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Primary laryngeal aspergillosis related to oral sex? A case report and review of the literature

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ABSTRACT

Primary laryngeal aspergillosis is an extremely rare opportunistic infection, especially in an immunocompetent host. Here we report a case of a 23-year-old female with a history of oral sex, which may be a suspected predisposing factor in this immunocompetent patient.

1. Introduction

Primary laryngeal aspergillosis is extremely rare, especially in immunocompetent patients. Up to now, we have known little about the developmental pathogenesis of this rare infection. The patient in our case was diagnosed with primary laryngeal aspergillosis. It suggests that the occurrence of the disease may have some correlation with oral sex. In review of the literature, we found that the age distribution and gender proportion of patients with laryngeal aspergillosis have changed dramatically, which may also support our unique viewpoint. However, more data are needed and more attention to oral sexual history should be paid to this rare but "rapidly increasing" disease.

2. Case

A 23-year-old female undergraduate student who had been experiencing hoarseness in the throat for 15 days was presented to our clinic. Initially, she began to experience hoarseness, severe paroxysmal cough and tachypnea without clear causes. She received laryngoscopy in a local hospital, white plaques were found on her vocal cords and laryngeal ventricle. After 10 days of hospital admission and treatment with anti-inflammatory medications, her cough and tachypnea disappeared. However, the hoarseness became worse than before. We carefully interviewed the patient, she was healthy in the past and denied any history of asthma and long-term use of antibiotics or corticosteroids. However, she revealed a history of oral sex (fellatio), the latest occurrence being 1 week before she became ill. A laryngoscopy was performed again and revealed obvious white plaques on the swollen vocal cords and laryngeal ventricle (Fig. 1a). Samples were taken from the vocal cords. Numerous hyphae branching at 45° angles were detected by microscopy, scanning electron microscopy (Fig. 1c) and pathology (Fig. 1d). A velvety and powdery colony was developed on Sabouraud Dextrose Agar (SDA) at 28 °C. Microscopic examination of a slide culture (Fig. 1e) was consistent with the features of *Aspergillus fumigatus*. DNA sequencing was also carried out to confirm the identification as previously described [1]. Genomic DNA was extracted using a DNA kit (Omega bio-tek, USA) and amplification of the intergenic transcribed spacer (ITS) regions flanking the 5.8S region of the rDNA was performed by PCR, employing the ITS-1 (5'–TCC GTA GGT GAA CCT GCG G) and ITS-4 (5'–TCC TCC GCT TAT TGA TAT GC) primers provided by Shanghai Invitrogen Biotech. The samples were subsequently sent to Invitrogen Life Technologies for DNA purification and bidirectional sequencing. The sequences were aligned using Clustal X software. A BLAST search in GenBank

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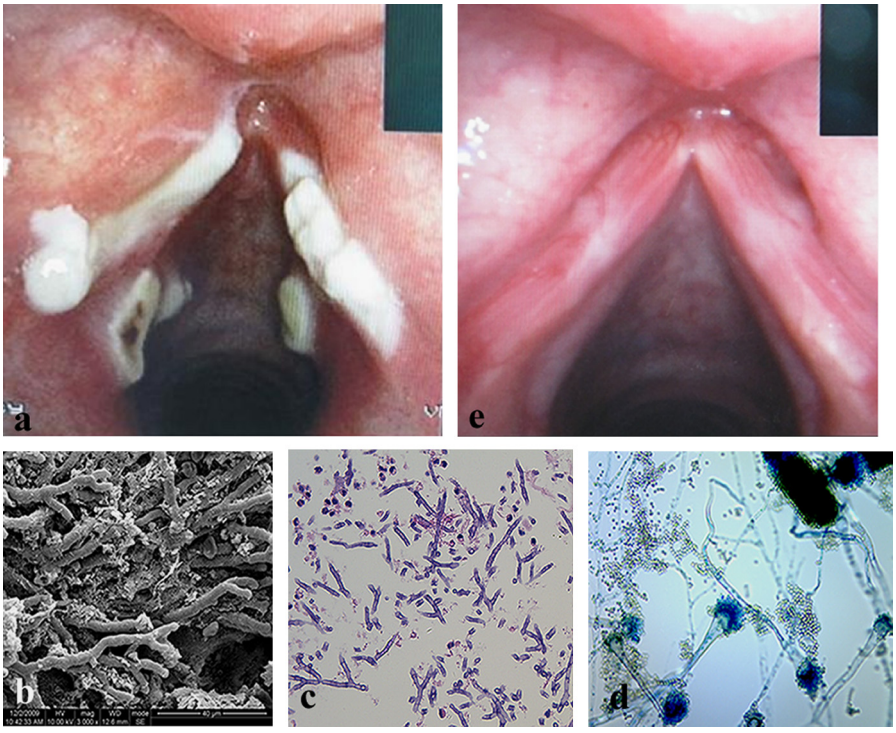

