of personal handicap and distresses. More than 50% of voice complaints have benign vocal cord disorders as their cause. The economic impact of these are also significantly high, making it imperative that doctors should understand the nature of the lesion and how best to treat them. Benign and phono traumatic lesions of vocal cord in clued vocal cord nodule,vocal cord polyp,vocal cord cyst, vocal cord oedema,vocal cord papilloma,vocal cord granulomaand vocal cord hyperplasia. Professional voice users are at greater risk of developing voice disorders; amongthem teachers

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present a high prevalence of voice changes compared with other professional categories.Voice abuse is the major risk factor for benign vocal cord lesions. Other risk factors are acid reflux irritating the larynx, allergy, cigarette smoke, medicines that dry the mucosa and thus decreasing the lubrication and viral aetiology

Voice therapy embraces principles from biomechanics of voice production and motor-learning principles, as well as psychological interventions to facilitate voice change in people with voice disorders.Voice therapy approaches include indirect and direct intervention. Indirect intervention includes explanation, stress management and general relaxation.

Direct intervention includes facilitative techniques and voice therapy programmes .Direct facilitative techniques were described by Boone, it includes yawn –sigh, chewing, pitch variation control, respiration training, chant talk and open mouth.Direct voice therapy techniques include Accent Method, Estill Voice Training and Alison Bagnall'sVoice craft, Laryngeal Manual Therapy, Stemple Vocal Function Exercises,Semi-Occluded Vocal Tract Therapy and Lee Silverman Voice Therapy.

The aim of this study is to analyse the treatment outcomes of voice therapy in patients with benign vocal cord lesion

Materials and Methods:-

This was a prospective observational study to analyse the efficacy of Voice therapy in benign lesions of the vocal cord.The study was conducted in the Department of Otorhinolaryngology and Head and Neck Surgery at Jubilee Mission Medical College and Research Institute, Thrissur, during the period of 1st November 2017 to 30th June 2019. A total of 44 patients were studied.

Ethical committee clearance was obtained prior to the study. Protocol of study was approved by institutional review board.Written informed consent was obtained from each participant or participant's guardian.Data were systematically recorded from those patients who are diagnosed with benign lesions of vocal cord. A detailed proforma was filled for each patient with regard to history and ENT examination.

Vocal cords were examined using indirect laryngoscopy. Video laryngoscopy was done using Karl Storz Hopkins 70^0 endoscope and findings were noted.Maximum phonatoryduration was measured.

Voice Handicap Index -10 is a subjective score which depends on the patient'shandicap .VHI -10 was developed and standardised by Rosen et.al (Pittsburgh university in 2004).VHI-10 score more than 11 can be considered abnormal(1). The normative value was found to be 2.83 based on study by Arffa et al (2). The VHI 10 was translated to Malayalam.

Patient who underwent voice therapy were required to attend at least 12 sessions for a period of 6 weeks. Patients were reviewed in ENT OPD at the end of 1st month and later at 3rd month. Treatment outcomes were measured in terms of VHI-10 and MPD.

The treatment outcomes were classified as GroupI-completely cured and symptoms relieved, GroupII-better outcome : lesion reduced in size and better voice, group III – lesion remained the same and patient didn't have any relief from symptom

Statistical Analysis:

Data was entered into MS Excel and analysis was done by using IBM SPSSversion25.Numerical variables were expressed as mean and standard deviation and categorical variables were expressed as frequency and percentages. Paired t test or Wilcoxon sign Rank test was used to test the mean differences of VHI-10, MPD and treatment progress.Chi Square test was used to find the association of Study variables with outcome.The p Value <0.05 is considered as statistically significant.

Results:-

In our study of 44 patients, majority 36 (81%) were females and 8(18%) were males. 15 patients were in the age group 31-40 years. 36 (81.81%) patients had change in voice, 33(75%) complained of delayed initiation of voice, 36 (81.81%) had voice fatigue, 35 (79.54%) had frequent clearing of throat, 20 (45.45%) patients noted change in the pitch of their voice.

Lesions	Number	Percentage
Nodules	31	70
Polyp	6	14
Sulcus	5	11
other benign	2	5

Table 1:- Types of benign lesions of vocalcord.

