

## PRIMARY LARYNGEAL ASPERGILLOSIS IN AN IMMUNOCOMPETENT PATIENT (case report)

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**Background.** *Aspergillus* is an inherently ubiquitous, weakly pathogenic fungus causing opportunistic infections. It is very rarely localized in the larynx, although laryngeal Aspergillosis may develop in the immunocompromised patients including those with leukaemia and severe aplastic anaemia.

**Objective.** The aim of the research was to explore the primary laryngeal Aspergillosis in an immunocompetent patient thru a case report.

**Methods.** A case report of primary laryngeal Aspergillosis in an immunocompetent patient is presented.

**Results.** A male patient of 40 years old, presenting with chronic worsening hoarseness, was found to have a smooth, white spheroid submucosal growth on left vocal cord with preserved bilateral cord movements on videostroboscopy. Histopathological examination of vocal cord growth revealed squamous epithelium containing septate hyphae with acute angle dichotomous branching pattern consistent with *Aspergillus*. Voice improved after a four-week course of oral itraconazole 200 mg/day. Post therapy follow up of 24 months was unremarkable.

**Conclusions.** Primary laryngeal Aspergillosis develops in the immunocompetent patients. Iatrogenic, vocal abuse, occupation and lifestyle factors may be contributory. Optimal diagnosis and management mandates a high index of suspicion.

KEY WORDS: **primary laryngeal aspergillosis; videostroboscopy.**

### Introduction

*Aspergillus* is an inherently ubiquitous, weakly pathogenic fungus causing opportunistic infections [1]. It is very rarely localized in the larynx [2], although laryngeal Aspergillosis may develop in the immunocompromised patients including those with leukaemia and severe aplastic anaemia [2-4]. Current healthcare is witnessing a surge in emerging fungal infections due to multiple exposure to antimicrobials, which can further antimicrobial resistance [5-11]. Invasive Aspergillosis of glottic, subglottic and epiglottis have been described following steroid and radiation therapy [12-15]. There are diagnostic challenges in resource-limited facilities due to overlapping presentation [16, 17]. We report a case of primary laryngeal Aspergillosis in an immunocompetent patient.

### Case Report

A 40-year-old male patient presenting to the otolaryngology clinic (Army College of

Medical Sciences and Base Hospital, New Delhi 110010, India) with complaints of chronic worsening hoarseness for two months. He was found to have a smooth, white spheroid submucosal growth on the anterior surface of left vocal cord with preserved bilateral cord movements on videostroboscopy. No history of vocal abuse, laryngeal trauma, sore throat, cough, dyspnea, fever or prolonged antimicrobial intake was present. There was no history of generalized immune deficiency, leukaemia, malignant disease, diabetes mellitus or use of immunosuppressive drugs and corticosteroids. No history of diabetes, tuberculosis or malignancy was present. Neither history of tobacco abuse nor history of social drinking was present. General, systemic examination and chest X-ray revealed insignificant changes. Oral cavity, oropharynx and neck were normal. HIV serology was negative. Hemoglobin was 13.5 gm/dl, total leucocytes 7800/mm<sup>3</sup> with normal differential count. Renal and liver function tests were in norm. Histopathological examination of vocal cord growth revealed squamous epithelium containing septate hyphae with acute angle

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dichotomous branching pattern consistent with *Aspergillus* (Fig. 1).

The findings were seconded by PAS (Periodic Acid-Schiff) stain, Grocott's (Grocott methenamine silver (GMS)) stain and KOH (Potassium hydroxide) mount, wherein hyaline hyphae with narrow angle branching were seen. *Aspergillus fumigatus* was isolated from the vocal cord tissue consecutively on Sabouraud's dextrose agar at 22 °C and 37 °C after incubation for 48 hours. Lactophenol cotton blue tease mount from blue-green suede like surface revealed septate hyaline hyphae with columnar smooth walled uniseriate conidiophores bearing phialides and conidia over flask shaped vesicles. Thermotolerance at 55 °C was observed. This was confirmed by amplification of Internal Transcribed Spacer (ITS) of 5.8S rDNA using ITS1 and ITS4 primers. Blood cultures were negative. Voice improved after a four-week course of oral itraconazole 200 mg/day. The patient was explained about good vocal practices and oral hygiene. Post therapy follow up for 24 months revealed no significant changes.