Fig. 1. (a) Image of laryngoscopy when the patient first came to our hospital in September 21, 2009 (b) Image of laryngoscopy after 30 days of antifungal treatment in October 21, 2009, (c) SEM observation of the focus tissue, (d) Histopathological examination (HE, ×400), (e) The slide culture of the isolate (methylene blue, ×400).

using the ITS sequence showed 99% homology to *A. fumigatus* (588/589). The sequence has been submitted to the gene data bank and registered under the accession number of JF958125. Moreover, routine laboratory tests showed her hepatic function, kidney function and immunity were normal, serum HIV-antibody was negative, and computerized axial tomography showed a normal image of her chest.

The patient was diagnosed as primary laryngeal aspergillosis and treated with oral itraconazole solution (Sporanox, XIAN-JANSSEN Pharmaceutical) at 200 mg (20 ml) twice a day (keep the solution in mouth for a moment, then swallow slowly) for 5 days, followed by itraconazole capsules at 200 mg twice a day for another 25 days. The patient was cured and gradually recovered her normal voice; laryngoscopy after the treatment showed the vocal cords were smooth without any white plaque (Fig. 1b). We followed up on the patient for half a year and there was no recurrence.

Table 1
Features of 17 cases of primary laryngeal aspergillosis in immunocompetent patients.

Authors and literatures	Published year	Patient's gender	Patient's age (years)
1. Rao PB [3]	1969	Male	48
2. Kheir SM [4]	1983	Male	50
3. Benson-Mitchell [5]	1994	Male	62
4. Nong [6]	1997	4 Female and 4 Male	30–40
5. Dean [7]	2001	Female	21
6. Wittkopf [8]	2006	Female	62
7. Ran [1]	2008	Female	36
8. Liu [9]	2010	2 Female	30/32
9. Ran [10]	2010	Female	30

3. Discussion

Primary laryngeal aspergillosis is extremely rare. So far as we know, since 1969 fewer than 50 cases have been reported in the English language literature. Advanced age, diabetes, long-term steroid therapy, chronic obstructive pulmonary disease, decline of CD4 lymphocyte cells, leukemia, lymphoma, HIV infection and other causes leading to immunocompromisation are generally the etiological factors [1]. Still, for immunocompetent patients, there are no noticeable events to explain the development of the rare infection. For our patient, fellatio may be a highly suspected predisposing factor. Although it may not be the direct cause as in the transmission of condyloma acuminata, HIV, herpes, and gonorrhea by oral-genital contact [2], by repeated friction, fellatio may cause local mucosal membrane barrier injury and edema, which may greatly contribute to the air suspended *Aspergillus* spores adhesion and colonization, followed by hyphae development and invasion, as the SEM shown. This patient had a relative serious symptom.

To review the related English literature, the age distribution and gender proportion of patients with laryngeal aspergillosis have changed dramatically over years (Table 1). Noticeably, the number of reported cases has increased rapidly in the past twenty years. Females among the ages of 20–40 years (who are sexually active) have a much higher incidence than males, who were the primary patients until 1997, especially in the past decade. The demographic shift from old to young and male to female, may be explained by the remarkably increased practice of oral sex [2]. However, more data are still needed, and unfortunately, many case reports lack such details. More attention to oral sexual history should be paid when this rare but "rapidly increasing" disease is diagnosed.

Conflict of interest

There are none.

Acknowledgments

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