Primary Aspergillosis of the Larynx: A Case Report

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Abstract Aspergillosis of larynx is very rare. Only a few cases have been reported in medical literature. Larynx is generally involved secondarily by aspergillosis. Only rarely the larynx happens to be the primary site of involvement. The lesions may be confined to the vocal folds or may involve various other sites of the larynx. There is, invariably, certain risk factors which may predispose for fungal infection like immune deficiency condition, use of inhaled or systemic steroids, long and continuous use of antibiotics etc. These lesions may mimic malignancy or a premalignant condition. Awareness of this entity is essential as the management depends on accurate diagnosis. These lesions invariably respond well to anti-fungal therapy with elimination of risk factors. Here we have reported a case of primary aspergillosis of the larynx without involvement of other part of the airway and without any generalized immune deficit in a 35 year old woman.

Keywords Aspergillosis · Larynx

Introduction

Cases of aspergillosis of the larynx are very rare. Like other cases of mycosis, larynx is generally involved secondarily by aspergillosis. In fact the larynx is only involved in advanced stages of broncho-pulmonary aspergillosis. In a few extremely rare cases, however, the larynx happens to be the primary site of lesion [1, 2]. It is an opportunistic

fungal infection affecting immunocompromised patients. Immunosuppression may be congenital or acquired. It may occur in AIDS, malignancy (specially hematological malignancies), diabetes mellitus and may be drug induced (e.g. antibiotics, steroids, chemotherapeutic agents) or secondary to radiation therapy [3]. In immunocompromised patient, aspergillus infection is usually necrotizing, invasive, and associated with poor prognosis. In noncompromised patients laryngeal aspergillosis may represent colonization rather than invasion requiring no systemic anti-fungal treatment. The diagnosis of aspergillosis is important as the presenting symptoms are suspicious of malignant laryngeal disease [4].

When the larynx is involved, patients complain of hoarseness, dysphagia and sometimes symptoms of airway obstruction. Depending on the degree of respiratory obstruction, stridor may or may not be present, but hoarseness and loss of intensity of voice are almost universal findings [2]. This is a report of the clinical manifestations, diagnosis and management of a patient with primary *Aspergillus fumigatus* infection of the vocal cords.

Case Report

A 35 year old female, housewife complaining of hoarseness of voice and cough for 1 month duration attended the ENT OPD of Gauhati Medical College and Hospital on 12.08.09. (Fig. 1) without dyspnoea or dysphagia. No other significant point could be elicited in the history. Indirect laryngoscopy revealed pale, whitish, irregular and thickened lesion involving the anterior 1/3 of both vocal cords. The cords were fully mobile. The remainder of the otolaryngological examination was within normal limits. Radiological examination of chest did not reveal any

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abnormality. Routine blood and urine tests were also normal. A clinical diagnosis of keratosis of the larynx was made and the patient was subjected to videolaryngoscopy. In videolaryngoscopy lesion is found to involve the medial margin and upper surface of both the vocal cords. The anterior and posterior commissures and the subglottic area were free of any pathology (Fig. 2).

Punch biopsy was taken from the lesion by direct laryngoscopy and the specimen was sent for histopathological and microbiological examination. The histopathological examination revealed colonization by both spores and broad septate hyphae, majority exhibiting acute angle branching. KOH preparation revealed dichotomously branching, hyaline, septate fungal hyphae (Fig. 3) and 4 days culture in SD Agar revealed fungal growth with bluish green velvety and powdery surface confirming it to be *A. fumigatus*.

The patient was subsequently treated with Itraconazole 100 mg per orally once daily dose for 3 weeks with marked improvement of the symptoms. The patient was again subjected to videolaryngoscopy which revealed complete disappearance of the lesion (Fig. 4). The patient is on follow up for last 3 months without any evidence of recurrence.

Discussion

Aspergillosis is an inflammatory disease caused by infection with one of the species of fungi of the genus *Aspergillus* (*A. fumigatus*, *A. niger* and *A. flavus*) and of the family Aspergillaceae. Michele, in 1729, described aspergillosis and named it because of its resemblance to “rougher head.” Since then many mycologist have identified nearly 400 species of the family. It is world wide in distribution and is commonly found on decaying debris and soil. Aspergillosis besides affecting plants, insects and

Fig. 1 Photograph of the patient

Fig. 2 Videolaryngoscopic picture (before treatment)

Fig. 3 Conidiophores and conidia (KOH stain)

