

A Conundrum: Pseudomembranous Necrotizing Tracheitis

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Abstract

We report a rare but potentially dangerous complication of intubation in the form of pseudomembranous necrotizing tracheitis in a 65 year old female who presented with respiratory distress, intubated and diagnosed with cardiac arrhythmia and underwent angioplasty. Post extubation she developed respiratory distress which progressed to stridor and underwent emergency tracheostomy where tube was inserted with difficulty due to presence of granulation tissue. Later computed tomography revealed an obstruction of the upper trachea due to mass, but subsequent flexible bronchoscopy showed whitish foreign body with granulation above the tracheostomy site which was reported as necrotic tissue on histopathology testing. Further, Culture sensitivity showed candida species. Subsequent mechanical debridement along with antifungal therapy resulted in successful decannulation and complete resolution of the disease and 6 weeks later showed no further tracheal stenosis.

Keywords: Candida; Fungal Tracheitis; Necrotizing Tracheitis; Pseudomembrane

Introduction

Pseudomembranous necrotizing tracheitis is one of the very rarest but fatal cause of obstruction of airway. Pseudomembrane airway disease is due to either an infectious or non-infectious process [1]. The most common infectious aetiologies include *Corynebacterium diphtheria*, *Corynebacterium pseudodiphtheriticum*, *Staphylococcus aureus*, *Bacillus cereus*, *Aspergillus* species, and *Haemophilus influenzae* [2]. Endotracheal intubation is the most common among non-infectious causes.

Despite being treated with anti-fungal medications, the common *Candida* spp. is an opportunistic fungal pathogen that

can result in deadly infections [3,4]. Patients who are severely immunocompromised, such as those with AIDS, post-chemotherapy, and cancer, frequently experience candidial infections. It is extremely uncommon and has never been documented in the literature to have pseudomembranous tracheitis brought on by a *Candida* infection [5].

A high index of suspicion is required for diagnosis of pseudomembrane tracheitis. Flexible bronchoscopy should be considered early for confirmation of the diagnosis. Early treatment with repeated mechanical debridement is required to avoid morbidity. It should be considered as differential diagnosis in sudden post extubation stridor [5,6].

Case Report

A 65 year old female, known diabetic and hypertensive presented to the casualty with complaints of sudden onset difficulty in breathing and in a state of shock. Her ECG was suggestive of atrial fibrillation. She was intubated and temporary external pacemaker was placed and later she underwent coronary angioplasty. After 72 hours, post extubation she presented with difficulty in breathing which progressed to stridor and was referred to ENT.

She underwent emergency tracheostomy in view of narrowing of trachea as was seen in X-Ray Neck lateral view. During the tracheostomy procedure, the tube was inserted with difficulty in view of granulation tissue obstructing the trachea. Further, CECT neck was done in view of suspected foreign body and showed soft tissue thickening with areas of enhancement involving right pyriform sinus extent inferiorly causing significant luminal narrowing of proximal trachea (Figure 1).

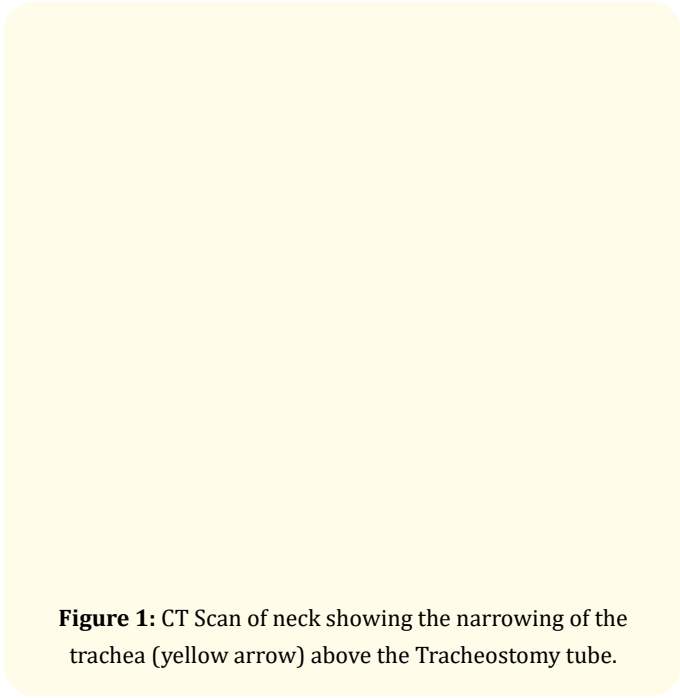


Figure 1: CT Scan of neck showing the narrowing of the trachea (yellow arrow) above the Tracheostomy tube.

Suspecting foreign body or tracheal mass, the patient was subjected to diagnostic flexible bronchoscopy which showed a whitish foreign body along with granulations at the level of 2nd and 3rd tracheal ring (Figure 2). The tissue was sent for histopathology. It was reported as necrotic tissue. On rigid bronchoscopy for removal

of foreign body, the trachea was filled with congested granulation tissue with significant bleeding on manipulation and no evidence of foreign body. Patient was started on Piperacillin tazobactam I.V TID and Inj. Doxycycline I.V BD prophylactically. Further culture and sensitivity sent after bronchoscopy was reported as Candida Species. Repeat Flexible bronchoscopy done after 72 hours showed necrotic debris at the level above the tracheostomy tube and whitish patches seen along the trachea extending up to primary bronchi after removing the tracheostomy tube (Figure 3).