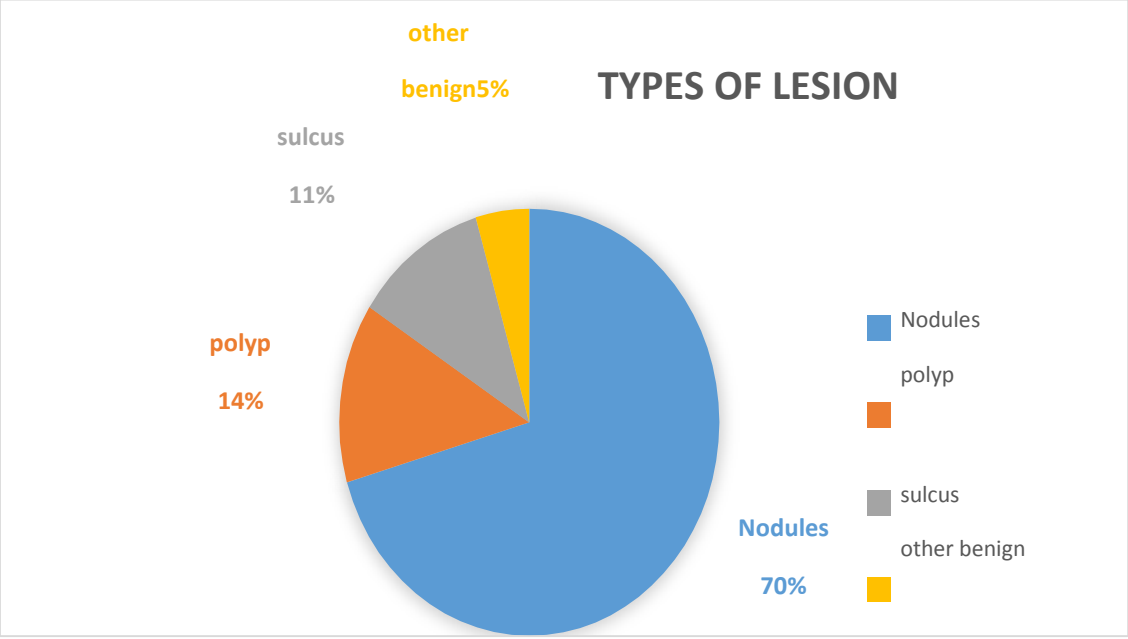

Figure1:- Types of benign lesions of vocal cord.

Out of 44 patients 40 (91 %) were extroverts, 39 (88.6%) had voice abuse, 32 (72 %) patient had acid reflux symptoms, 17 (38%) patients gave history of allergic symptoms, 2 patients gave history of alcohol abuse and 3patients gave history of hypothyroidism.

The mean pre-treatment baseline VHI-10 was 21.10 which was reduced to 10.95 at the end of 1 month and to 8.23 at the end of 3months.

The mean pre-treatment MPD was 8.5 which was increased to11 after1month and 11.72 after 3 months.

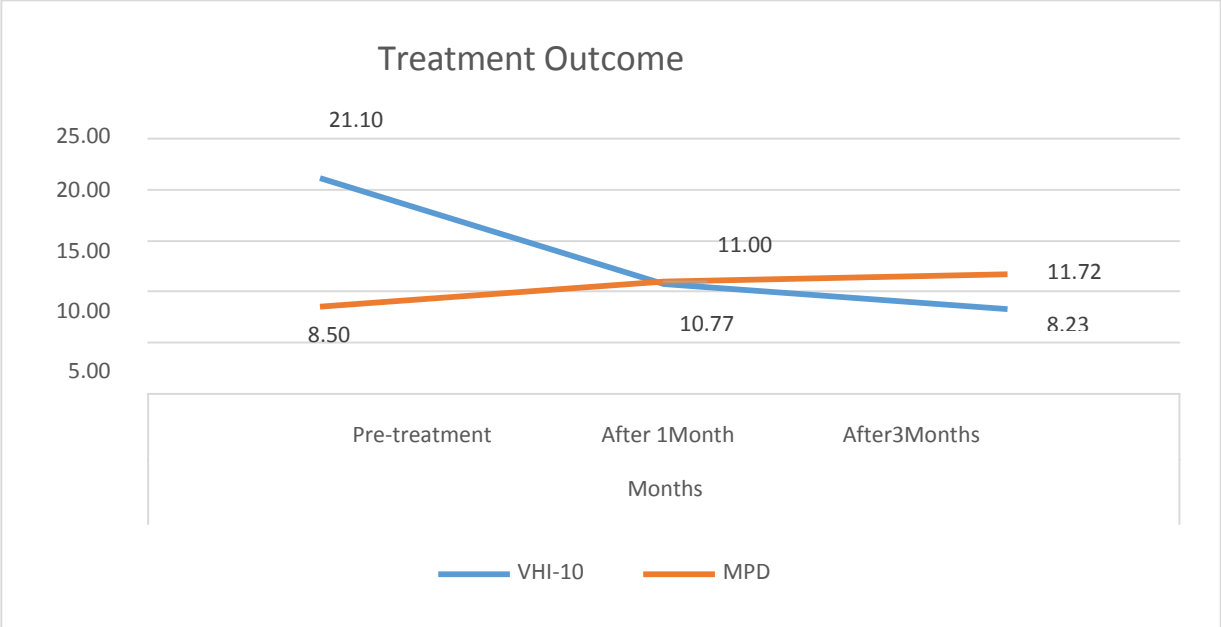

Figure2:- Treatment outcome

Out of 44 patients 27 (61.36%) had excellent prognosis, 9 (20.45%) had better prognosis and 8 (18.18%) had worse or same (groupIII) prognosis.

