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Case report

Isolated vocal cord aspergillosis in a professional flute player – A case report

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ABSTRACT

Introduction: Isolated vocal cord aspergillosis is an extremely rare clinical entity, especially in immunocompetent persons. It is usually seen as part of the systemic infections involving bronchopulmonary region in an immunocompromised patient. Differential diagnosis is important in this condition as clinical features are often simulating to the laryngeal malignancy or premalignant conditions.

Aim: Early identification and treatment of this rare isolated fungal lesion in the vocal cords prevent spread to other parts of the larynx and outside of the larynx.

Case report: In this case, a 35-year-old male flute player presented with primary aspergillosis of the vocal cords without affecting other parts of the airway. With the help of histopathological and microbial culture report, it was diagnosed and treated early.

Results and discussion: Video laryngoscope confirmed pale, whitish, irregular and thickened lesions involving the bilateral vocal cords, whereas histopathological examination showed colonization by both spores and broad septate hyphae without any evidence of malignant cells. Potassium hydroxide (KOH) staining and culture in Sabouraud Dextrose Agar (SDA) revealed fungal growth with bluish green velvety and powdery surface confirmed the fungal growth of *Aspergillus fumigatus*.

Conclusions: An isolated fungal infection of the larynx is a rare clinical entity and often simulates a premalignant condition or squamous cell carcinoma. Early identification and treatment of this isolated fungal lesion in the vocal cords are important to prevent spread to other parts of the larynx and outside of the larynx.

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1. Introduction

Fungal infection of the larynx is not reported widely and rarely recognized with clinical manifestations. Isolated vocal cord aspergillosis is extremely rare, especially in immunocompetent persons. Aspergillosis is an opportunistic fungal infection in immunocompromised patient. It can occur in diabetes mellitus, AIDS, hematological malignancies, secondary to radiation and drug induced situation like prolonged antibiotics, steroids and chemotherapeutic agents.[1] Besides affecting the birds, insects and plants, it is also pathogenic to human beings. *Aspergillus fumigatus* and *A. niger* are common species infecting to the human being. The larynx is only affected in advanced stages of bronchopulmonary aspergillosis. Isolated involvement of larynx with *Aspergillus* is an extremely rare one. It has the potential for simulating to premalignant or malignant lesions of the larynx. So the management will become incorrect and delay in diagnosis with unnecessary surgical intervention.[2] It can affect any part of the body but most commonly the respiratory tract, as *Aspergillus* spores are able to enter the respiratory tract with inhaled air. Common head and neck areas involved by aspergillosis are nasal, paranasal sinus and external auditory canal.[3] Isolated involvement of larynx is very rare clinical presentation. Here, we are reporting a case of healthy individual presenting with isolated vocal cord aspergillosis in a professional flute player.

2. Aim

Early identification and treatment of this rare isolated fungal lesion in the vocal cords prevent spread to other parts of the larynx and outside of the larynx.

3. Case study

A 35-year-old male presented with hoarseness of voice at the Outpatient Department of Otorhinolaryngology since two months. He had no complaints of dyspnea or dysphagia. He had no habit of smoking. The patient was not taking steroids and showed no evidence of immune deficiency. He was a flute player by profession. Indirect laryngoscopy showed pale, whitish, irregular and thickened lesions involving the bilateral vocal cords and it was confirmed by video laryngoscope (Fig. 1). The bilateral vocal cords were fully mobile, whereas other parts of the larynx were within normal limits. X-ray chest, routine blood and urine examinations did not reveal any abnormality. A clinical suspicion of glottic carcinoma was made and the patient was subjected to punch biopsy from the lesion by micro-laryngeal procedure under general anesthesia. The tissue was sent for histopathological examination which showed colonization by both spores and broad septate hyphae, most of them showing acute angle branching without any evidence of malignant cells (Fig. 2). Potassium hydroxide (KOH) staining of the samples from the lesion revealed dichotomously branching, hyaline septate fungal hyphae. The culture in Sabouraud Dextrose Agar (SDA) for four days revealed fungal growth with bluish green velvety and powdery surface

