

Vocal Nodules and Polyps: Clinical and Histological Diagnosis



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Abstract

Vocal nodules and polyps are the most common benign laryngeal lesions. Recent studies have emphasized the importance of the clinico-histological correlation in laryngeal pathologies. The clinico-histological correlation of these lesions is not always easy, but an accurate diagnosis is of the utmost importance.

Keywords: Laryngeal; Nodule; Polyp; Vocal

Introduction

Vocal nodules and polyps are the most common benign laryngeal lesions which are diagnosed primarily by patient history, clinical complaints and through visual examination such as indirect laryngoscopy with rigid or flexible fiber optic scope and stroboscopy. The etiology of both is commonly related to vocal abuse and microscopically both are defined as identical lesions. The development of new noninvasive diagnostic methods and advances in the study of semiology, laryngeal physiology and histopathology are allowing a thorough assessment of laryngeal lesions in the vocal folds. Recent studies have emphasized the importance of the clinico-histological correlation in laryngeal pathologies.

Discussion

Vocal polyps

Vocal polyps can be sessile or pedunculated, unilateral or bilateral. They occur commonly at the free edge of the vocal fold characterized as edematous, hyaline or mixed [1]. Acute or chronic voice abuse results in micro-vascular trauma that leads to sub-cellular changes. These polyps typically affect adults whose work involves frequent voice stress [2], for example, teachers and they are also at higher risk of vocal fold cysts and nodules [3]. The typical histological features are found in the lamina propria, such as edematous changes, increased capillaries and inflammation are characteristic [2]. The same

histological changes can often be seen in vocal fold nodules and Reinke's edema [4].

Besides the repetitive trauma, the addition causes that may contribute to polyp formation are airway infections, allergies, nicotine, gastro-esophageal reflux, aspirin and other blood thinning medications [2]. The size and location of the polyps is directly correlated to voice quality. These polyps are purely structural and surgical problem but the otolaryngologist should always check the specific requirements of the patient for his work and leisure time, and organize the relevant voice diagnostics. Recurrence is possible even with successful surgical dissection if the underlying pathogenesis is ignored. It is suggestive for postoperative voice therapy in some cases although voice therapy as the sole treatment modality is unlikely to cure vocal fold polyps despite anecdotal reports of its success [5].

Vocal nodules

Vocal nodules (e.g. singer's nodes) are the consequence of functional voice disorders, also caused by vocal abuse or misuse. Typically these nodules are bilaterally symmetrical in the middle third of the vocal fold and located superficially on the vibrating free edge of the fold. The anatomical diagnosis can be difficult because of the heterogeneity of lesions ranging from discrete, poorly circumscribed edematous lesions to hard, horny nodules [6]. Stroboscopic examination reveals the incomplete glottis

closure (classically an hour-glass closure pattern) that can help making the diagnosis [7]. Patients often present with a poor vocal endurance and a quickly tiring voice.

An increased vocal load, for example, due to the patient's profession, is usually, responsible for the formation of nodules. Boys, young women and teachers are particularly affected [8]. The pathogenesis of vocal nodules is due to the disproportionately high mechanical shear on the free edge of the vocal fold which damages the superficial layer of the lamina propria and results in micro-vascular changes in the middle third of the fold. With time, it results in remodeling of the tissue with increasing hyalinization and epithelial hyperplasia, leading to typically circumscribed lesions in the vocal folds. On histological examination, thickening of the basement membrane and an edematous swelling of the lamina propria are characteristic [9].

It is often difficult to diagnose different lesions of the lamina propria histologically (eg. nodules, polyps and Reinke's edema) [10,11]. Therefore, the correct diagnosis cannot be made purely on histological examination, but requires a complete assessment including history, voice assessment and laryngoscopic/stroboscopic findings [12]. It is also worth noting that the diagnoses of vocal polyps and nodules are not always concordant clinically and histologically but an accurate diagnosis is of the utmost importance and should try the best for correct diagnosis. The viable therapeutic measures for nodules are conservative voice hygiene and voice therapy. The patient's motivation, vocal requirements in social and professional life together with the correct diagnosis allows an appropriate conservative treatment plan to be formulated. The specifically tailored program, including targeted voice therapy, achieves better results than a generic program [13].

There is often a subjective and objective improvement of the voice that may not always match by improvements in the laryngoscopic/stroboscopic findings. Phonosurgery may be indicated if conservative measures fail to achieve the desired results [14,15]. Furthermore, it is noteworthy that surgery does not necessarily correct the underlying causal process at hand [12]. Hence voice therapy is the key to gain a long lasting improvement after surgery and reduces recurrence rate.

Conclusion

The diagnoses of vocal polyps and nodules are not always concordant clinically and histologically, but an accurate diagnosis is of the utmost importance.

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