

Introduction

- Dupilumab, a monoclonal antibody targeting the IL-4 and IL-13 pathways, is commonly used to treat eosinophilic asthma, atopic dermatitis, and other allergic conditions.
- Cryptococcus neoformans, an encapsulated yeast from soil, bird droppings, and decaying wood, typically causes lung and CNS infections in immunocompromised hosts.
- Laryngeal cryptococcosis is rare and usually seen in immunosuppressed patients.
- We report a case of an immunocompetent patient on Dupilumab who developed laryngeal cryptococcosis, highlighting possible immunomodulatory effects of this therapy.

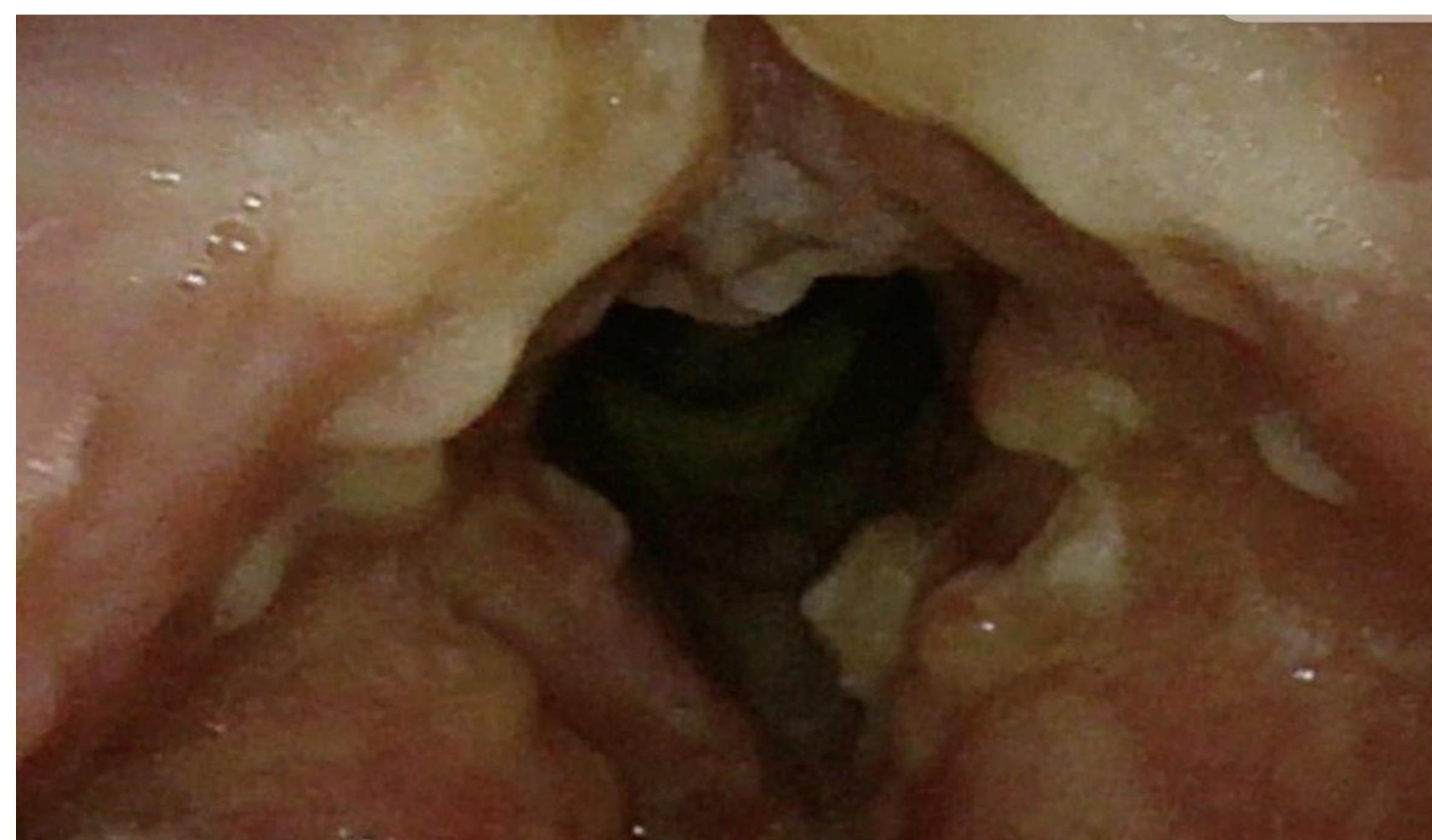


Figure 1: Flexible stroboscope demonstrating bilateral true vocal fold erythema, mucosal irregularity, and purulent debris.

