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A CLINICO - HISTOPATHOLOGICAL STUDY OF VOCAL FOLD LESIONS

Otorhinolaryngology

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ABSTRACT

Background: This descriptive study aimed to understand the clinical and histopathological characteristics of various vocal fold lesions, which are vital vibratory structures in the larynx. **Material and Methods:** The study involved 60 consecutive patients aged 11-80 years, who underwent a detailed evaluation including history and physical examination. Only those who underwent surgery for vocal cord lesions were included in the study. **Results:** The results showed that vocal fold lesions were more prevalent in males than females, with a male-to-female ratio of 2.7:1. Out of 60 cases, 44 (73.3%) were males and 16 (26.6%) were females. The highest frequency of vocal fold lesions was noted in the age range 51-60 years. Benign vocal fold lesions comprised 42 cases (70%), while premalignant and malignant lesions comprised 2 cases (3.3%) and 16 cases (26.6%) respectively. The most frequently observed benign vocal fold lesion was vocal fold nodules, comprising 18 cases (30%). Premalignant lesions included vocal fold dysplasia and vocal fold keratosis, each having a latency of less than 10 years. In malignant lesions originating from vocal folds, 10 cases (16.6%) comprised of well differentiated squamous cell carcinomas, the highest frequency when compared to moderately differentiated squamous cell carcinoma. **Conclusion:** In conclusion, vocal fold lesions can cause vocal hoarseness and dyspnea, impacting a patient's social well-being and quality of life. Proper therapeutic measures are crucial for improved functional outcomes, and diagnostic accuracy improves with a 70-degree video laryngoscope. It is extremely important to diagnose laryngeal malignancy at an early stage, so that voice preservation surgery or radiotherapy can be started early so that patient can lead a normal life with minimal morbidity.

KEYWORDS

Vocal fold lesions, change in voice, hoarsness of voice

INTRODUCTION

Vocal folds are vital vibratory structures located inside the larynx, responsible for phonation. The size of these folds varies in children, adults, and males and females, leading to distinct pitch of sound. Structural abnormalities of the vocal folds can be benign or malignant, and their grading and staging depend on histopathological features.

Effective vocalization is initiated by an interaction between the structure and fluid of the glottis, which is mechanically complex and activated by laryngeal musculature. Symptoms can range from hoarseness of voice to life-endangering respiratory distress.[1,2]

Irregular vibratory function of the vocal folds results in defective voice production called dysphonia. Normal vocalization requires a normal structural anatomy, elastic properties, and mass to promote adequate vibration at various frequencies. Various phonosurgical techniques are used for managing vocal disorders, including microlaryngeal surgery, laryngeal framework surgery, injection thyroplasty etc. Recent advances for evaluation of vocal fold lesions include narrow band imaging endoscopy (NBI) and stroboscopy.[3,4]

The aim of this prospective study is to clinically explore various vocal fold lesions and correlate them with histopathological findings to facilitate early diagnosis and timely management.

The study objectives are fourfold: first, to distinguish between benign, premalignant, and malignant lesions of the vocal folds; second, to examine the clinical presentation of these lesions; third, to identify associated risk factors; and fourth, to correlate clinical diagnoses with histopathological diagnoses.

MATERIALS AND METHODS

This descriptive, non-randomized, hospital-based study was conducted at our institute, focusing on 60 consecutive patients of either sex, aged 11 to 80 years, who underwent surgery for vocal fold lesions. The patient selection process included specific **inclusion criteria**, allowing only those who had surgery for vocal cord lesions. **Exclusion criteria** ruled out individuals with voice changes related to puberty or pregnancy without demonstrable lesions, patients unfit for surgery, and those with central nervous system lesions causing speech defects and those who improved with voice therapy and conservative treatment.

A comprehensive evaluation was performed on all patients, which included a detailed medical history, a general physical examination, and provisional diagnosis was made using 70-degree rigid video laryngoscopy. Maximum phonation time was calculated in all patients, relevant clinical data was then collected and processed.

The preoperative assessment of benign vocal fold lesions included an evaluation of voice handicap using the Voice Handicap Index-10 (VHI-10) scale.

Vhi 10 Scale

Participants are asked to reflect on their voice experiences using a 0 to 4 rating scale, where 0 means "Never," 1 is "Almost Never," 2 is "Sometimes," 3 is "Almost Always," and 4 is "Always." By circling the response that best matches their experiences, individuals provide insights into how their voice disorders impact their daily lives. This structured assessment helps evaluate the perceived voice handicap in patients with vocal fold lesions prior to surgery.

Scores for the VHI-10 range from zero-to-40, with higher scores indicating a greater voice-related handicap. A score greater than 11 is considered abnormal, and scores ranging from zero-to-10 are considered normal, or nearly normal.

