

Research Article

Efficacy of voice therapy in patients with puberphonia- A 15-year experience

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Abstract

Background

Puberphonia is the perseverance of high pitched voice after the pubertal age in males which causes a huge psychosocial impact. Voice therapy is one modality of management of Puberphonia.

Aim

The Objective of our study was to evaluate the efficacy of voice therapy in patients as the sole treatment to improve the pitch and quality of voice, the psychosocial impact and patient's satisfaction.

Methods

A retrospective study was carried out on 71 patients who were presented to ENT unit at the National hospital of Sri Lanka for fifteen years from 2002. Pre and post voice therapy subjective assessment was done by the speech therapist for pitch and quality and patient's perceptual assessment using an analog scale (0-extremely poor to 10-normal voice) and a psychosocial impact assessment was also done.

Results

The time duration of voice therapy ranged from 1 to 10 months (average-3.6 months). Pitch and quality of the voice became normal in 78.9% and 35.2% of patients respectively. Pre-therapy perceptual score range(PSR) was 0 to 6 (mean-3.0). Post-therapy PSR was 5 to 10 (mean-7.7). 95.8% patients had improved psychosocial impact and patient satisfaction after voice therapy. Remaining opted for surgical management.

Conclusion

Voice therapy significantly improves the pitch, patient's satisfaction and psychosocial impact and can be used as an effective modality of treatment for Puberphonia.

Key words: Puberphonia, psychosocial, voice therapy, Sri Lanka

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Introduction

Puberphonia is the inability to eliminate the higher pitched voice of pre-pubescence and to substitute the lower pitched voice of post pubescence in the presence of a structurally normal larynx.⁽¹⁾ This is also known as Mutational falsetto and Pubescent falsetto.⁽²⁾ According to Banerjee the estimated incidence of puberphonia is 1: 90000 in india.⁽⁶⁾ At puberty the total length of a boy's vocal cord grow by as much as 60% and thyroid cartilage doubles in size. While the epiglottis gets elevated it changes from an omega shape to a more flattened shape. The voice drops by an octave in boys, but only three to four semitones in girls⁽³⁾. in puberphonia the larynx tends to be held high in the neck, the cricoid cartilage is usually tilted backwards, the vocal folds are stretched and the acoustic analysis shows a speaking fundamental within the normal female range, intensity⁽³⁾. Difficulty in projection of voice, breathiness, hoarseness and pitch breaks are some of the common symptoms seen. Sadly, the majority of the society consider males with puberphonia as immature, passive, and are frequently teased by peers⁽⁴⁾. They are often identified as females during telephone conversations. Speech therapy is the mainstay of treatment⁽¹⁾. Type 3 Thyroplasty can be offered to patients who do not respond to speech therapy. The aim of our study is to evaluate the efficacy of voice therapy in patients as the sole treatment to improve the pitch and quality of voice, the psychosocial impact and patient's satisfaction.

Methodology

A retrospective study was carried out in 71 patients who presented to ENT unit at National hospital of Sri Lanka for fifteen years from 2002. Subjects consisted of males between age 14-24 years, presenting with a history of high-pitched voice (perceptually) which was diagnosed as puberphonia by an ENT surgeon. Patients with Hypothalmpituitary dysfunction, and those who are with other mutational voice disorders like incomplete mutation, mutational basso were excluded from the study. A detailed ENT evaluation and a stroboscopic evaluation was done by an ENT surgeon on all patients.

Stroboscopy was used to obtain an observable analysis of the vocal cords. Perceptual assessment of voice is carried out by the speech therapist, pre and post therapy on, Quality, Pitch, Intonation and Respiration The severity was graded on a 4-point rating scale, on which 4 being worst and 1 being normal. Pre and post therapy observer score was also given by the speech therapist using an analog scale (0-extremely poor to 10-normal voice)

Retrospective analysis of patient's perceptual assessment of voice was done using an analog scale (0-extremely poor to 10-normal voice) pre and post therapy via a telephone interview. Also the psychosocial impact assessment was done using a telephone based questionnaire based on Voice Handicap Index (VHI) 10. Patient's perceptual assessment of voice was done using an analog scale (0-extremely poor to 10-normal voice) pre and post therapy via a telephone interview.

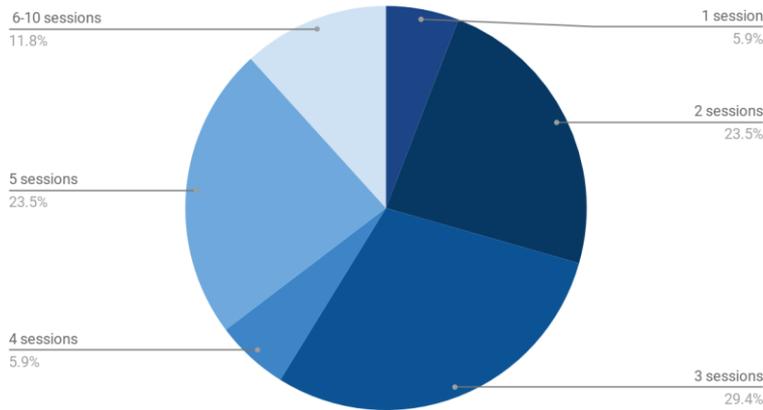
All patients had counseling regarding the basics of patient anatomy, physiology and underwent voice therapy subjective to each person according to evidence based management. Patients had their speech therapy sessions once in two weeks, which is based on relaxation techniques, breathing techniques, laryngeal elevation techniques, creating awareness about self-voice and phonation training and by a qualified Speech Therapist.

