THE VISIBLE VOICE

A Newsletter for Physicians, Speech-Language Pathologists, Professional Voice Users, and People with Voice Disorders

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REFLUX, OCCULT VOCAL FOLD PARESIS, AND THINGS THAT GO BUMP ON THE VOCAL FOLD

A prospective study of 20 patients with vocal fold nodules and other free-edge, striking-zone lesions was conducted to determine the incidence of laryngopharyngeal reflux and vocal fold paresis. All of the patients had vocal nodules, pre-nodules, cysts, pseudocysts, or hemorrhagic polyps. Seventy-five percent 75% (15/20) had bilateral lesions. All underwent videostroboscopy, electroglottography, 24-hour double-probe pH monitoring, and laryngeal electromyography. The results of this study were striking: 85% (17/20) of the patients had vocal fold paresis, 75% (15/20) had laryngopharyngeal reflux, and 65% (13/20) had both. Treatment consisted of antireflux treatment, voice therapy, and sometimes medialization laryngoplasty, injection augmentation, lesion removal and/or a combination of those treatments. Prior to treatment, the glottal closure index (a measure of vocal fatigue and effort) was 14, and following treatment the GCI was 4 ($P > 0.001$). Prior to treatment, the reflux symptom index (a clinical measure of LPR) was 20, and after treatment it was 7 ($P < 0.001$). The data suggest that many free-edge striking zone lesions are not simply the result of vocal misuse or abuse, but rather that the etiology may be multifactorial and related to glottal closure problems such as paresis and inflammation (LPR).

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THE DEMISE OF BEHAVIORAL VOICE DISORDERS?

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The nosology (classification) of vocal fold lesions, particularly free-edge striking zone lesions, is imprecise. For purposes of clarification, the following terms are used in this paper:

- Prenodules – Prenodules are localized mucosal swellings that are neither cystic nor firm. These soft mucosal swellings occur on the mid portion of the striking zone and they are almost always symmetrical.
- Nodules- Nodules refer to lesions that are firm and that are presumably irreversible either because of hyalinization, vascular changes, or organizational histology.
- Pseudocysts – Pseudocysts[1] refer to a blister-like lesions that have no true epithelial lining but appear to be fluid filled, similar to a blisters or localized Reinke's edema.
- Subepithelial Cyst -- A true cyst does have an epithelial lining and is virtually always subepithelial.
- Hemorrhagic polyp(s) – Usually unilateral, these "nodules" are red, angioma-like lesions or firm callous-like lesions that may be sessile. These lesions have obviously abnormal feeding vessels that cross from the ventricular surface of the vocal fold.

Cysts, pseudocysts, and hemorrhagic polyps are usually asymmetrical. For generations, it has been assumed that nodules, prenodules, and most other symmetrical free-edge lesions were the result of vocal misuse or abuse. In part, this presupposition was based upon the fact that patients' voices often may improve with voice therapy.[2,3] A prospective study of underlying inflammatory neuromuscular disease has not been previously reported.

For the last decade, the author has systematically evaluated glottal closure problems and LPR in patients with free-edge lesions. The current study was undertaken to determine the incidence of those in patients with free-edge lesions. In addition to a different therapeutic approach, the author has often employed glottal closure procedures such as laryngoplasty or injection augmentation in patients with glottal closure problems with or without free-edge lesions.

MATERIALS AND METHODS

Twenty consecutive patients with vocal fold lesions in the free-edge striking zone were included in the study. The study was prospectively undertaken. All patients completed symptom indices for LPR (the reflux symptom index),[4] RSI and a glottal closure index (GCI).[5] In addition, every patient underwent double-probe pH testing[6] with the proximal probe being placed in the pharynx and laryngeal electromyography.[7] We have previously reported the technique of both diagnostics.

RESULTS

Of the 20 patients studied, 17 were females and 3 were males. The mean age of the entire population was 35.8 and the mass majority of female patients were in their third and fourth decades of life. Fifteen of the patients had bilateral lesions and five had unilateral lesions. Of those with bilateral lesions, prenodules were present in all cases, but unilateral cysts or pseudocysts were found in unilateral cysts. Pseudocyst or hemorrhagic polyp was found in six. The mean glottal closure index prior to treatment was 14, and the mean reflux symptom index was 20. Eighty-five percent (17/20) of the 20 patients had abnormal EMG findings, consistent

with vocal fold paresis (i.e., neuropathy); 13/17 demonstrated bilateral abnormalities; 85% (17/20) of the study subjects had abnormal reflux by double-probe pH testing. Seven patients underwent bilateral medialization; eight patients underwent suspension like microlaryngoscopy with removal of lesions and/or lipoinjection.[8-11] Four patients underwent simultaneous removal of the lesion from the vocal fold followed by medialization laryngoplasty at the same sitting. Follow up data are available on fifteen patients. The postoperative glottal closure index was 4.1 ($p < .001$), and the posttreatment reflux symptom index was 7.0 ($p<.001$).

DISCUSSION

These 20 patients with "nodules" represent a group of voice patients who are usually presumed to have primary behavioral voice disorders. The novel observation of this paper is that behavioral voice disorders often coexist with vocal fold paresis and LPR. Indeed, they may be interrelated. The increased demands of vocal usage, particularly in vocal professionals, makes the development of striking-zone pathological lesions more likely in the context of a glottal closure problems that require effortful closure ("squeezing"). In addition, LPR causes inflammation that increases the vascularity of the vocal folds so that microhemorrhages and formation of vascular ectasias are common consequences of phonotrauma.

