Rev Bras Otorrinolaringol.
V.70, n.6, 739-41, nov./dec. 2004

ORIGINAL ARTICLE

Vocal fold polyps and cover minimum structural alterations: associated injuries?

Flavio Akira Sakae[1], Fernando Sasaki[2], Luiz Ubirajara Sennes[3], Domingos Hiroshi Tsuji[3], Rui Imamura[4]

Key words: vocal fold polyp, vocal fold cover minor structural alteration, phonotrauma.

Summary

Polyps are common injuries of the vocal folds. Voice trauma is the main factor related with the onset of this injury. The association between vocal fold polyps and cover minimum structural alterations (sulcus, epidermoid cyst, mucosal bridge, laryngeal web and varicosity) has been little studied in literature; therefore, the purpose of the present study was to quantify and to analyze this association. Study design: Clinical retrospective. Material and Methods: We carried out a retrospective study with 68 patients, mean age 39.5 years, surgically submitted to exeresis of vocal fold polyps in the period between January 1999 and May 2003. We analyzed the presence of vocal fold polyps and cover minimum structural alterations. Results: The presence of cover minimum structural alterations associated with the polyp occurred in 16 (23.5%) patients. In 8 (50%) patients, the finding was sulcus vocalis. In 4 (25%) patients, the finding was epidermoid cyst, in 2 (12.5%) patients, mucosal bridge, in 1 (6.25%), varicosity and in 1 (6.25%) patient, laryngeal web. Cover minimum structural alterations were contralateral to the vocal fold polyp in 11 patients. Of the sulcus, 6 (75%) were contralateral and among the cysts, 3 (75%) were contralateral to the polyp. Conclusion: The association between vocal fold polyps and cover minimum structural alterations is relatively frequent and it was 23.5% in our study. Careful intraoperative exploration of vocal folds in search for these alterations is essential.

[1] Physician, Preceptor, Division of Clinical Otorhinolaryngology, Hospital das Clínicas, Medical School, University of Sao Paulo.
[2] Resident Physician, Division of Clinical Otorhinolaryngology, Hospital das Clínicas, Medical School, University of Sao Paulo.
[3] Full Professor, Discipline of Otorhinolaryngology, Medical School, University of Sao Paulo.
[4] Assistant Physician, Discipline of Otorhinolaryngology, Medical School, University of Sao Paulo.
Study conducted at Division of Clinical Otorhinolaryngology, Hospital das Clínicas, Medical School, University of Sao Paulo.
Study presented at III Congresso Triológico, Rio de Janeiro, 2003.
Address correspondence to: Flavio Akira Sakae –Av. Dr. Enéas de Carvalho Aguiar, 255 6º andar, sala 6021 Sao Paulo SP 05403-000
Tel/Fax (55 11) 3832-7020 – Mobile (55 11) 9623848 – E-mail: sakaeflavio@yahoo.com.br
Article submited on June 16, 2004. Article accepted on November 10, 2004.

INTRODUCTION

Polyps are common vocal fold lesions. They can have millimeters in size or occupy almost the whole glottis. They may be single, multiple or bilateral. Macroscopically, they are apparently smooth, jelly and transparent masses, normally on the free margin, either sessile or pediculated [1].

Etiology is still obscure, but it is believed that vocal abuse resulting from mechanical trauma is the main factor. Histology findings of polyps are varied. Initial lesion occurs after vocal trauma (sudden movements during phonation), which would take to lesion of blood capillaries, followed by edema, bleeding, thrombosis, formation of fibrin and proliferation of blood capillaries [2]. Some polyps show greater vascularization and less fibrous stroma, whereas others present similar amounts of epithelial and stroma [3].

Minimum structural alterations of the mucosa cover are deviations from the configuration of the mucosa histological architecture, which can interfere in the vibration characteristics of the vocal folds. Among the most common minimum structural alterations we can include vocal sulcus, epidermoid cyst, mucosa bridge, laryngeal microweb, and varicosity [4-8].

The purpose of the present study was to quantify and analyze the possible associations between vocal fold polyps and minimum structural alterations of the mucosa cover.

MATERIAL AND METHOD

We conducted a retrospective study of patients submitted to vocal fold polyp surgery at the Division of Otorhinolaryngology, Hospital das Clínicas, FMUSP between January 1999 and May 2003, which totalized 103 cases.