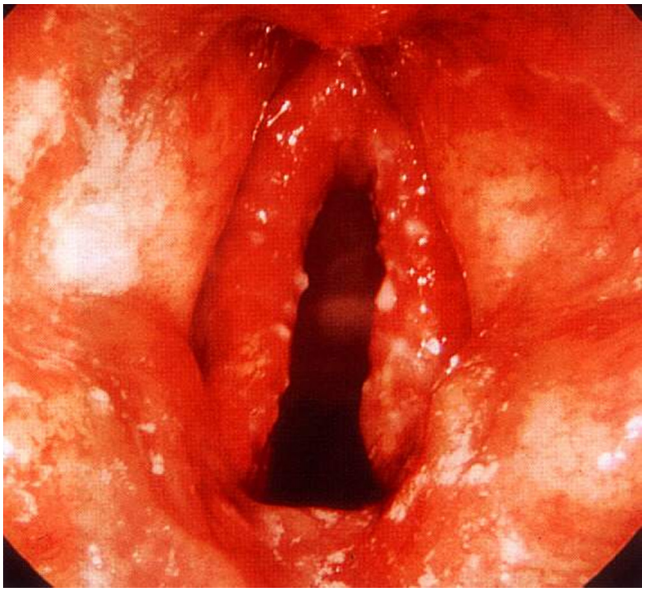

Fig. 1 – Videolaryngoscopic picture showing the larynx.

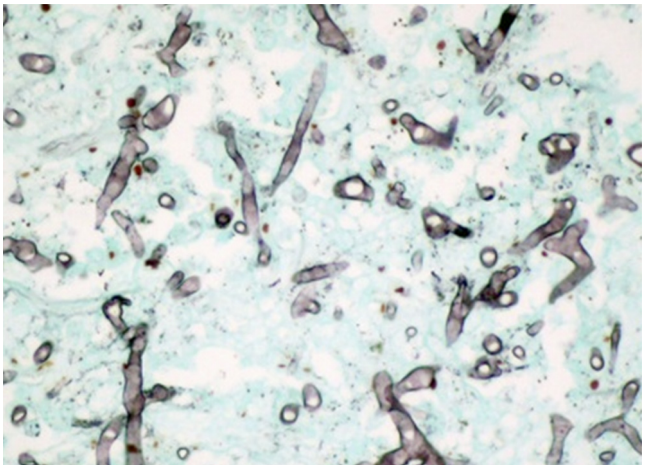

Fig. 2 – Photomicrograph showing septate fungal hyphae (HE, magnification 400×).

confirmed the fungal growth of *A. fumigatus* (Fig. 3). The patient was treated with antifungal drug like itraconazole 100 mg orally twice a day for three weeks. As he was playing very old flute since long time, it may be a risk factor for transmitting the infection to the airway. He was instructed not to play the old flute for few months and later on advised to change to a new one. The patient improved symptomatically and fiberoptic nasopharyngolaryngoscopy revealed disappearance of the lesions in the vocal cords. At follow-up, six months later, he was completely asymptomatic.

4. Results and discussion

Aspergillosis is a fungal infection caused by one of the species of the genus *Aspergillus* (*A. fumigatus*, *A. niger* and *A. flavus*) and of the family *Aspergillacea*. Most commonly *A. fumigatus* and

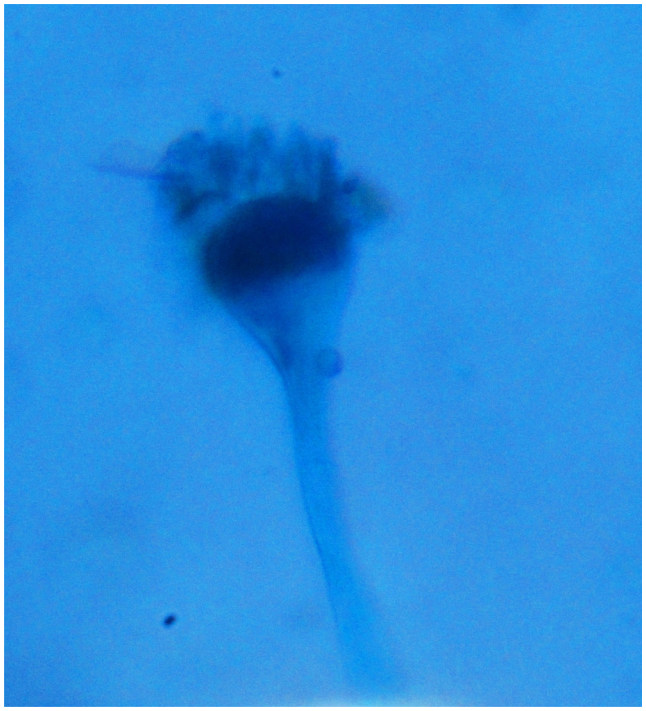

Fig. 3 – Microscopic image of *A. fumigatus* from 72-hours-old SDA cultured plate (magnification 100×).