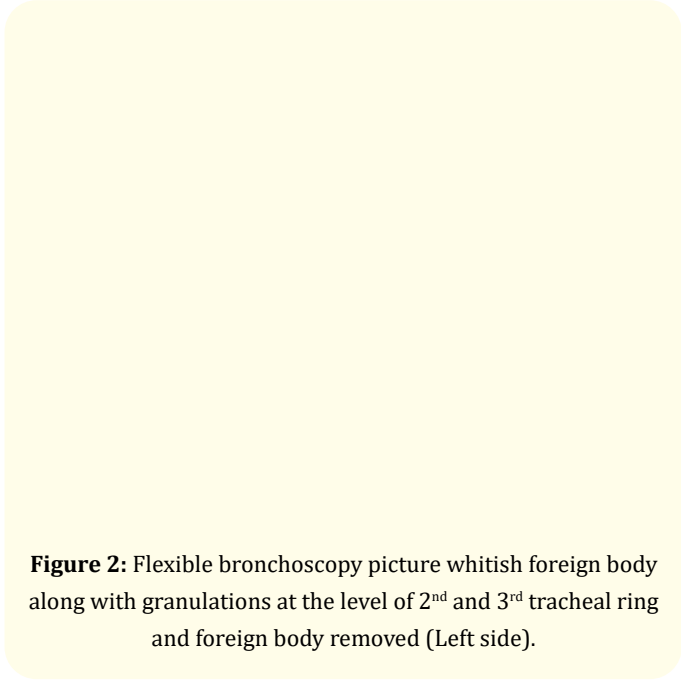


Figure 2: Flexible bronchoscopy picture whitish foreign body along with granulations at the level of 2nd and 3rd tracheal ring and foreign body removed (Left side).

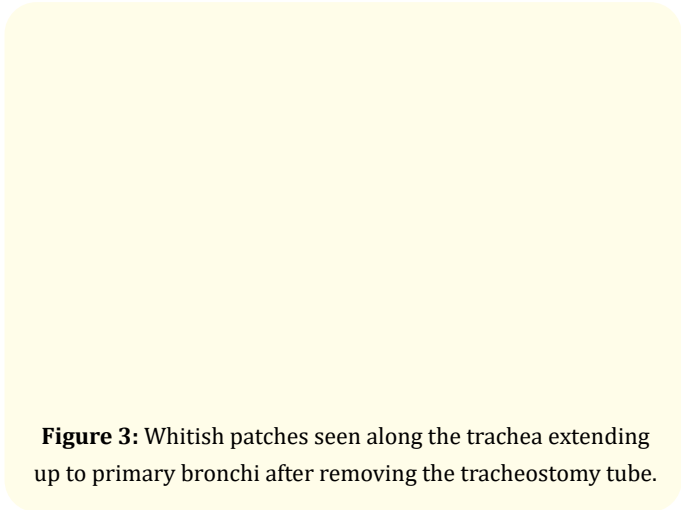


Figure 3: Whitish patches seen along the trachea extending up to primary bronchi after removing the tracheostomy tube.

The patient was started on antifungal injection Anidulafungin 100 mg I.V OD for 21 days along with Inj. Piperacillin tazobactam I.V TID. She was given regular tracheostomy care. Repeated flexible rigid endoscopy done after 15 days of antifungals, showed no granulation and complete resolution of the disease without narrowing of trachea (Figure 4). She was successfully decannulated. She recovered well and discharged.

Figure 4: Complete resolution of the disease without narrowing of trachea.

Discussion

Pseudomembranous necrotizing tracheitis is one of the cause of central airway obstruction seen commonly in children [6]. The challenge in diagnosis in our patient is because of its rarity of presentation in the adults. It occurs most commonly in immunocompromised people. The most common cause of the disease is due to prolonged endotracheal intubation but in our patient it occurred within 72 hours of endotracheal intubation probably due to mucosal damage cause during the extubation attributed by her comorbidities [7,10].

On review of literature, most causes are due to *Staphylococcus aureus* and *Corynebacterium* species [8]. Only one case report reported by Malhotra et al in 2017 shows causative organism as *Aspergillus fumigatus* [9]. This is the first case report of pseudomembranous necrotizing tracheitis which is caused by *Candida* species.

Pseudomembranous necrotizing tracheitis as mentioned is not diagnosed easily but in our case early diagnosis by repeated flexible

bronchoscopy with histopathology and culture and sensitivity testing followed by subsequent mechanical debridement along with antibiotics and antifungal resulted in good prognosis and decreased morbidity of the patient.

Conclusion

Pseudomembranous necrotizing tracheitis secondary to fungal like candida is an extremely rare condition and an often fatal. The diagnosis is always challenging and requires a high index of suspicion in post extubation stridor. Early confirmation is required in the form of histopathology and culture sensitivity testing. Initiation of antifungal therapy and repeated mechanical debridement resulted in successful treatment leading to resolution of disease without tracheal stenosis.

Conflict of Interest

The authors declare they have no conflict of interest.

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