Results

A total of 71 patients were treated during the study period of 15 years. They were in the age group range of 14 to 24 years, diagnosed with Puberphonia by an ENT Surgeon on perceptual analyses and stroboscopic findings.

The number of sessions required to achieve desired results varied depending upon the pre-therapy subjective analysis by the speech therapist, patient compliance, their motivation and practicing of the therapeutic techniques at home.

Fig 1 : The distribution of the therapeutic sessions



The duration of treatment, varied among the patients from one session to up to 10 months, with an average of 3.6 months to achieve the expected results.

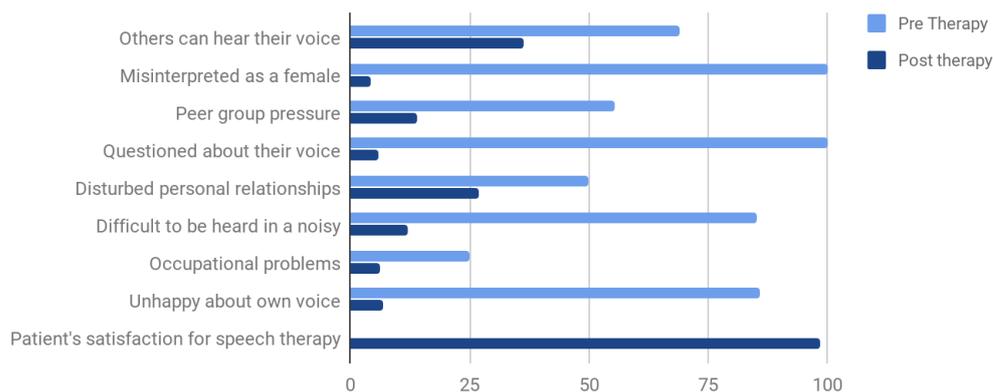
Pitch became normal (1) in 78.9% ($p < 0.05$) cases, which makes speech therapy an important treatment modality for Puberphonia. Quality of voice was normal (1) only in 35.2% of patients respectively. This can be due to decrease vocal stamina in these patients. Pre-therapy observer score range(OSR) was 2-6 (mean 3.8) and post therapy OSR was 7-10 (mean-7.9). Pre-therapy patient's perceptual score range(PSR) was 0 to 6 (mean-3.0). Post-therapy PSR was 5 to 10 (mean-7.7).

Prior to therapy 69% said others cannot hear them speak, and 100% said they were questioned about their voice and misinterpreted as a female via telephone. This is similar to observations made by Premarathna⁽⁵⁾, where conversing over the telephone was an issue for 87% . Peer group pressure was experienced by 54.9% and 50.7% had difficulties in personal relationships, even though 77% experienced difficulties in social situations according to Premarathna⁽⁵⁾, occupational problems are less(25%) compared to previous author's study(60%) . 88.6% were unhappy with their voices which complies with international data.

With therapy 85 % said others were able to hear them speak, and 94% said they were no longer questioned about their voice, nor they being identified as a female. Peer group pressure and difficulties in personal relationships got reversed by 74.3% and 77.7% with therapy respectively.

95.8% patients had improved psychosocial impact and patient satisfaction after voice therapy. ($p < 0.01$) Only 2 patients (2.8%) had their OSR below 7 post therapy, and were opted for surgery.

Figure 2: Psycho-social aspect of voice therapy



Discussion

Puberphonia or mutational falsetto is seen in young males from 14 - 15 years onwards with relation to puberty. They are usually brought by the parents or present by themselves in the later in life for help after a long battle of issues related to social and psychological wellbeing, due to their voice and amidst of the fact that it is easily missed by the general practioners, this is one the easiest and also very rewarding disorders to be treated.⁽⁶⁾

With this study we tried to evaluate the efficacy of voice therapy in patients as the sole treatment to improve the pitch and quality of voice, the psychosocial impact and patient's satisfaction. Majority of the patients, exhibited improvement in their voice.

Pitch became normal⁽¹⁾ in 78.9% ($p < 0.05$) cases, and the number of voice therapy sessions for majority ranged 3-4. A patient centered, evidence based therapy techniques were used. For example, relaxation techniques, breathing techniques, laryngeal dropping or elevation and positioning. The therapy program was customized according to the Perceptual assessment of voice, carried out by the speech therapist

The results of this study are comparable with a similar study carried out by Desai⁽¹⁾ where all 30 patients had their pre-therapy high-pitched voice, lowered to a normal pitch range at the end of therapy and the average number of sessions ranged from 3- 4 which complies with findings of our study.

Limitations of our study includes, patients defaulting follow up as soon as there is an improvement in voice, some patients could not be contacted over the phone and unavailability of acoustic analysis techniques which are freely available in Sri lanka to assess the voice

Conclusion

Voice therapy helps to reduce the pitch of the voice in Puberphonia significantly. It also helps to improve the overall quality of life as the patient's satisfaction is increased and the perceptual score and observer score was increased post therapy.

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