Case Presentation

- A 63-year-old male was evaluated at our tertiary care center with complaints of fluctuating dysphonia, strained voice, chronic cough and throat clearing.
- Past medical history was notable for asthma for which he had been taking Dupilumab.
- He was previously seen by an outside otolaryngologist who treated him with fluconazole for candida laryngitis.
- However, symptoms persisted and outside direct micro laryngoscopy exams in the OR were not diagnostic.

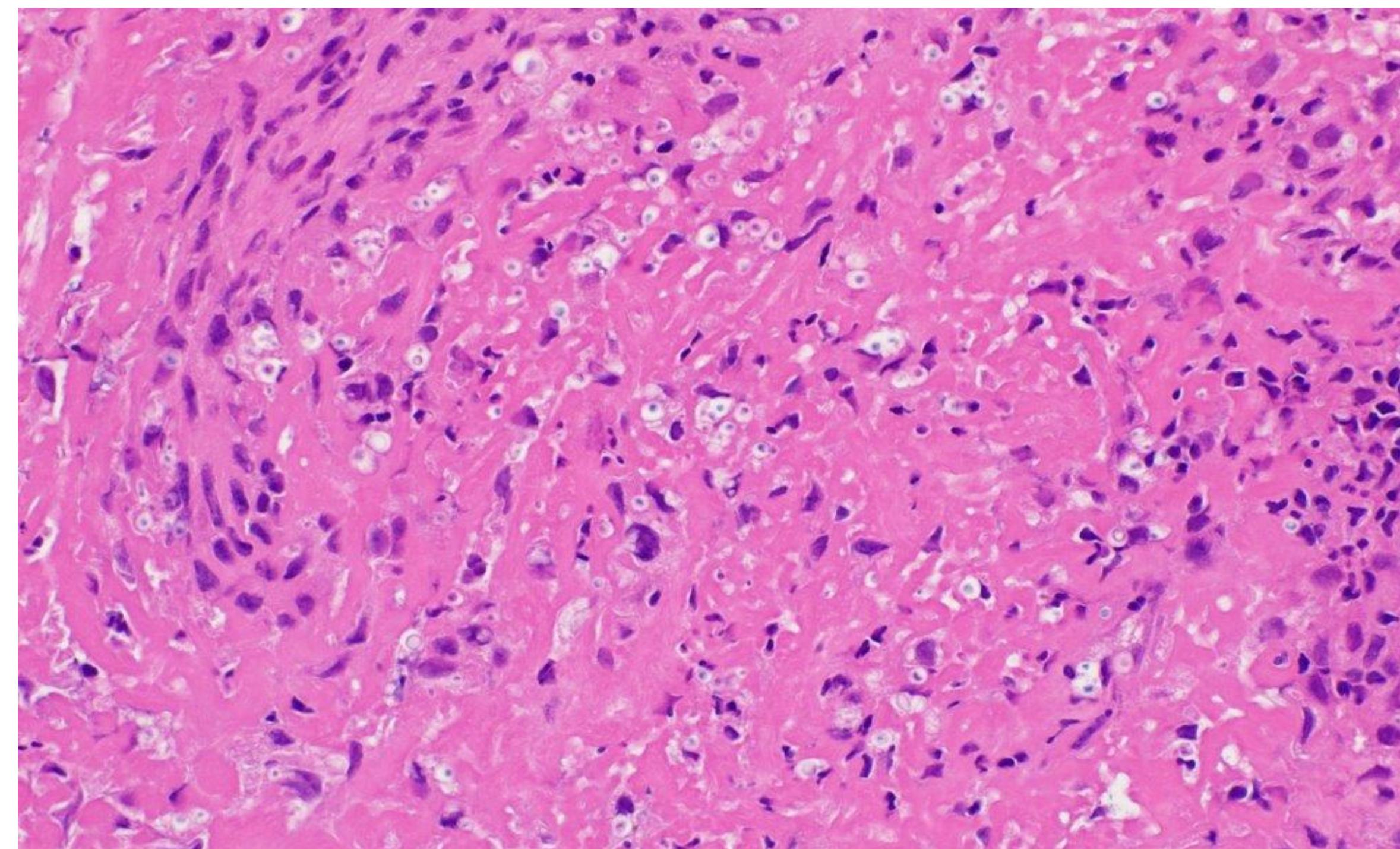


Figure 2: Dermatopathology of vocal fold biopsy showing submucosal inflammation with small encapsulated yeast organisms consistent with Cryptococcus.

Examination and Workup

- On exam he was noted to have a breathy, strained voice. Flexible stroboscope was performed which showed erythema and irregularity along with purulent debris of the bilateral true vocal folds (Figure 1). He was treated with a 14-day course of Bactrim for possible bacterial laryngitis.
- Following treatment, he noted a moderate improvement in symptoms. However, exam displayed persistence of erythema and mucosal irregularity in addition to a granulomatous left true vocal fold lesion.
- Direct micro laryngoscopy with biopsy of the lesion was done in the operating room. Biopsy was sent for dermatopathology to rule out pemphigoid disease.
- Initial pathology report displayed carcinoma in situ (CIS) versus high grade dysplasia.
- Final dermatopathology report displayed submucosal inflammation with small encapsulated yeast microorganisms (Figure 2). The microorganisms appeared to be consistent with cryptococcus on dermatopathology report.
- The patient was subsequently referred for infectious disease consultation.

