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Case Representation

Mycobacterium Paraffinicum: A Rare Non-Tuberculous Mycobacterium Pulmonary Infection

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Abstract

Introduction: *Mycobacterium paraffinicum* has been isolated from numerous soil samples from widely distributed oil fields. In 1971 *M. paraffinicum* was not considered a legitimate Mycobacterium species because of the phenotypic confusion with *M. scrofulaceum.* However, after an extensive molecular sequence analysis in 2010, it was finally reincorporated into the taxonomy.

Case presentation: An 85-years-old, former smoker man came to the emergency department complaining of worsening exertional dyspnea of several months of evolution. A chest CT scan revealed a large cavitary lesion associated with multiple smaller nodes with central cavitation throughout both lung fields. A flexible bronchoscopy was performed and the bronchoalveolar lavage culture was positive for *M. paraffinicum.*

Conclusion: To our knowledge there are only two published cases of pulmonary infection by this pathogen. To date there is no standard drug therapy regimen for *M. paraffinicum* infection. More research and development are needed in this field as to improve diagnostic and treatment for this rare disease.

Keywords: *Mycobacterium paraffinicum*; Taxonomy; Flexible bronchoscopy; Nontuberculous mycobacterium

Abbreviations: AFB: Acid Fast Bacilli; NTM: Nontuberculous Mycobacterium; RIPE: Rifampin Isoniazid Pyrazinamide Ethambutol; PPD: Purified Protein Derivative.

Introduction

Mycobacterium paraffinicum has been isolated from numerous soil samples from widely distributed oil fields [1]. Originally isolated in 1956 and described as a long, slender, strongly acid-fast rods showing Much's granules with Ziehl-Neelsen stain; which produced yellow, waxy, wrinkled colonies. In 1971 M. paraffinicum was not considered a legitimate Mycobacterium species because of the phenotypic confusion with M. scrofulaceum. However, in 1991 a review of rarely encountered mycobacterial diseases acknowledged that it had obviously different biochemical responses from M. scrofulaceum and after an extensive molecular sequence analysis in 2010, it was finally reincorporated into the taxonomy [1]. Investigation of antimicrobial susceptibility was done, and results showed that M. paraffinicum' strains were susceptible in vitro to rifabutin, linezolid, clarithromycin, and amikacin [2].

Case Presentation

We present an 85-years-old, former smoker man with a past medical history of colon adenocarcinoma status post colostomy, hypertension, hypothyroidism, and glaucoma complaining of worsening exertional dyspnea of several months of evolution. He denied cough, unintentional weight loss, fever, chills, night sweats, hemoptysis recent travel, and exposure to tuberculosis, asbestos or silica. Physical examination was unremarkable. Initial chest CT scan revealed a large cavitary lesion of approximately 4.5x4.2 cm, in addition to multiple smaller nodes with central cavitation throughout both lung fields (Figure 1). PPD skin test was negative. PET-Scan showed in-

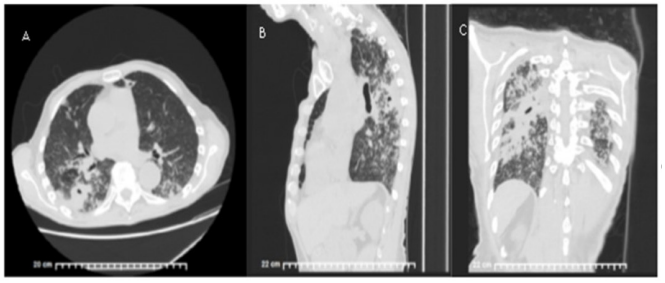

Figure 1: (A) CT thorax with (B) sagittal and (C) coronal views showing a large cavitary spiculated mass seen in the dependent portion of the superior aspect of the right lower lobe with surrounding subcentimeter branching centrilobular nodules.

creased FDG concentration with uneven distribution on the upper lobe posteromedial aspect of right lung with a maximum SUV of 12.3. A flexible bronchoscopy was performed and the bronchoalveolar lavage sample was positive for Acid Fast Bacilli smear (AFB), for which he was started on RIPE therapy. Unexpectedly, AFB culture revealed M. paraffinicum growth and thus, RIPE therapy was discontinued and intravenous imipenem, azithromycin and amikin were started. In view of adequate clinical response, he was discharged approximately one month later with azithromycin and ciprofloxacin. Subsequent chest CT scan was performed 3 months later in which marked improvement was noted compared with the previous images.

Discussion

M. Paraffinicum is a slow growing mycobacterium, and a rare cause of clinical Nontuberculous Mycobacterium infection (NTM). It was initially described in pseudo outbreak; however, it is capable of causing symptomatic lung disease [3]. To date, little is known about its pathogenic potential, drug susceptibility profile, and treatment outcome. To our knowledge there are only three published cases of pulmonary infection by this agent, all treated with similar antibiotic regimen with adequate clinical response [1,4,5]. More research and development are needed in this field as to improve diagnostic and treatment for this rare disease.

Conclusion

To date there is no standard drug therapy regimen for *M. paraffinicum* infection. More research and development are needed in this field as to improve diagnostic and treatment for this rare disease.

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