Consider this: How many people do you see walking around limping because it's fun to limp or because people are too stupid to walk right? Is that not a metaphor for the behavioral voice disorder model? While I did not undervalue voice therapy to increase the vocal efficiency and reduce phonotrauma, whether or not injured, voice therapy generally cannot correct underlying neuromuscular and inflammatory disease. It is likely that many paresis patients have a condition similar to "Bell's palsy of the larynx."[12]

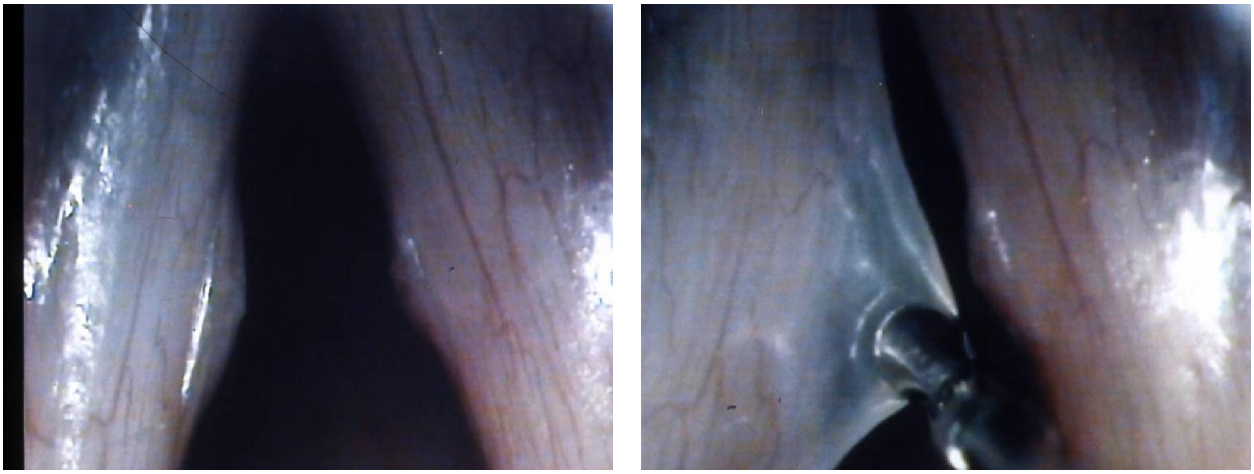
In conclusion, striking-zone pathology due may be related to vocal fold paresis and LPR in addition to misuse/abuse/overuse. Indeed, glottal closure problems and inflammation increase the likelihood of secondary phonotraumatic pathology. Voice therapy is useful but may not be the answer in every case. Glottal closure procedures and antireflux treatment are often needed.

REFERENCES

1. Koufman JA, Belafsky PC. Unilateral or localized Reinke's edema (pseudocyst) as a manifestation of vocal fold paresis: the paresis podule. Laryngoscope 111:576-580, 2001.
2. Koufman JA, Blalock PD. A classification and approach to patients with functional voice disorders. Ann Otol Rhinol Laryngol 91:372-377, 1982.
3. Koufman JA, Blalock PD. Vocal fatigue and dysphonia in the professional voice user: Bogart-Bacall syndrome. Laryngoscope 98:493-498, 1988.
4. Belafsky PC, Postma GN, Koufman JA. Validity and reliability of the reflux symptom index (RSI). J Voice 16:274-277, 2002.
5. Bach KK, Belafsky PC, Wasylik K, Postma GN, Koufman JA. Validity and reliability of the glottal function index. Arch Otolaryngol Head Neck Surg 131:961-964, 2005.
6. Koufman JA. The Otolaryngologic manifestations of gastroesophageal reflux disease (GERD): A clinical investigation of 225 patients using ambulatory 24-hour pH monitoring and an experimental investigation of the role of acid and pepsin in the development of laryngeal injury. Laryngoscope 101 (Suppl. 53):1-78, 1991
7. Koufman JA, Postma GN, Whang C, et al. Diagnostic laryngeal electromyography: the Wake Forest experience 1955-1999. Otolaryngol Head Neck Surg 124:603-606, 2001.

8. Koufman JA. Laryngoplasty for vocal cord medialization: an alternative to Teflon. Laryngoscope 96:726-731, 1986.
9. Koufman JA. Surgical correction of dysphonia due to bowing of the vocal cords. Annals of Otol Rhinol Laryngol 98:41-45, 1989.
10. Koufman, JA, Postma, GN, Cummins, MM, Blalock, PD. Vocal fold paresis. Otolaryngol Head Neck Surg122:537-541, 2000
11. Postma GN, Blalock PD, Koufman JA. Bilateral medialization laryngoplasty. Laryngoscope 108:1429-1434, 1998.
12. Amin MR, Koufman JA. Vagal neuropathy after upper respiratory infection: a viral etiology? Am J Otolaryngol 22:251-256, 2001.

CASE OF THE MONTH – WHAT IS IT?



A. Vocal nodule
B. Vocal prenodule
C. Subepithelial cyst
D. Pseudocyst
E. Polyp

Answer next month. Answer for January 2008 – D. Cricoid chondrosarcoma

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