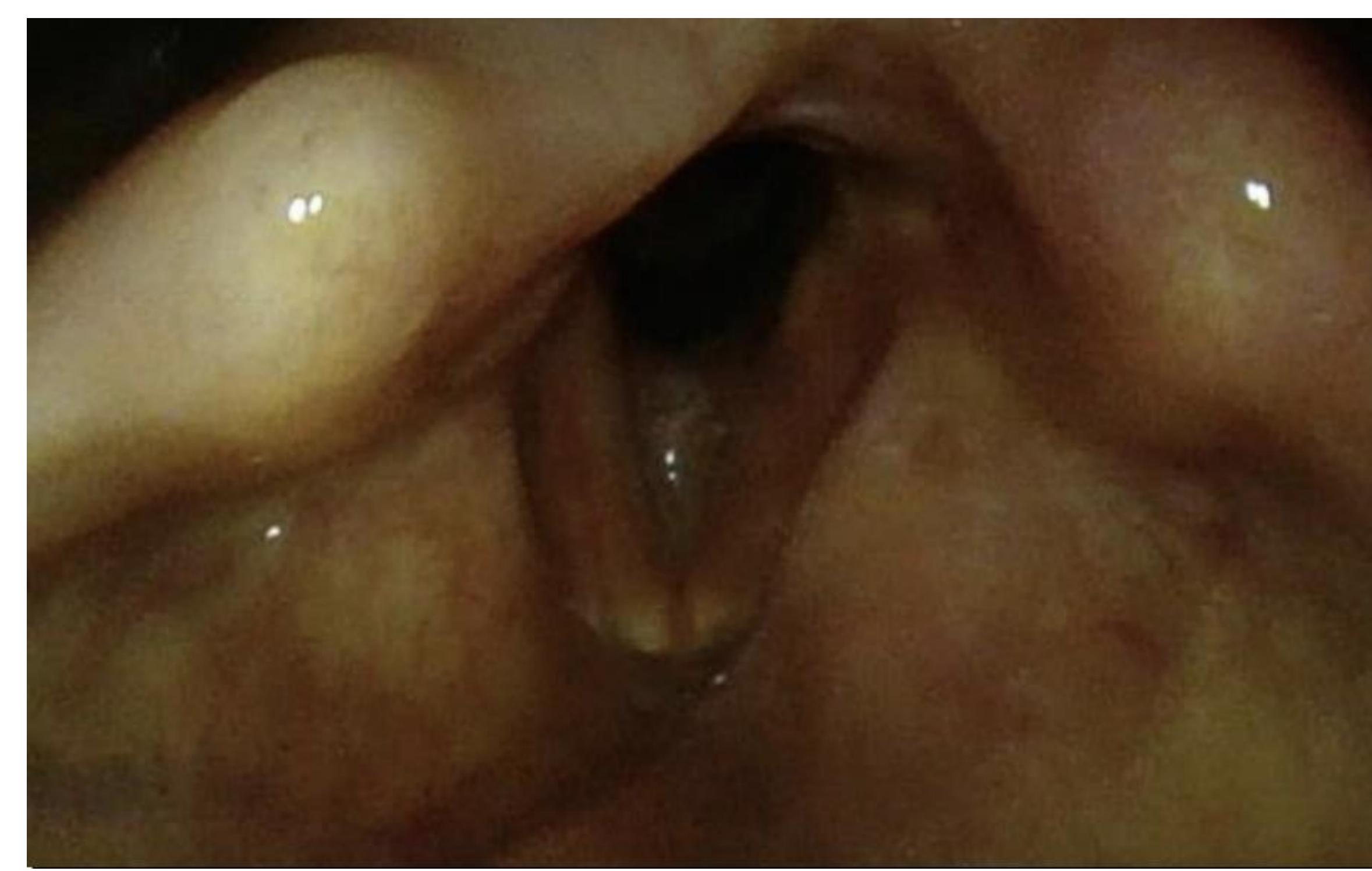


Figure 3: Flexible stroboscope exam following treatment with oral fluconazole and IV Amphotericin B.

Management and Outcome

- Our patient was admitted to the hospital and was given liposomal amphotericin B therapy.
- Lumbar puncture and CT head showed no evidence of central nervous system involvement, and he was discharged on oral fluconazole 400mg.
- A 2 month follow up demonstrated significant improvement in vocal fold appearance and healing of the granulomatous lesion. The patient's symptoms of throat rawness and cough significantly improved within weeks of starting fluconazole therapy.
- At a 4 month follow up, patient reported improvement in dysphonia and complete resolution of throat discomfort. His exam at that time displayed resolution of previous inflammation and mucosal change, with a small residual anterior glottic web (Figure 3).
- Per recommendations given by infectious disease, prophylactic fluconazole at a dose of 200mg daily was recommended for 12 months to prevent recurrent cryptococcal infection, with the potential requirement of lifelong treatment.

Discussion

- Laryngeal cryptococcosis is a rare manifestation of cryptococcal infection, more commonly seen in immunocompromised individuals such as those with HIV/AIDS.
