ISSN: 2053-3578 I.F. 9.1

MODERN METHODS OF TREATING LARYNGEAL GRANULOMA

Assistant of the Department of ENT
Diseases of the Tashkent Medical Academy Ph.D.
Makhamadaminova Sh.A
ENT doctor of the Republican Specialized
Otorhinolaryngology and Head and Neck Research Center,
R.A. Khusnitdinov

Annotation: In the article modern methods of treating laryngeal granuloma and its basic symptoms were discussed. On the other hand, types of this illness like Airway laryngeal granuloma, its main features and treating ways were noted.

Key words: *intubation injury, "hammer-and-anvil" action, anti-reflux medications, supraglottic activity, hyperfunction behavior, Airway laryngeal granuloma.*

Laryngeal granulomas are uncommon benign disease with no exact cause yet. As we know, hyper functional vocal behaviors, intubation injury or reflux from the esophagus to the pharynx can contribute to the occurrence of the disease. However, laryngeal granulomas rarely occur after surgical resection of laryngeal cancer. To date, this is the first reported case of glottic granuloma occurring after laryngeal neoplasm operation. Laryngeal cancer is the second most common type of head and neck malignancy worldwide, with estimated 151,000 new cases and 82,000 deaths annually in the world. SCC of the glottis is performed with surgery or RT depending on the extent of the disease.[1]

Laryngeal contact granuloma develops when initial trauma to the mucosa at the vocal process causes the epithelium to ulcerate and chronic irritation or inflammation occurring during the healing process leads to epithelial hyperplasia. Etiological factors of LCG typically include hyperfunctional vocal behavior, laryngopharyngeal reflux (LPR), and intubation trauma. Hyperfunctional laryngeal adduction, especially referring to vocal abuse, throat clearing, and chronic coughing, manifest as "hammer-and-anvil" action of the vocal process, which results in repetitive phonotrauma. Glottic insufficiency and subsequent vocal hyperfunction can also result in phonatory injury and LCG formation. In all these scenarios, LPR acts as a significant potentiating cofactor, and irritation of gastric refluxate is associated with chronic inflammation of the posterior glottis. Intubation and other forms of clinical manipulation, such as bronchoscopy and esophagogastroduodenoscopy, can lead to mucosa injury and iatrogenic

granulomas. Evidence suggests that when contributing factors are taken controlled, regression of granuloma tissue can be accelerated. Therefore, treatments of LCG in clinical practice attempt to be etiology driven, such as voice therapy to alleviate voice hyperfunctional action and anti-reflux medications to overcome LPR and prevent the injury from gastroesophageal reflux. However the treatment is still unsatisfactory with response rate of conservative treatment ranging from 20–44.3% and it is mainly due to the unknown etiology and complex pathogenesis. Recent data reveals that patients receiving radiotherapy for non-laryngeal head and neck cancer suffer from more severe voice impairment when compared with glottic tumor[2]. Patients complain of increased vocal effort, breathiness and roughness while videostroboscopy demonstrates enhanced supraglottic activity and greater poster glottic gap. It is highly suggested that patients undergoing the aforementioned radiation develop voice disorder and subsequent vocal hyperfunction behavior. As in 2009 Carroll et al. firstly reported that glottic insufficiency and subsequent voice hyperfunction for various causes was an underestimated etiology of LCG. Then the occurrence of LCG after radiotherapy for nasopharyngeal carcinoma (NPC) in our practice has implored us to re-exam the underlying etiology of these cases. We hypothesize that radiation against non-laryngeal head and neck cancer, such as NPC, may also be another etiology of LCG.