A. niger are pathogenic to human beings. Isolated fungal infection of the larynx is a rare clinical entity and often simulates a premalignant condition or squamous cell carcinoma.[4] Old age, diabetes, prolonged steroid therapy, chronic obstructive pulmonary disease, decreased CD4 lymphocytes, leukemia, lymphoma, HIV infections and other causes leading to immunocompromised conditions are risk factors for causing aspergillosis.[5]

Aspergillus is a ubiquitous, saprophytic soil-dwelling organism. Due to its thermophilic nature, it has a tendency to cause several clinical manifestations by involving different parts of the body. Aspergillosis is classified into two groups: superficial and deep according to the depth of invasion. The superficial variety involves the mucosal lining whereas deeper one involves the deeper tissue and may spread to other parts by blood dissemination. Although *Aspergillus* lacks virulence traits, it may cause a wide spectrum of clinical manifestations in humans from localized to invasive infections with significant morbidity.

Isolated *Aspergillus* localization to the vocal cords is an extremely rare clinical condition. The fungus provokes a reactive epithelial hyperplasia or keratosis of the squamous epithelium of the vocal cords that often mimics premalignant conditions like leukoplakia and also glottic carcinoma. Presentation with voice change is characteristic for isolated vocal cord aspergillosis. The rarity of the aspergillosis on the larynx emphasizes the normal resistance of larynx to colonization of aspergillosis, despite the presence of spore in outside environment. Many factors disrupt the normal mucosal integrity of the larynx. An intact mucosal barrier is an essential protective component to the larynx. Vocal abuse results in disruption of the vocal cord mucosa are considered as potential aggravating factors.[6] Other factors altering the laryngeal mucosal barriers are previous radiotherapy, inhaled corticosteroids and gastro-esophageal reflux disorders.

Commonest fungi causing laryngitis is *Candida*.[7] Other fungal infections causing laryngitis are aspergillosis, cryptococcal, blastomycosis and histoplasmosis. All fungal infections of the larynx are secondary to pulmonary or oropharyngeal infections. When the larynx is affected with aspergillosis, patients may present with hoarseness of voice, dysphagia and occasionally airway obstruction. In our case, the patient presented with change in voice without any respiratory obstruction or dysphagia. Video laryngoscopy picture showed edema, erythema, hyperkeratosis, shallow ulcerations and gray or white pseudomembrane formation. The lesions of the vocal cords may mimic malignancy or premalignant conditions. The diagnosis is done by the demonstration of fungal spores, hyphae or pseudohyphae either by KOH stain and culture or tissue biopsy. The hyphae of *Aspergillus* appeared basophilic with hematoxylin and eosin stain. However, periodic Gomori methenamin silver stain, reticular silver impregnation method, periodic acid–Schiff and hematoxylin stain give a better morphological appearance of the hyphae. *Aspergillus* is described as uniform calibra mycelium on the section, septate hyphae and sometimes folds with dichotomous branching. The role of biopsy is controversial but it is justified if there is doubt for malignancy or there is incomplete response to adequate therapy.

Early diagnosis is always crucial for preventing dissemination of the fungal infections. Isolated laryngeal aspergillosis is invariable responding to antifungal therapy with elimination of risk factors. Treating with antifungal agents is helpful in patients with normal immune system whereas it is uncertain in immunocompromised patients. Antifungal agent like Amphotericin B is first line drug for this fungal infection; even it is associated with severe toxicity. Liposomal amphotericin B is more effective and with less toxicity. The antifungal agent like itraconazole is promising nowadays.[5]

In our case, the patient underwent microlaryngoscopy and biopsy. The fungal lesions from both vocal cords were excised and the antifungal drug like itraconazole was started orally with twice daily for three weeks and showed significant improvement with complete resolution of fungal involvement of vocal cords. Misdiagnosis of this clinical condition and inadequate treatment can cause impaired function of vocal cords and lead to permanent disability. Our case demonstrates fungal lesion in a healthy individual with flute player occupation and the importance of it considering as a diagnosis before any invasive procedure. Prolonged use of flute would be a risk factor for laryngeal infections with *Aspergillus* and in our case, it was advised for not playing the old flute.

5. Conclusions

Isolated vocal cord aspergillosis in an immunocompetent person is extremely rare, particularly in a flute player. The etiological factor behind this disease may be due to occupation and is due to long standing playing with old flute which may be source and factors for spreading this fungal disease. Awareness of isolated vocal cord aspergillosis is essential as the management depends on accurate diagnosis and identification of risk

factors. Early identification and treatment of this fungal lesion in the vocal cords are important to prevent spread to other parts of the larynx and outside of the larynx. There is invariably a predisposing factor among this type of patients. Dramatic improvement occurs following oral antifungal therapy along with correction of risk factors.

Conflict of interest

None declared.

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