- Dupilumab is a known immunomodulating medication that has been used to treat severe atopic dermatitis, asthma, and eosinophilic esophagitis.
- Based on previous articles, approximately 30 cases of laryngeal cryptococcosis have been described worldwide. While prior studies have reported fungal infections in patients on inhaled corticosteroids, the role of Dupilumab in fungal colonization and laryngeal cryptococcus has not been explored.
- Our case represents a unique situation in which an already rare disease presentation is coupled with a background of immunomodulation with Dupilumab.
- Furthermore, this case highlights the importance of biopsy and culture in distinguishing infectious from neoplastic laryngeal lesions.

References

- Quintero O, Trachuk P, Lerner MZ, Sarungbam J, Pirofski LA, Park SO. Risk factors of laryngeal cryptococcosis: A case report. *Med Mycol Case Rep.* 2022;37:16-19. doi:10.1016/j.mmcr.2022.04.001
- Wong DJY, Stanley P, Paddle P. Laryngeal cryptococcosis associated with inhaled corticosteroid use: Case reports and literature review. *Front Surg.* 2017;4:63. Published 2017 Nov 13. doi:10.3389/fams.2017.00063
- Morse JC, Gelbard A. Laryngeal cryptococcosis resulting in airway compromise in an immunocompetent patient: A case report. *Laryngoscope.* 2019;129(4):926-929. doi:10.1002/lary.27456