Table2:- Treatment outcome

Treatment results	No of Patients	%
I, Excellent prognosis	27	61.36
II,Better prognosis	9	20.45
III,Worse/same	8	18.8
	44	100

Out of the 44 patients who underwent voice therapy, 31 patients had vocal nodules. In those patients, 23(74.2% patients had excellent prognosis, 7 (22.6%) patients had better prognosis and 1(3.2%) patient had worse or same (groupIII) prognosis.This is statistically significant (p value < 0.005). 6 patients who had polyp ,4(66.7%) patients had excellent prognosis1(16.7%) patient had better and1(16.7%) patient had worse or same prognosis.

Discussion:-

Benign vocal cord lesions are the most common cause of hoarseness. Benign lesions include vocal nodules, vocal polyps, vocal cord cysts, sulcus vocalis, and Reinke's edema.

In our study 70 % of patients had vocal nodules, 14 % had vocal polyps, 11 % had sulcus vocalis and 5 % had other benign lesions. This is similar to the study by by Hemanth chopra et al, among various types of benign lesions, vocal nodules were found in 33.33% cases, vocal cysts in 17.3%, vocal polyp in 16% and Chronic hypertrophic laryngitis in 13.3% (3).

In the study by Ayaaz Rahman et al. Most of the cases had vocal cord polyps (51%) followed by vocal cord nodules (43%), vocal cordcysts (3%), Reinke' sedema (2%) and vocal cord papilloma (2%) (4), which is contrary to our study.

In our study 40 (91 %) were extroverts, 39 (88.6%) had voice abuse, 32 (72 %) patient had acid reflux symptoms, 17(38%) patient gave history of allergic symptoms

Extrovert personality was found to the most common risk factor in the studies conducted by Jun Yano et al (5) and Ratajczak et al (6). Extroverts show more activity and are more socially communicative than introverts which make them more prone for vocal lesions.

In the study by Aniket Buche et al in 40 patients vocal abuse was the commonest habit (62.5%) , followed by use of tobacco (37.5%) followed by alcohol consumption in20%cases(7).This is almost similar to our study.

In 44 patients who underwent voice therapy the mean pre-treatment MPD was 8.5 which was increased to 11 after 1month and 11.76 after 3 months. Ewa Niebudek et al. published a study on voice therapy verses vocal hygiene in 51teachers with functional voice disorders. The MPD in the group who attended vocal therapy increased significantly from 14.3seconds to17.4 seconds.The mean increase in MPD was similar to our study(8).

The mean pre-treatment baseline VHI-10 was 21.10 which were reduced to 10.77 at the end of 1 month and to 8.23 at the end of 3months.

Out of 44 patients, 27 (61.4%) had excellent prognosis, 9 (20.5%) had better and 8 (18.2%) worse or same prognosis

31patients who had nodules were treated with voice therapy. 23 (74.2%) patients had excellent prognosis and 7 (22.6%) patients had better results. Out of 31 cases of nodules 96.8% patients were better with voice therapy alone.

In a study published by Mc Crory E (9) of 26 patients with vocal nodules, results demonstrated elimination and /or reduction of vocal fold nodules in over 70% of clinical files audited. Post-therapy over 80% of patients presented with either a normal voice quality or a mild degree of dysphonia.This is in accordance to our study.

Sulica L et al. published a study based on a survey of American Academy of Otolaryngology–Head and Neck Surgery, members with 1208 respondents found that 91% use voice therapy as the primary modality of treatment for nodules (10).

In a study by Schindler et al Voice modifications after voice therapy in a group of 16 subjects with benign vocal foldlesions was assessed using a multidimensional protocol. No clear and significant improvement was observed in aerodynamic and perceptual ratings, while better scores were found on acoustic and self- assessment ratings. (11)

Conclusion:-

Benign lesions of vocal cords are the most common lesions found in larynx and are responsible for dysphonia that leads to decrease in quality of life. Extrovert personality and voice abuse are most common risk factor for benign lesions of vocal cord followed by LPRD, history of allergy, smoking, and alcohol. 90 % of the patients had better results after treatment. Vocal nodules can be treated with voice therapy as the primary modality of treatment 96.8 % had better results withvoice therapy alone.

We recommend that the general public should be made aware of the adverse effects of voice abuse and should be advised to seek treatment at the earliest for any change in voice, as the treatment results are excellent for benign lesions of vocal cord .

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