Bamboo Node of Vocal Fold—— Report of 2 Cases

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Abstract

Vocal fold bamboo node disease is a rare characteristic disease. Its clinical manifestation is hoarseness. Under endoscopy, it is a fat yellow strip disease on one or both vocal cords.

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Abstract: Vocal fold bamboo node disease is a rare characteristic disease. Its clinical manifestation is hoarseness. Under endoscopy, it is a fat yellow strip disease on one or both vocal cords. Its shape is like bamboo knot. Its disease is mainly related to autoimmune diseases, including diseases such as systemic lupus erythematosus (SLE), rheumatoid, Sjogren's syndrome, etc. In this paper, the clinical data of laryngoscopy, pathology and treatment of 2 patients with vocal cord bamboo disease were followed up, analyzed and the relevant literature to explore the clinical characteristics, pathogenesis, development law and treatment of vocal fold bamboo node disease. The two patients were women, with hoarseness as the most significant symptom, had a common cause of their disease, which was systemic lupus erythematosus. They were treated with oral steroids and speech therapy. One of the symptoms of this condition is progressive, which can lead to bilateral or unilateral changes. There is no known gold standard for treating this type of disorder, and there is a lack of a documented method of therapy. However, the Bamboo nodes can be helpful in identifying patients with this condition.

Keywords: Laryngeal Diseases, Vocal Cords, Bamboo Node, Autoimmune Diseases

Introduction

Vocal fold bamboo node disease is a rare characteristic disease. Its clinical manifestation is mainly hoarseness. Under endoscopy, it is a fatty yellow strip disease on one or both vocal cords. Its disease is mainly related to autoimmune diseases. Autoimmune diseases will lead to multi system injuries, including those to the throat. As a result of autoimmune diseases, laryngeal lesions such as ulcers, edema, cricoarytenoid arthritis, laryngeal paralysis, and vocal bamboo nodes are most commonly observed. A case of SLE was described by Scarpelli et al. In 1959. Microscopic examination showed extensive edema of lamina propria, and invasion of tissue cells, lymphocytes, hyperplasia, and mast cells. These lesions were originally named "inflammatory nodules" [1]. As early as 1993, Hosako et al. described vocal cord lesions that resembled bamboo knots in patients with SLE, presenting as nodes that resembled bamboo knots. Therefore, they suggested changing its name from "inflammatory nodule" to "bamboo node"[2]. In this paper, the clinical data of laryngoscopy, pathology and treatment of 2 patients with vocal cord bamboo disease were followed up, analyzed and reviewed the relevant literature to explore the clinical characteristics, pathogenesis, development law and treatment of vocal fold bamboo node disease.

2. Materials and Results

The clinical data of laryngoscope, pathology and treatment of 2 patients with vocal cord bamboo disease in our hospital were followed up and analyzed retrospectively. The relevant literatures published since 2020 were compared and analyzed retrospectively. The two patients were the first diagnosed patients and were hospitalized with autoimmune diseases. During this period, they had throat symptoms dominated by hoarseness.

3. Case Report

3.1. Case 1

A woman 25 years of age was hospitalized in the Department of Rheumatology and immunology of our hospital in November 2015 due to morning stiffness of both hands. She was diagnosed with systemic lupus erythematosus and received routine first-line treatment. In 2020 Due to hoarseness, she was consulted in our department, and her laryngoscopy showed that there was a fatty yellow strip lesion in the front 1/3 of the left vocal cord, with local mucosal bulge (Figure 1); the symptoms related to SLE were well controlled at the time of treatment. It is suggested that the sound should be stopped, and local hormone atomization inhalation should be symptomatic, after treatment, the symptoms of hoarseness were significantly improved after two weeks of treatment. In November 2021, the patient came to our department again because of hoarseness, and his laryngoscopy showed: Symmetrical fat yellow striped lesions can be seen in the front 1 / 3 of bilateral vocal cords, with local mucosal bulge (Figure 2). The lesions change from unilateral bamboo node to bilateral bamboo nodes. It is recommended to remove the lesions surgically and make a clear pathological diagnosis. However, the patient refused the operation due to the good control of the SLE and was given symptomatic treatment with rest and local hormone atomization inhalation. The position of the two lesions grew clearer during the stroboscopic test. Except for the lesion, the vocal folds vibrated with reduced amplitude during chest voice phonation, as seen by the stroboscopic image. There was no tendency of vibrations between the portions of the vocal fold in front of and behind the transverse lesion in the continuing picture of the videostroboscopy. After one week of treatment, the symptoms of hoarseness were significantly improved, the patient was in good health in the past, generally in good condition after onset, without discomfort symptoms such as weight loss, and denied the history of similar diseases in the family.