All cases were analyzed through medical chart analysis. We excluded cases whose data were not completed and/or those who had no histology confirmation of vocal fold polyp, totaling 35 cases.

Thus, we included in the study 68 patients, 33 (48.5%) were male and 35 (51.5%) were female. Ages ranged from 11 years to 69 years, mean of 39.5 years.

The following data were obtained: presence of gastroesophageal reflux (GER), smoking and vocal abuse; in the surgical description we looked for the presence of vocal fold polyps and possible associated minimum structural alterations (MSA).

The diagnosis of GER was made based on preoperative description of laryngeal videoendoscopy that suggested reflux by the presence of edema and interarytenoid hyperemia.

Vocal abuse was characterized in patients that used their voice professionally or that reported they spoke or sang abusively.

Surgeries were conducted always by the same medical team from the group of laryngology at Hospital das Clínicas.

As to data analysis, in addition to observing incidence and type of MSA most frequently associated with polyps, we correlated smoking, vocal abuse and presence of GER.

RESULTS

Out of 68 analyzed patients, in 36 (53%) we found left vocal fold polyp, in 28 (41%) right vocal fold, and in 4 (6%) patients in both vocal folds. There were 65 (90%) cases of mucous polyps and 7 (10%) of angiomatous polyps confirmed by histological exam.

The presence of MSA associated with the polyp occurred in 16 (23.5%) of the patients, and in 8 patients (50%) the finding was vocal sulcus (7 stria sulcus and 1 pocket sulcus), and among them, one patient had also varicosity on the same vocal fold as the sulcus. In 4 patients (25%), we found vocal fold cyst, in 2 (12.5%) there was mucosa bridge, in 1 (6.25%) varicosity, and in 1 (6.25%), laryngeal microweb.

In 11 patients, MSA was contralateral to the vocal fold polyp. For sulcus, 6 (75%) were contralateral and for cysts, 3 (75%) were contralateral to the polyp.

Other findings associated with the polyp were contralateral reactive nodular lesions (20.5%), laryngeal papilloma (1 case) and leukoplasia (1 case).

As to risk factors, 16 patients (23.5%) had GER symptoms, 39 (57.5%) were smokers or former smokers and finally 31 (45.5%) had vocal abuse.

In patients with MSA associated with the polyp, 9 (56%) had GER, 11 (68.8%) were smokers or former smokers and 11 (68.8%) had vocal abuse. Out of the patients with vocal sulcus, 7 (87.5%) had vocal abuse and of the patients with epidermoid cyst, none had vocal abuse.

DISCUSSION

We know that histologically, polyps present capillaries with endothelial lesion that take to platelet adhesion and thrombosis. Vocal abuse is considered the main etiological factor. Reinforcing this hypothesis, we observed that in the ultrastructure of recurrent polyps, lesion of capillary endothelium, probably induced by repeated trauma on the vessel walls, maintaining the lesion [2].

Despite this theory, in our study vocal abuse was not present in most of the cases (45.5%). The most prevalent risk factor was smoking (68.8%). Considering the bias of a retrospective study, smoking is much easier and objective to be reported by the patients than vocal abuse, which requires further investigation.

In theory, GER may contribute to generalized inflammatory response in the vocal fold mucosa that can exacerbate the formation of a polyp, but there is still no confirmation that it happens, despite the fact that many

laryngologists use anti-reflux drugs in laryngeal microsurgery postoperative care [9]. In our study, GER was present in only 23.5% of the cases.

To explain the origin of epidermoid cysts, mucosa bridges and vocal sulcus there are two main hypotheses: acquired and congenital. The first hypothesis involves traumatic or infectious etiology [10]. The second most important one is derived from anomalies in the 4th and 6th branchial arches that occur during laryngeal development. According to Bouchayer[5], six clinical observations reinforce the congenital origin of these lesions: dysphonia starts in childhood in 55% of the cases; vocal sulcus and epidermoid cyst were found in 15% of the children in the study; those lesions can be found in patients that do not have vocal abuse or history of laryngitis; the association between epidermoid cysts and vocal sulcus occurred in 15% of the cases; lesions that are completely removed do not recur; there are described cases of sulcus and cysts in members of the same family.