Fig. 4 Videolaryngoscopic picture (after treatment)

birds is also pathogenic to human beings. *A. fumigatus* and *A. niger* are the commonest species pathogenic for human. The primary involvement of the larynx by aspergilla is rare. The common fungal infections of the larynx are

actinomycosis, blastomycosis, histoplasmosis, candidiasis, leptoehrdocosis and rhinosporidiosis [5, 6]. Fungal infections are more commonly seen in tropical areas because of high humidity and sunlight. The debilitating diseases like malignancy, diabetes and other conditions giving rise to low body resistance are important factors conducive to growth of the fungal infections. Patients receiving cytotoxic drugs, steroids, broad spectrum antibiotics and radiotherapy are also prone to develop fungal infections. In the case described here, however, none of these factors were present.

Aspergillosis is subdivided into superficial and deep. The former involves the mucosal lining, whereas the later involves the deeper tissues and may spread by blood dissemination to involve the lungs, liver, heart, brain, kidneys, spleen, gastro-intestinal tract and lymph nodes. Histopathologically, aspergillosis can be divided as necrotizing, suppurative and granulomatous or pseudo-membranous varieties.

Aspergillosis is perhaps most frequently encountered as a saprophytic growth in the external auditory canal. It is also the most common fungal infection of the paranasal sinuses [7]. The laryngeal localization of the aspergillosis is extremely rare and is almost always secondary to severe and invasive aspergillosis of the tracheobronchial tree. Surprisingly none of the 98 patients with systemic aspergillosis studied by Young et al. [8] had had laryngeal involvement. The hyphae of aspergillus look basophilic with haematoxylin and eosin stain. However, periodic Gommon methenamin silver stain, Reticular silver impregnation method, PAS and haematoxylin stain, give a better morphological appearance of the hyphae. Aspergillus is recognized by circular, uniform calibra mycelium on section, septate hyphae and occasional folds with dichotomous branching [9].

Management of aspergillosis infection remains problematic. Removal of the vocal cord lesions during biopsy may also facilitate the relief of symptoms in these patients. Early diagnosis is crucial to prevent further dissemination of disease. Antifungal agents may be helpful in treating

patients with normal immune system, but their value in treating immunocompromised patients is uncertain. Amphotericin B is still considered as a first-line agent for this infection, although it is associated with severe systemic side effects [10]. Aerosolised and liposomal amphotericin B offer hope of higher and more effective dosing with less toxicity. The new antifungal agent itraconazole is also promising [11]. The liquid formulation of itraconazole may produce more reliable and constant levels. Interaction with rifampicin, phenytoin, cyclosporine and other drugs may be a problem with itraconazole. In our case itraconazole is found to be effective antifungal agent with encouraging results.

References

1. Rao PB (1969) Aspergillosis of larynx. J Laryngol Otol 83: 377–379
2. Ferlito A (1974) Primary aspergillosis of the larynx. J Laryngol Otol 88:1257–1263
3. Florent M, Ajchenbaum-Cymbalista F, Amy C, Rio B, Molina T, Audouin J, Marie JP, Bouvet A, Cornet M (2001) Dysphonia and dysphagia as primary manifestations of invasive aspergillosis. Eur J Clin Microbiol Infect Dis 20:441–442
4. Kheir SM, Flint A, Moss JA (1983) Primary aspergillosis of the larynx simulating carcinoma. Hum Pathol 14(2):184–186
5. Friedmann I (1973) Otolaryngology by Paparella, M. and Schumrick, D.A., Philadelphia W.B. Saunders Co., p 616
6. Jackson C, Jackson CL (1955) Diseases and injuries of larynx, 2nd edn, 1942, New York, Macmillan Co. availed from Sir S^T Clair Thomson Diseases of the Nose and Throat, 6th edn, p 567
7. Savetskey L, Waltner J (1961) Arch Otolaryngol 74:995
8. Young RC, Benett JE, Vogel CL, Carbone PP, DeVita VT (1970) Aspergillosis. The spectrum of the disease in 98 patients. Medicine 49:147–173
9. Sood VP, Daharwal A, Bahadur S (1983) Primary aspergillosis of the larynx. Indian J Otolaryngol Head Neck Surg 35:41
10. Benson-Mitchell R, Croft CB, Gallimore A (1994) Aspergillosis of the larynx. J Laryngol Otol 108:883–885
11. Ran Y, Yang B, Liu S, Dai Y, Pang Z, Fan J, Bai H, Liu S (2008) Primary vocal cord aspergillosis caused by *Aspergillus fumigatus* and molecular identification of the isolate. Med Mycol 46: 475–479