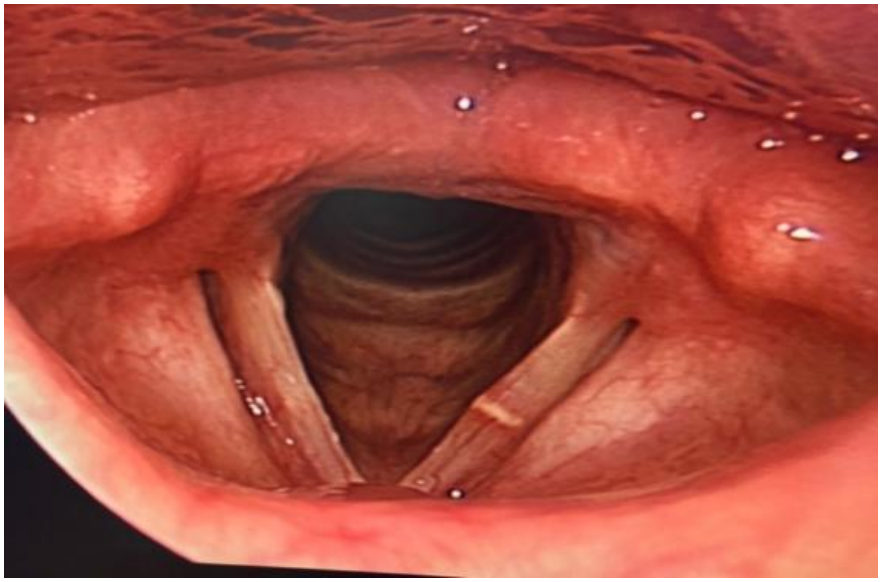

Figure 1. At the first diagnosis, a fatty yellow strip lesion with local mucosal bulge can be seen in the front 1/3 of the left vocal cord.

Figure 2. During the follow-up, it was found that the patient had symmetrical fatty yellow striped lesions in the front 1/3 of bilateral vocal cords, with local mucosal bulge, which changed from unilateral slubby to bilateral slubby.

3.2. Case 2

Female, 40 years old, was hospitalized in the rheumatology and Immunology Department of our hospital in November 2021 because of intermittent fever with joint swelling and pain. She was diagnosed as SLE and was

treated with routine first-line treatment, During the period, she was consulted in our department because of hoarseness. Her laryngoscopy showed that there were fatty yellow striped lesions, nodular changes, and local mucosal uplift in the front 1/3 of the right vocal cord (Figure 3), With the consent of the patient, the pathological examination was showed submucosal lymphocyte and neutrophil infiltration, accompanied by a little necrosis and eosinophil deposition (Figure 4). The patients were given symptomatic treatment of resting and local hormone atomization inhalation. The bilateral lesion's location became more obvious during the stroboscopic examination. The stroboscopic image during chest voice phonation revealed that, apart from the lesion, the vocal folds were vibrating with decreased amplitude. The vocal fold regions in front of and behind the transverse lesion did not exhibit any pattern of vibration in the videostroboscopy's continuing picture. After two weeks of treatment, the symptoms of hoarseness were significantly improved. They were followed up for 3 months and did not relapse again. The patients were in good health in the past, generally in good condition after onset, without discomfort symptoms such as weight loss, and denied the history of similar diseases in the family.