Therefore, considering vocal fold polyps as sequels from vocal trauma [2,11,12] and MSA as of congenital nature [11], the association between those two diseases occurred in 23.5% of our cases, most of them contralateral to the polyp.

Epidermoid cysts are lesions that probably facilitate the onset of polyps owing to trauma in the contralateral vocal fold. Similarly to reactive nodular lesions of the vocal folds caused by vocal trauma from a contralateral cysts or polyp [13], the onset of contralateral polyp to the cyst could have the same origin.

In the case of vocal sulcus, the most frequent MSA, given that there is no direct trauma on the contralateral vocal fold mucosa, such as the case of cysts, the onset of polyp could be facilitated by a compensation to vibration pattern of the normal vocal fold. However, in this group, vocal abuse was very significant (87.5%), which is a factor that has probably contributed to the onset of polyps.

In ipsilateral MSA, their presence shows disarrangement in the vocal fold structure, modifying the normal vibration pattern [14], which could favor onset of polyp.

CONCLUSION

The association between vocal fold polyps and structural minimum alterations of mucosa cover is relatively frequent, presenting incidence of 23.5% in our study. Careful intraoperative exploration of vocal folds in search for these alterations is essential.

REFERENCES

1. Steinberg BM, Abramson AL, Kahn LB, Hirschfield L, Freiberger I. Vocal Cord Polyps: Biochemical and Histologic Evaluation. Laryngoscope 1985; 95: 1327-31.
2. Dikkers FG, Nikkels PGJ. Benign Lesions of the Vocal Folds: Histopathology and Phonotrauma. Ann Otol Rhinol Laryngol 1995; 104: 698-703.
3. Kotby MN, Nassar AM, Seif EI, Helal EH, Saleh MM. Ultrastructural Features of Vocal Fold Nodules and Polyps. Acta Otolaryngol (Stockh) 1988; 105: 477-82.
4. Behlau MS, Pontes PA. Avaliação e Tratamento das Disfonias. São Paulo: Lovise; 1995.
5. Pontes P, Behlau M, Gonçalves MI. Alterações Estruturais Mínimas da Laringe (AEM): considerações básicas. Acta Awho 1994; 13(1): 2-6.
6. Pontes P, Gonçalves MI, Behlau M. Vocal Fold Cover Minor Structural Alterations: Diagnostic Errors. Phonoscope, 1999; 2(4): 175-85.
7. Pontes PAL, Biase N, Pontes AAL. Fonomicrocirurgia das Alterações Estruturais Mínimas. In: Campos CAH, Costa HOO. Tratado de Otorrinolaringologia da Sociedade Brasileira de Otorrinolaringologia, São Paulo, Roca; 2002; p. 393-407.
8. Poels PJP, Jong FICRS, Schutte HK. Consistency of the Preoperative and Intraoperative Diagnosis of Benign Fold Lesions. J Voice 2003; 17(3): 425-33.
9. Sulica L, Behrman A. Management of Benign Vocal Fold Lesions: A Survey of Current Opinion and Practice. Ann Otol Rhinol Laryngol 2003; 112: 827-33.
10. Bouchayer M, Cornut G, Witzig E., Loire R., Roch JB, Bastian RW. Epidermoid Cysts, Sulci, and Mucosal Bridges of the True Vocal Cord: A Report of 157 Cases. Laryngoscope 1985; 95: 1087-94.
11. Nagata K, Kurita S, Yasumoto S, Maeda T, Kawasaki H, Hirano M. Vocal Fold Polyps and Nodules. A 10-year Review of 1,156 Patients. Auris Nasus Larynx 1983; 10: S27-35.
12. Kleinsasser O. Pathogeneses of Vocal Cord Polyps. Ann Otol Rhinol Laryngol 1982; 91(4): 378-81.
13. Rosen C, Lombard LE, Murry T. Acostic, Aerodynamic, and Videostroboscopic Features of Bilateral Vocal Lesions. Ann Otol Rhinol Laryngol 2000; 109: 823-28.
14. Shohet JA, Courey MS, Scott MA, Ossoff RH. Value of Videostroboscopic Parameters in Differentiating True Vocal Fold Cysts From Polyps. Laryngoscope 1996; 106: 19-26.