A Case of Laryngotracheal Mucormycosis

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Introduction

Mucormycosis is a fungal infection that mainly occurs in immunocompromised states including those with poorly controlled diabetes mellitus, hematological malignancies, and solid organ transplant.[1] Few cases of mucormycosis of the larynx and trachea have been reported and there is limited data on the medical and surgical management of this disease.2

We present a case of laryngotracheal mucormycosis highlighting our multi-disciplinary management of this challenging disease.

Case Presentation

A 36-year-old male with poorly controlled type 2 DM (A1c 14.4%) presented to the ED with hoarseness, voice changes, and dyspnea. CT neck with contrast is demonstrated in Fig 1. A flexible fiberoptic laryngoscopy (FFL) demonstrated right true vocal fold immobility and diffuse white plaque-like lesions throughout oropharynx and supraglottis. His WBC was elevated to 18 K/µL and glucose was 700 mg/dL.

He was admitted to the ICU for airway observation and started on Vancomycin/ Clindamycin, IV steroids, and Fluconazole for presumed laryngeal candidiasis. His diabetes was managed with sliding scale insulin (SSI). He initially had improvement of symptoms, but his increased work of breathing on led to emergent intubation.

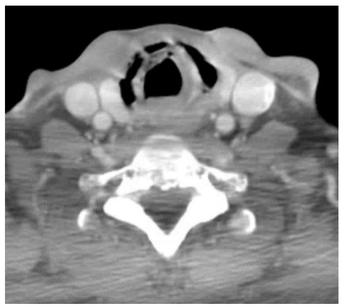


Figure 1. CT check with contrast (axial): circumferential emphysema around thyroid cartilage, possible perforation at the cricothyroid membrane, and right lung pneumonia

Case Presentation

On HD6, a direct laryngoscopy (DL) was performed which showed no obvious tracheal defect, but abnormal appearing mucosa and granulation tissue from the supraglottis extending into the subglottis. Biopsies were obtained and IV liposomal amphotericin B was initiated. The pathology was confirmed positive for invasive mucormycosis.

On HD12, the patient underwent a tracheostomy due prolonged respiratory failure. He subsequently had several more debridements and balloon dilations due to the development of subglottic stenosis on HD19, HD25, HD34, and HD43.

On HD20, given his persistent necrosis, he was started on inhaled Amphotericin B and Micafungin, in addition to an increased dose of IV Amphotericin B to 10 mg/kg daily.

The patient was ultimately discharged on HD47 on a long-term course of Posaconazole. He was readmitted six weeks later for diarrhea when he underwent a DL showing no necrosis or disease progression. The patient unfortunately died five months following initial presentation from sepsis from ESBL E. Coli bacteremia from a right lower lung lobe abscess.

Direct Laryngoscopy Images

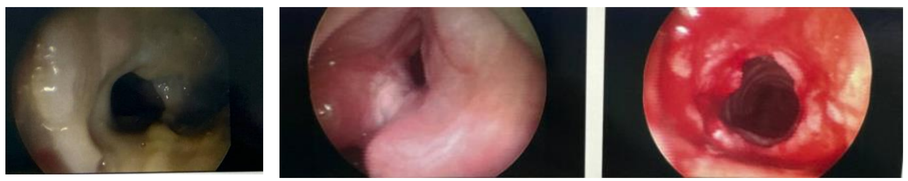


Figure 2. HD19: Necrotic cricoid cartilage and circumferential necrotic tissue in the subglottic. Stenosis was present superior to the tracheostomy site.

Figure 3 and 4: HD25: No necrotic debris in the larynx and trachea. Exposed cricoid cartilage appeared to re-mucosalize with developing subglottic stenosis, which was dilated.

Discussion

The management of mucormycosis involves three pillars: **reversal of the underlying immunosuppression, systemic antifungal therapy, and aggressive surgical debridement.**[3,4]

The angio-invasive nature of mucormycosis can cause vessel thrombosis and tissue necrosis, hindering immune cells and antifungal agents from reaching the infection making surgical debridement a necessary component of management.[5]

This patient required serial DLs with debridement approximately 6-9 days apart over a five-week period. This aggressive strategy successfully controlled the acute fungal infection, however, the destructive nature of mucormycosis resulted in long-term airway scarring and subglottic stenosis requiring persistent tracheostomy.

Conclusion

Our case highlights the critical role of multidisciplinary care for the management of laryngotracheal mucormycosis involving antifungal therapy, surgical debridement, and management of risk factors.

References

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