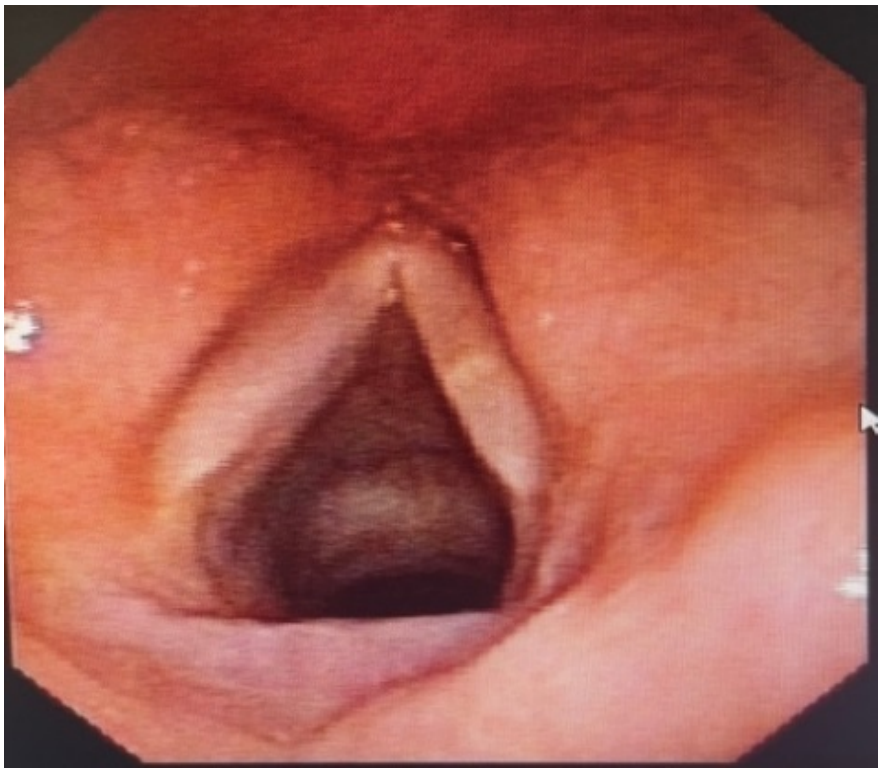

Figure 3. Nodular changes in fat-yellow banded lesions and local mucosal bulges can be seen in the front 1/3 of the right vocal cords.

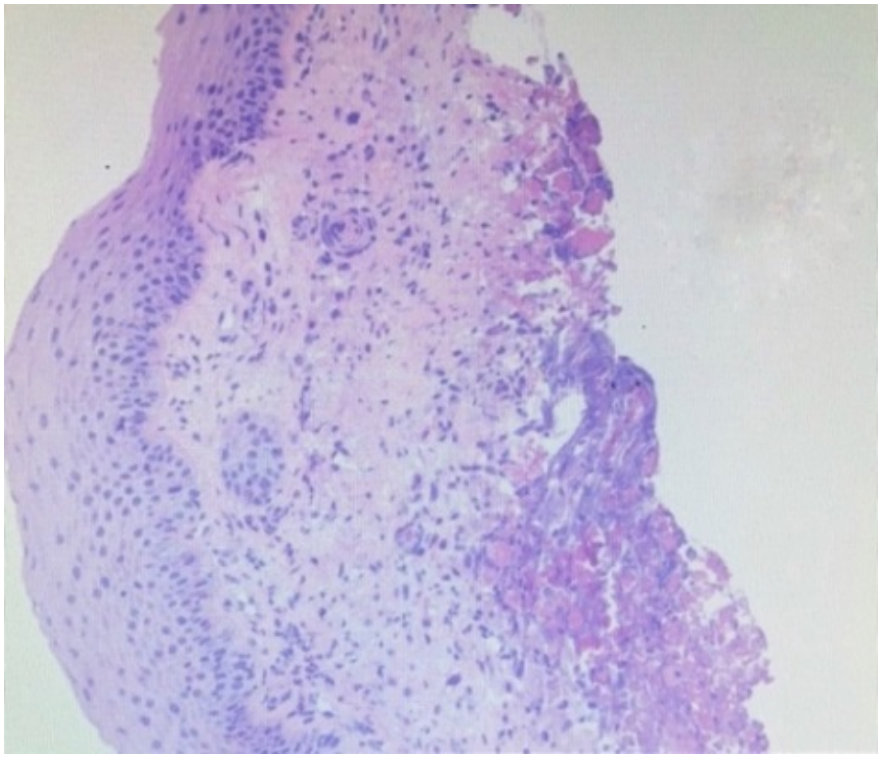

Figure 4. Submucosal lymphocytes and neutrophil infiltration, with a little necrosis and eosinophil deposition.