### Discussion

Approximately 50 cases of primary laryngeal Aspergillosis have been reported, half of them involved immunocompetent patients [18-24]. *Aspergillus* is non-pathogenic, or very weakly pathogenic, and causes opportunistic infections. Aspergillosis occurs due to deficient host's defense rather than fungal pathogenicity [21]. Isolated laryngeal Aspergillosis may follow colonization of larynx, which may be furthered, by local factors, rather than systemic immunosuppression. Further, systemic immunodeficiency may not contribute to the development of isolated laryngeal Aspergillosis. Iatrogenic factors such as radiation therapy, inhaled steroids and laser treatment may, also, be contributory [12-15]. Vocal abuse and oral sex may impair local protective barrier provided by healthy mucosal covering and allow colonization and subsequent invasive Aspergillosis [21]. Laryngeal Aspergillosis can even occur in a true vocal-fold cyst or laryngocele. Systemic factors include previous prolonged antimicrobial therapy, which is implicated in altering local flora and disturbing the ecological balance between bacteria and fungi, thus allowing the growth of *Aspergillus*. Occupation, avocation and lifestyle may be contributory to exposures in healthy patients. Farmers and carpenters may be at higher risk as *Aspergillus* is a soil saprophyte. Aspergillosis had a shift in its host range as a

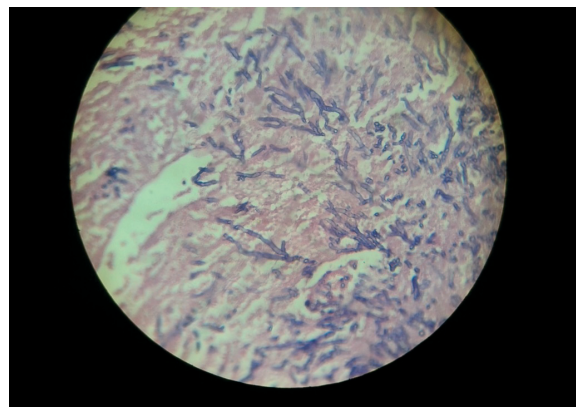


Fig. 1. Photomicrograph H&E, X400. Vocal cord growth. Squamous epithelium containing septate hyphae with acute angle dichotomous branching pattern consistent with *Aspergillus*.

higher incidence in males since the beginning of the 21<sup>st</sup> century has now turned to a higher incidence in females aged 20-40 years old [21].

Opportunistic infections mandate clinical intrepidity, diagnostic efficiency, appropriate timely therapy and prognostication for favourable results [25-31].

Primary Aspergillosis is often reported late due to prolonged low-grade infection and delayed onset of clinical features. Fungal growth in tissues may not corroborate to clinical presentation leaving scope for further complications such as invasion of adjacent tissues, abscess development and dissemination, for which radical surgery and aggressive antifungal therapy may be required. Fatal invasive Aspergillosis of larynx has also been reported [32].

### Conclusions

Primary laryngeal Aspergillosis develops in immunocompetent patients. Iatrogenic, vocal abuse, occupation and lifestyle factors may be contributory. Optimal diagnosis and management mandates high index of suspicion.

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### Conflict of Interests

The authors declare no conflict of interest.

### Author Contributions

*Rajmohan K.S.* – conceptualization, formal analysis, *Khan I.D.* – conceptualization, formal analysis, investigation, writing – original draft, review & editing, *Kapoor U.* – investigation, data curation, *Hashmi S.A.* – conceptualization, *Gupta R.M.* – writing – original draft, review & editing, *Sen S.* – writing – original draft, review and editing, *Nair G.L.* – data curation, *Singh K.K.* – data curation, *Tandel K.* – formal analysis, *Malik M.* – formal analysis.

## ПЕРВИННИЙ АСПЕРГИЛЬОЗ ГОРТАНІ У ІМУНОКОМПЕТЕНТНОГО ПАЦІЄНТА (клінічний випадок)

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**Вступ.** *Aspergillus* – один з найпоширеніших видів грибів з низькою патогенністю, котрий може спричиняти опортуністичні інфекції. Він надзвичайно рідко локалізується у гортані, однак може викликати аспергильоз гортані у осіб з ослабленою імунною системою, до прикладу при лейкемії чи апластичній анемії.

**Мета.** Дослідити особливості перебігу первинного аспергильозу гортані у імунокомпетентного пацієнта на прикладі клінічного випадку.

**Методи дослідження.** Описано та проаналізовано клінічний випадок первинного аспергильозу гортані у імунокомпетентного пацієнта.

**Результати.** 40-річний чоловік звернувся до лікаря зі скаргами на хронічну прогресуючу захриплість. При огляді виявлено гладкий, білого кольору, сфероїдної форми утвір на лівій голосовій зв'язці. Рухливість зв'язок збережена білатерально, що підтверджено на відеостробиоскопії. Гістологічне дослідження утвору голосової зв'язки виявило септований міцелій

грибів роду *Aspergillus* (плоскоклітинний епітелій з септами з гострим кутом дихотомічного розгалуження, що відповідає аспергильозу). Покращення голосу спостерігалось після чотирьох-тижневого курсу ітраконазолу, перорально в дозі 200 мг/день. При обстеженні через 24 місяці після лікування жодних відхилень не виявлено.

**Висновки.** Первинний аспергильоз гортані може розвиватися у імунокомпетентних пацієнтів. Ятрогенні чинники, перевантаження голосових зв'язок, професійні шкідливі впливи та певний спосіб та стиль життя можуть сприяти його розвитку. Необхідно бути настороженим щодо можливого розвитку таких опортуністичних інфекцій для їх успішного діагностування та лікування.

**КЛЮЧОВІ СЛОВА:** первинний аспергильоз гортані; гістологічні зміни; відеостробиоскопія.

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