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Isolated Laryngeal Mucormycosis in an Uncontrolled Diabetic Patient: A Rare Case Report

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ABSTRACT

Background: Mucormycosis is a rare but aggressive angioinvasive fungal infection predominantly affecting immunocompromised individuals, particularly those with poorly controlled diabetes mellitus. While commonly presenting in rhino-orbito-cerebral, pulmonary, and cutaneous forms, isolated laryngeal involvement is extremely uncommon and often underrecognized due to nonspecific clinical manifestations such as hoarseness. **Case Presentation:** We report a case of a 69-year-old male with uncontrolled diabetes mellitus who presented with a two-month history of progressive hoarseness. Videolaryngoscopy revealed whitish plaques on the anterior one-third of the true vocal cords with normal cord mobility. The patient was initially managed as a case of keratosis larynx and underwent microlaryngeal surgery with vocal cord stripping. However, histopathological examination of the excised tissue revealed broad, aseptate fungal hyphae with right-angled branching, consistent with mucormycosis. Imaging studies (CT neck, PNS, and chest) confirmed that the infection was localized to the larynx. Postoperatively, the patient was treated with intravenous liposomal Amphotericin B for two weeks. Follow-up endoscopy at four weeks showed complete resolution with no recurrence. **Conclusion:** Isolated laryngeal mucormycosis is a rare clinical entity that can mimic benign or premalignant laryngeal lesions. This case underscores the importance of maintaining a high index of suspicion in diabetic patients presenting with persistent hoarseness. Early diagnosis through histopathology and prompt initiation of antifungal therapy, alongside surgical management and glycemic control, are critical for optimal outcomes.

INTRODUCTION:

Mucormycosis is an invasive fungal infection caused by fungi belonging to the order Mucorales, commonly affecting immunocompromised individuals, particularly those with uncontrolled diabetes mellitus (1,2). Typical presentations include rhino-orbito-cerebral, pulmonary, gastrointestinal, cutaneous, and disseminated forms (3). Isolated laryngeal mucormycosis, however, is exceedingly rare, with very limited documentation in medical literature, making it a challenging clinical entity to diagnose and manage (4,5). The nonspecific symptoms such as chronic hoarseness may often be mistaken for benign lesions or malignancy, thereby delaying timely intervention and affecting prognosis (6). This report details a unique case of isolated laryngeal mucormycosis in an uncontrolled diabetic patient, highlighting crucial diagnostic features and treatment outcomes.

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PATIENT INFORMATION

A 69-year-old male shepherd presented with persistent hoarseness of voice for approximately two months. The patient had a history of uncontrolled diabetes mellitus and chronic voice abuse. He was a non-smoker, and there was no previous history of COVID-19 infection or other significant medical conditions. Family history, genetic predispositions, and psychosocial history were not significant.

Clinical Findings:

Videolaryngoscopy examination revealed whitish plaques involving the anterior one-third of both true vocal cords, situated along the free medial edges, as shown in Image 1. Both true and false vocal cords demonstrated normal mobility during phonation and respiration. Physical examination did not reveal any additional abnormalities.

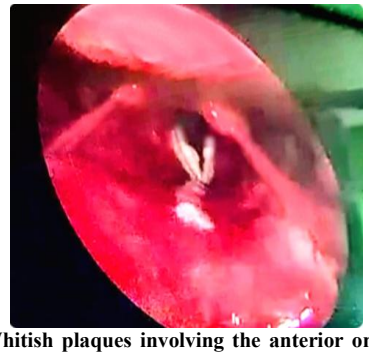

Fig 1 : Whitish plaques involving the anterior one-third of both true vocal cords, situated along the free medial edges

Timeline

- **Two months prior:** Onset of hoarseness
- **Initial consultation:** Clinical evaluation and provisional diagnosis of keratosis larynx
- **Treatment initiation:** Glycemic control optimized with insulin and oral hypoglycemic agents
- **Surgical intervention:** Microlaryngeal surgery with stripping of the vocal cords
- **Histopathological examination:** Confirmed diagnosis of mucormycosis
- **Follow-up:** Videolaryngoscopy at four weeks post-treatment showing resolution of lesions

DIAGNOSTIC ASSESSMENT:

Initially, the clinical findings suggested keratosis larynx due to chronic irritation from voice abuse. Differential diagnoses included leukoplakia, fungal laryngitis, laryngeal carcinoma, and chronic laryngitis. The histopathological evaluation, however, showed broad, aseptate fungal hyphae with characteristic right-angled branching, confirming mucormycosis (Image 2a and 2b). Imaging with CT scans of the paranasal sinuses (Image 3a, left), neck (Image 3a, right), and chest (Image 3b) were conducted to exclude systemic spread, and all scans were normal.

