

Short Report

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Ventilator-associated pneumonia caused by corynebacterium striatum in a postoperative patient with liver cirrhosis: A case report

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Abstract

Corynebacterium striatum, traditionally considered a non-pathogenic skin commensal, has emerged as a significant nosocomial pathogen in critically ill patients. This report presents a case of a 70-year-old male with underlying liver cirrhosis who developed ventilator-associated pneumonia (VAP) caused by *C. striatum* following elective hip arthroplasty. The patient experienced acute respiratory deterioration on postoperative day eight, requiring re-intubation. Bronchoalveolar lavage (BAL) performed on three separate occasions consistently grew *C. striatum*. Radiological findings and clinical decline supported the diagnosis. Treatment with intravenous vancomycin led to gradual recovery. This case highlights the need to consider *C. striatum* as a genuine pathogen in patients with chronic comorbidities, particularly those requiring prolonged mechanical ventilation.

Introduction

Corynebacterium striatum is increasingly recognized as an opportunistic pathogen responsible for a range of nosocomial infections including ventilator-associated pneumonia (VAP), particularly in immunocompromised patients and those with indwelling medical devices. Its capacity for biofilm formation on endotracheal tubes and resistance to multiple antibiotics complicates management and underscores its clinical significance [1]. Patients with liver cirrhosis are at heightened risk of severe infections due to cirrhosis-associated immune dysfunction, which compromises phagocytosis, complement activation, and cytokine production [2].

Case presentation

A 70-year-old male with a history of alcohol-related liver cirrhosis was admitted for elective hip replacement surgery. His postoperative course was initially stable. On postoperative day eight, he developed acute hypoxemic respiratory failure and was transferred to the ICU for high flow nasal cannula and ventilatory support. Despite an initial attempt at extubation, he required re-intubation within 48 hours due to respiratory fatigue and declining gas exchange. Computed tomography (CT) of the thorax revealed bilateral diffuse ground-glass opacities and

interlobular septal thickening. Interstitial lung disease was initially considered but ruled out following multidisciplinary team (MDT) evaluation due to the acute onset, radiological distribution, and absence of prior respiratory symptoms. Bronchoalveolar lavage was performed on three separate occasions and consistently grew *Corynebacterium striatum*. The infectious disease and microbiology teams interpreted the repeated isolation in the context of clinical and radiological findings as diagnostic of true infection rather than colonization. The patient was started on intravenous vancomycin based on culture sensitivities. Over the following days, his respiratory parameters gradually improved, and inflammatory markers declined. He was successfully weaned from mechanical ventilation and discharged from ICU to ward-level care.

Discussion

Corynebacterium striatum has evolved from a previously overlooked organism to a recognized cause of serious nosocomial infections, including pneumonia, endocarditis, and bloodstream infections. Mechanically ventilated patients are at particular risk due to mucosal barrier disruption and biofilm formation on airway devices [3]. This patient's radiological findings—diffuse ground-glass opacities and interlobular septal

thickening—were consistent with VAP and matched descriptions from previous case series involving *C. striatum* [1]. The repeated isolation of the organism from BAL cultures over time further supported its pathogenic role. Liver cirrhosis in this case likely contributed to both susceptibility and disease severity. Cirrhosis-associated immune dysfunction impairs multiple arms of host defense, reducing the ability to clear pathogens and increasing the likelihood of ICU-acquired infections [2]. Management of *C. striatum* pneumonia is complicated by its intrinsic and acquired resistance mechanisms. In this case, vancomycin was used effectively. Linezolid may be an alternative, although monitoring for hematologic toxicity is essential. A multidisciplinary approach was vital for early diagnosis, targeted antimicrobial therapy, and clinical recovery.

Conclusion

This case highlights *Corynebacterium striatum* as an emerging cause of ventilator-associated pneumonia in vulnerable patients, particularly those with underlying liver disease. Persistent isolation from BAL, radiographic evidence, and clinical decline should prompt recognition of this organism as a true pathogen. Early intervention with appropriate antimicrobials, guided by microbiological and radiological input, can significantly improve outcomes.



Figure 1: Axial CT scan of the thorax demonstrating diffuse bilateral ground-glass opacities and septal thickening consistent with acute infectious pneumonitis.

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