4. Discussion

Many instances of bamboo nodes have been linked to systemic lupus erythematous (SLE) [2,3,4], although similar lesions have also been observed in individuals with rheumatoid arthritis, Sjogren's disease, Hashimoto's thyroiditis, and progressive systemic sclerosis [1]. Bamboo nodes is not a disease of voice fold itself, but rather a manifestation of underlying autoimmune diseases [5]. Bamboo nodes may sometimes appear before other symptoms arise, with a blood anomaly being the sole additional finding. The discovery of bamboo nodes does not necessarily result in multisystemic connective tissue syndrome. For years, bamboo nodes in some people seem to be the sole indication of disease [6]. Additionally, a few years of follow-up reveal a connection between autoimmune activity and bamboo nodes [7,8]. It has long been recognized that autoimmune illnesses may cause laryngeal symptoms. They may include vocal fold lesions such vocal fold rheumatoid nodules, mucous inflammation, subglottic stenosis, viscus litis, laryngeal edema, paralysis, and infection [4]. Bamboo nodes in the larynx are not often identified as an indication of an autoimmune illness. When an otolaryngologist examines them, he or she must search for any signs of an autoimmune condition that may be the cause. Similar to this, an internist should refer a patient with a speech problem who has an autoimmune illness to an otolaryngologist so they may check for bamboo nodes.

The origin of illnesses has also been the subject of other theories. According to Ramos et al., bamboo nodes may be the outcome of a local inflammatory response and are associated with autoimmune diseases [9]. Hosako-Naito et al. hypothesized that the vocal fold's mucosal wave would result in mechanical damage that might result in bamboo nodes [10]. Li et al. proposed a hypothesis that took into account both mechanical micro-trauma and a local immunological response [11]. Until now, bamboo nodes have only been reported in women. They were usually found in professional speakers. Patients with an autoimmune disease or those who suffer from dysphonia should also be checked for these nodes [12].

Although it is unclear why bamboo nodes are exclusively seen in females, it is probably because women's vocal folds tend to be smaller and vibrate at higher frequencies than men's, which leads to a greater prevalence of nodules on the vocal folds in females [13]. This emphasizes the importance of having bamboo nodes checked for autoimmune diseases in middle-aged women. Likewise, for patients with bamboo nodes, a comprehensive check-up should be carried out to identify an asymptomatic autoimmune disease [14].

Submucosal edema, lymphocyte, and neutrophil infiltration, as well as fibrinoid necrosis all contribute to bamboo nodes on the vocal folds [2,3,7,10,13]. The patient's vocal folds' bamboo node immunofluorescence analysis revealed the presence of IgM, C1q, as well as IgA in the submucosal area. These findings demonstrate that immune complexes adversely adhere to the submucosa of bamboo nodes. It is in line with the pathological exam results of the patient, which showed submucosal lymphocytes, neutrophil infiltration, and a little amount of eosinophil deposition, as detailed in this paper.

When it comes to treating bamboo node illness, Murano confirms that bamboo nodes are a sign that the autoimmune disease is active [7]. Therefore, in a clinical situation, he holds the opinion that systemic steroids need to be tried initially. Oral steroids are used as the first therapy for the autoimmune illness and the laryngeal lesions. Hosako-Naito suggested totally eradicating the lesion to prevent it from recurrence [2]. According to Perouse, 19 patients were successfully treated with surgery [10]. According to the research, speech therapy may help patients avoid developing harmful vocal habits and minimize vocal microtrauma better than surgery or steroid treatments. Steroid therapy was used to treat the two instances discussed in this paper, and the patients' symptoms had an improvement. And it is not ruled out that the use of surgical resection of bamboo nodes can be performed in patients with resistant to systemic or local therapy [15].

5. Conclusion

Bamboo nodes are rare, vocal cord bamboo knot disease can change the laryngeal characteristics of patients with immune diseases. The main pathological changes are submucosal lymphocyte and neutrophil infiltration. In the event that a patient has bamboo nodes on their vocal folds, they should schedule an appointment with their physician or have their immune system examined. Oral hormone conservative treatment can improve the symptoms, but the pathological changes are progressive, which can progress from unilateral to bilateral, and the symptoms are aggravated. As of today, there is no gold standard for therapies, nor is there a documented method of therapy that is widely accepted.

Patient consent

Written informed consent was obtained from the patient by the corresponding author. The signed consent forms were retained by the corresponding author. We anonymized the patient's details as much as possible.

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None.

Conflict of interest

None.

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