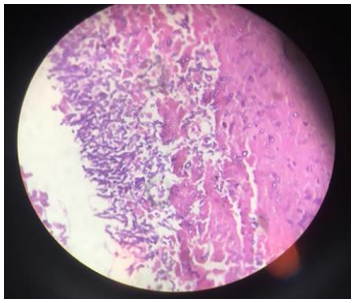

Fig 2a: Histopathological evaluation, however, showed broad, aseptate fungal hyphae with characteristic right-angled branching, confirming mucormycosis

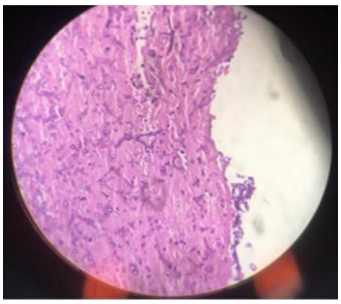

IMAGE 2b

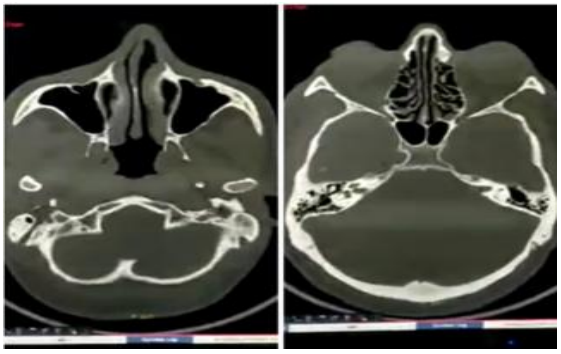

Fig 3a: CT scans of the paranasal sinuses (Image 3a), neck (Image 3a)

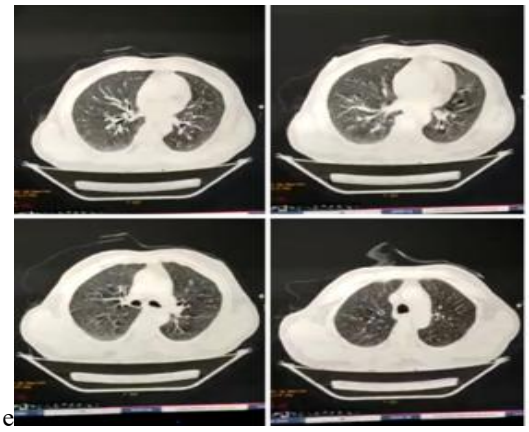

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Fig 3b: CT scans of the chest (Image 3b)

THERAPEUTIC INTERVENTION:

Initially, microlaryngeal surgery was performed based on a preliminary diagnosis of keratosis

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larynx, involving stripping of the affected mucosa of vocal cords (image 4). Following histopathological confirmation of mucormycosis, the treatment strategy was revised. The patient was administered intravenous liposomal Amphotericin B for two weeks, alongside continued strict glycemic control. Renal function and electrolytes were closely monitored throughout therapy.

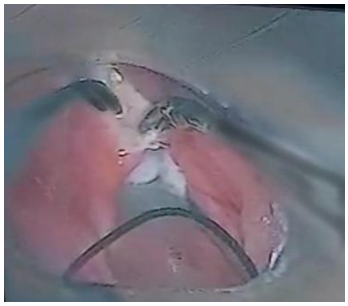

Fig 4 : Stripping of the affected mucosa of vocal cords

Follow-up and Outcomes:

The patient tolerated the antifungal therapy well, with only mild hypokalemia observed, promptly corrected with electrolyte supplementation. A follow-up videolaryngoscopy conducted four weeks post-therapy demonstrated complete resolution of the lesions, with no evidence of residual disease or recurrence (Image 5).

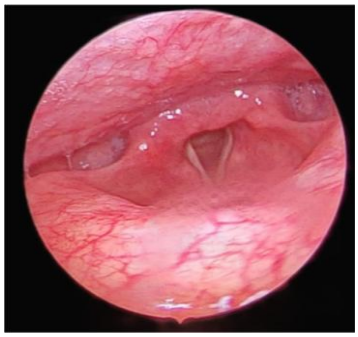

Fig 5: A follow-up videolaryngoscopy image, four weeks post-therapy demonstrated complete resolution of the lesions, with no evidence of residual disease or recurrence

Patient Perspective:

The patient reported significant improvement in voice quality and overall well-being post-treatment and expressed high satisfaction with the clinical care received.

DISCUSSION:

Mucormycosis, primarily affecting immunocompromised hosts, remains a serious health challenge due to its aggressive nature and diagnostic difficulty (7). Uncontrolled diabetes mellitus significantly increases susceptibility, as hyperglycemia facilitates fungal proliferation and impairs immune responses (1,2). The isolated involvement of the larynx in mucormycosis is extraordinarily rare, often misdiagnosed initially as benign lesions like keratosis or malignancies (4,5). Histopathological evaluation revealing characteristic broad aseptate hyphae with right-angled branching remains the gold standard for diagnosis (3). Early recognition and timely intervention are paramount to ensure favorable outcomes, emphasizing the necessity for clinicians to maintain a high index of suspicion, especially when managing diabetic patients with persistent unexplained laryngeal symptoms (6,8). Treatment involves surgical debridement of affected tissues followed by systemic antifungal therapy, with liposomal Amphotericin B as the first-line therapeutic agent (7,9). The prognosis significantly improves with prompt diagnosis, effective glycemic control, and multidisciplinary management strategies.

CONCLUSION:

Isolated laryngeal mucormycosis, though rare, should be included in the differential diagnosis of chronic hoarseness, especially in immunocompromised individuals such as diabetic patients. Early biopsy, histopathological confirmation, surgical management, and systemic antifungal therapy significantly enhance clinical outcomes, highlighting the necessity of multidisciplinary awareness and collaboration in managing this challenging fungal infection.

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