Airway laryngeal granuloma is a rare condition characterized by chronic inflammation and fibrosis of the airways. It is typically associated with sarcoidosis, a granulomatous disorder of unknown etiology that affects multiple organs but can also be seen in other conditions such as tuberculosis, fungal infections, and foreign body inhalation. Airway laryngeal granuloma refers to the formation of abnormal tissue masses or nodules in the airways, which can occur as a result of various underlying causes. Granulomas are localized inflammatory reactions characterized by the accumulation of immune cells, such as macrophages, lymphocytes, and multinucleated giant cells. These cells aggregate together to form granulomatous lesions. The diagnosis of airway laryngeal granuloma typically involves a combination of clinical evaluation, medical history assessment, imaging studies, and sometimes tissue biopsy. Airway granulomas are characterized by structural alterations such as epithelial metaplasia, airway fibrosis, and airway smooth muscle hyperplasia. The epithelium in asthma is more fragile, as indicated by shedding and increased turnover of cells. Epithelial cells differentiate frequently into mucus-secreting goblet cells, and mucus glands increase in number and size. Myofibroblasts, which have a mixed contractile and collagen-synthesizing phenotype, are likely to participate in subepithelial deposition of collagen and other matrix proteins that cause the classical thickening of the lamina reticularis. Similarly, altered matrix protein deposition contributes to remodeling of the submucosa and adventitia.

Bronchial blood vessels increase in number and size, and bronchial smooth muscle increases in mass [3].

There is no consensus in the literature regarding the best treatment for laryngeal granulomas due to the diversity of etiologies. Among the several treatments, there are proton pump inhibitors, inhaled or oral corticosteroids, nonhormonal anti-inflammatory drugs, and botulinum toxin.7–10 Pharmacological treatment is usually slow and requires dietary discipline and changing habits. Surgical treatment is fast, but requires general anesthesia, as well as hospitalization, and is not free of complications. In the present study, intubation granulomas were the most prevalent (56%), confirming the data in the literature.1,3,11 The pharmacological treatment was ineffective for most of these cases, with 77% requiring surgery. No patient with intubation granuloma submitted to surgery had postoperative recurrence, and the importance of maintaining the antireflux treatment after the surgical procedure should be emphasized. In a study that included 168 patients with vocal fold granulomas, Ma et al12 found improvement in 41.3% (n ¼ 71) with conservative treatment (pump inhibitors, vocal arrest, and voice therapy); however, higher resolution rates were seen after microsurgery alone (78.4%) or associated with botulinum toxin (95.2%). Granulomas secondary to reflux corresponded to 25% of the cases and, in these, the pharmacological treatment presented a better success rate (75%). In two cases, remissionwas seen only after 9 months of treatment, confirming the importance of insisting on antireflux treatment for an extended period in such cases. Surgery was indicated in only one patient with granuloma consequent to reflux, and proved to be effective[4].

To summarize all given facts above it should be noted that The results of this review indicated that there is no evidence as to the best treatment for laryngeal granulomas secondary to endotracheal intubation. The small number of patients in each study is responsible for large confidence intervals, which lead to indifference between interventions. Regarding time to resolution of granulomas, surgical treatment is the fastest of all types of treatment, since it resolves immediately; however, recurrence is similar to the other treatments. Although inhaled budesonide is the treatment that has taken a longer time to resolve the lesions, it should be considered as an option for the treatment of laryngeal granulomas, since it has low morbidity. Zinc sulfate is a promising treatment, still little studied, which is also in the range of possibilities. Regarding the applicability of the evidence, the metanalysis performed in relation to the outcome resolution and recurrence of the granuloma after treatment, be it primary or recurrent, resulted in inconclusive data. There was no difference between the treatments analyzed due to the huge confidence intervals between the interventions, which inevitably lead to their overlap. As most of

the included studies were considered to be at high risk of bias, the quality of the evidence is poor. Regarding the potential biases in the review process, we are confident that the extensive literature search used in this review, added to the manual search, has captured most of the relevant literature published, minimizing the likelihood of loss of relevant studies.

REFERENCES:

1. Mendenhall WM, Dagan R, Bryant CM, et al. Definitive radiotherapy for squamous cell carcinoma of the glottic larynx. Cancer Control 2016;23:208–12.
2. Fung K, Yoo J, Leeper HA, et al. Vocal function following radiation for non-laryngeal versus laryngeal tumors of the head and neck. Laryngoscope 2001;111:1920-4
3. Rosen, Y. Pathology of Granulomatous Pulmonary Diseases. Arch. Pathol. Lab. Med. 2022, 146, 233–251. [CrossRef]
4. Regina Helena, Garcia Martins, Norimar Hernandes Dias, Carlos Segundo Paiva Soares, Andrea Cristina Joia Gramuglia. Treatment of Laryngeal Granulomas. Original Research. Published online: 2019-05-28