Fig No.01: Preoperative Images Of Vocal Folds During 70 Degree Rigid Video Laryngoscopy

Surgical Procedure

Surgery included microlaryngoscopic excision of vocal fold lesions under general anasthesia using a suspension microlaryngoscope. In case of suspected malignancy only biopsy from the lesion was taken. All the specimens were sent for histopathological examination for confirmation of diagnosis.

RESULTS

The age distribution of the 60 participants showed that the largest group is aged 51 to 60, with 14 individuals (23.3%), while the smallest group is 21 to 30, with only 6 participants (10%). The 31 to 40 age bracket has 10 participants (16.7%), and the 61 to 70 group includes 11 participants (18.3%). Both the 11 to 20 and 41 to 50 groups have 7 participants (11.7%). Overall, the data indicates a strong presence of middle-aged individuals, suggesting an older demographic.

Gender distribution of patients in the study, showing a significant predominance of males, who accounted for 73.3% (44 patients) of the total. In contrast, females made up 26.6% (16 patients) of the cohort. This notable male preponderance suggests potential gender-related factors influencing the prevalence of vocal fold conditions.

The distribution of patients based on their occupation found following results. Among the participants, 4 singers accounted for 6.6% of the total, while teachers represented the largest group with 16 individuals, making up 26.6%. Homemakers followed closely with 19 participants, or 31.6%. There was 1 call center worker, which constituted 1.6% of the sample. Farmers comprised 6 individuals, representing 10%, and business owners included 9 patients, accounting for 15%. Lastly, students made up 10% of the population with 5 individuals.

The distribution of patients according to their chief complaints. All 60 patients (100%) reported a change in voice quality as their primary concern. Additionally, 5 patients (8.3%) experienced difficulty in swallowing, while 8 patients (13.3%) reported difficulty in breathing. Painful swallowing, throat pain, and cough were less common complaints, each reported by 1 patient (1.6%). The distribution of patients based on their addictions is as follows: 19 individuals (31.6%) reported using smoking or tobacco. Additionally, 6 patients (10%) indicated a combination of smoking or tobacco use along with alcohol consumption. The majority, 35 patients (58.3%), reported having no addictions.

DISCUSSION

Only those patients who had surgery for vocal cord lesions were included in this study, those who improved with voice therapy or conservative treatment were excluded.

In present study, the age distribution of patients showed that the 41 to 60 age group is the largest, with 21 individuals (35%). Both the 21 to 40 and 61 to 80 age groups consist of 16 participants each (26.7%). This data highlights a predominance of middle-aged individuals and a lower representation of younger participants, suggesting an older demographic overall.

In a study conducted by Minutha R et al., the age distribution of patients revealed that a significant portion, 36.85%, fell within the 21 to 40-year range. However, an even larger segment, 51.31%, was identified in the 41 to 60-year age bracket. This pattern suggests that the health issues examined predominantly impact middle-aged individuals, highlighting the need for targeted healthcare interventions and preventive measures for this demographic. The findings underscore the importance of addressing age-related health concerns in clinical practice and public health strategies.[5]

In present study, a total of 60 patients were examined, revealing a notable gender distribution among the participants. Males comprised 73.3% of the patients, accounting for 44 individuals, while females made up 26.6%, totalling 16 patients. This disparity highlights a significant predominance of male patients in the study population, suggesting potential gender-related factors in the health issues being investigated.

Similar observations were made by Siddapur GK et al., who conducted a study that found 66.7% of the patients were male. This indicates a significant male predominance in the patient population, suggesting that the health issues examined may be more prevalent or impactful among men. The findings align with the current study's gender distribution, where males constituted 73.3% of the total patients. This consistent trend across both studies highlights the need to consider gender-specific factors when analyzing the underlying causes and risk factors associated with the conditions being investigated.[6]

In present study, the diagnosis distribution of vocal fold conditions showed that vocal fold nodules were the most common, making up 30% of cases, followed by vocal fold polyps at 15% and well-differentiated squamous cell carcinoma at 16.6%. other conditions included laryngeal papillomatosis (8.3%), laryngeal tuberculosis (6.6%), and vocal fold cysts (5%). the presence of vocal fold dysplasia and keratosis was less frequent, indicating a diverse range of vocal fold pathologies and emphasizing the need for careful monitoring, particularly for potential malignancies.

According to Sllamniku b et al., vocal fold nodules were the most common benign lesions, comprising 28.3% of cases (17 instances). premalignant lesions included vocal fold dysplasia and keratosis, each with one case (1.6%). notably, vocal fold keratosis can progress to invasive laryngeal carcinoma in under 10 years, highlighting the importance of early diagnosis and monitoring.[7]

In the present study, histopathology results showed presence of malignancy in 16 cases (26.6%), all of which were squamous cell carcinoma. (16.6% - well differentiated squamous cell carcinoma and 10% - moderately differentiated squamous cell carcinoma).So in our study 100% of malignancies were squamous cell carcinoma.

In the case series by ciolofan et al., over 98% of laryngeal malignancies were well-differentiated squamous cell carcinomas. the remaining 2%-5% included leiomyosarcomas, chondrosarcomas, and melanomas, highlighting the predominance of squamous cell carcinoma while acknowledging the presence of other tumor types.[8]

According to Malik et al., recurrent laryngeal papillomatosis was identified in 5 cases, which constitutes 8.3% of benign vocal fold lesions. This condition is characterized by the growth of benign tumors, or papillomas, on the vocal folds, often caused by the human papillomavirus (HPV).[9]

In present study, chief complaints of patients, showing that 100% reported a change in voice quality as their primary concern. Other issues included difficulty in swallowing (8.3%) and difficulty in breathing (13.3%). Less commonly, patients reported painful swallowing, throat pain, and cough, each affecting 1.6% of the group. According to Tuljapure A et al., hoarseness was reported in all 40 cases (100%). Other complaints included vocal fatigue (26), painful voice (13), throat irritation (12), difficulty swallowing (11), foreign body sensation (6), and difficulty breathing (2).[10]

In present study, occupational distribution of patients, revealing that homemakers made up the largest group at 31.6%, followed closely by teachers at 26.6%. Other significant occupations included business owners (15%) and farmers (10%). Singers, although a smaller group at 6.6%, highlight a specific risk category for vocal fold issues.

In another study by Malik P et al., 28% of patients were housewives, 14% were in business and farming, and 10% were students. Other occupations included government service (8%), salesmen (6%), and various roles like accountant and barber, highlighting diverse occupational backgrounds.[9]

CONCLUSION

Vocal fold lesions can cause vocal hoarseness and dyspnea, impacting a patient's social well-being and quality of life. Proper therapeutic measures are crucial for improved functional outcomes. Documentation, detailed patient workup, and imaging are essential. Diagnostic accuracy improves with a 70-degree video laryngoscope. Microlaryngosurgery is recommended for benign lesions not benefitting from voice therapy. Patients with a history of addiction should be examined for suspicious lesions to exclude carcinoma. It is extremely important to diagnose laryngeal malignancy at an early stage, so that voice preservation surgery or radiotherapy can be started early so that patient can lead a normal life with minimal morbidity.

REFERENCES

1. Akbulut S, am Zehnhoff-Dinnesen A, de Jong F, Echternach M, Eysholdt U, Fuchs M, Hacki T, Izdebski K, Keilmann A, Kummer P, Mahmood S. Basics of voice disorders. InPhoniatrics I: Fundamentals–Voice Disorders–Disorders of Language and Hearing Development 2019 Dec 5:193-238)
2. Rzepakowska A, Sobol M, Sielska-Badurek E, Niemczyk K, Osuch-Wójcikiewicz E. Morphology, vibratory function, and vascular pattern for predicting malignancy in vocal fold leukoplakia. Journal of Voice. 2020 Sep 1;34(5):812-e9.
3. Colton RH, Woo P. Measuring vocal fold function. Diagnosis and treatment of voice disorders, 4th edn. Plural Publishing, San Diego. 2014 May 1:253-87.
4. Alves-Pereira M, Branco NA. Vibroacoustic disease: biological effects of infrasound and low-frequency noise explained by mechanotransduction cellular signalling. Progress in biophysics and molecular biology. 2007 Jan 1;93(1-3):256-79.
5. Minutha R, Sathish Kumar, Harsha P. Benign lesions of the vocal cords - An analysis of fifty cases. MedPulse International Journal of ENT. December 2020; 16(3): 33-37.
6. Siddapur GK et al. Comparative study of benign vocal fold lesions in a tertiary health centre. Int J Otorhinolaryngol Head Neck Surg. 2015 Oct; 1(2):65-68.
7. Sllamniku B, Bauer W, Painter C, Sessions D. Clinical and histopathological considerations for the diagnosis and treatment of verrucous carcinoma of the larynx. Archives of oto-rhino-laryngology. 1989 Jun;246:126-32.
8. Ciolofan MS, Vlăescu AN, Mogoantă CA, Ioniță E, Ioniță I, Căpitănescu AN, Mitroi MR, Anghelina F. Clinical, histological and immunohistochemical evaluation of larynx cancer. Current health sciences journal. 2017 Oct;43(4):367.
9. Malik P, Yadav SPS, Sen R, Gupta P, Singh J, Singla A, Vashisht S. The Clinicopathological Study of Benign Lesions of Vocal Cords. Indian J Otolaryngol Head Neck Surg. 2019 Oct;71(Suppl 1):212-220.
10. Tuljapure AN, Deshmukh S, Jain SK, Pawar V. Clinicopathological study of benign lesions of larynx. J Evolut Med Dent Sci. 2018 May 14;7(20):2468-74.