Section: Respiratory Medicine

Case Series

CHALLENGES OF DIAGNOSING AND TREATING NON TUBERCULOUS MYCOBACTERIA INFECTIONS - A CASE SERIES

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ABSTRACT

Background: Typically surgical site infections due to atypical mycobacteria have long incubation periods, as evident in our case where the patient presented with discharge one month after the surgery. Initially, the post-operative wound seemed to have healed, but later turned erythematous and gradually developed into a discharging wound. There was no fever, pain or any other systemic symptoms. A chronic non-healing wound may therefore present a confusing picture and in such cases mycobacterial infection should always be ruled out. **Materials and Methods:** This study was conducted at Institute of thoracic Medicine, Madras Medical College. **Result:** Atypical mycobacteria were isolated from 80% of the cases of delayed post-operative wound healing. Most of the patients with NTM are misdiagnosed and are treated as tuberculosis, sometimes with a multidrug resistance regimen, which results in significant morbidity and mortality. **Conclusion:** Need for increased suspicion, better diagnostic facilities that provide drug-susceptibility testing, and newer evidence-informed treatment guidelines.

Keywords: Nontuberculous mycobacteria (NTM), Diagnosis, Treatment

INTRODUCTION

Nontuberculous mycobacteria (NTM) encompass all mycobacteria (more than 140 species), except the members of Mycobacterium tuberculosis complex and Mycobacterium leprae. NTM is ubiquitously present in the environment, most notably in water supplies. Their presence in tap water is attributed to their natural resistance to commonly used water disinfectants. Because of this, routine exposure to NTM, most notably in the form of airborne particles, is extremely common.[1] The Mycobacterium chelonae, Mycobacterium abscessus, Mycobacterium fortuitum and Mycobacterium smegmatis groups are most often linked with infections after NTM surgical intervention worldwide.[2] These organisms can produce biofilm because of their hydrophobic nature. When these microorganisms shed, they produce biofilms that increase the likelihood of infection.[3]

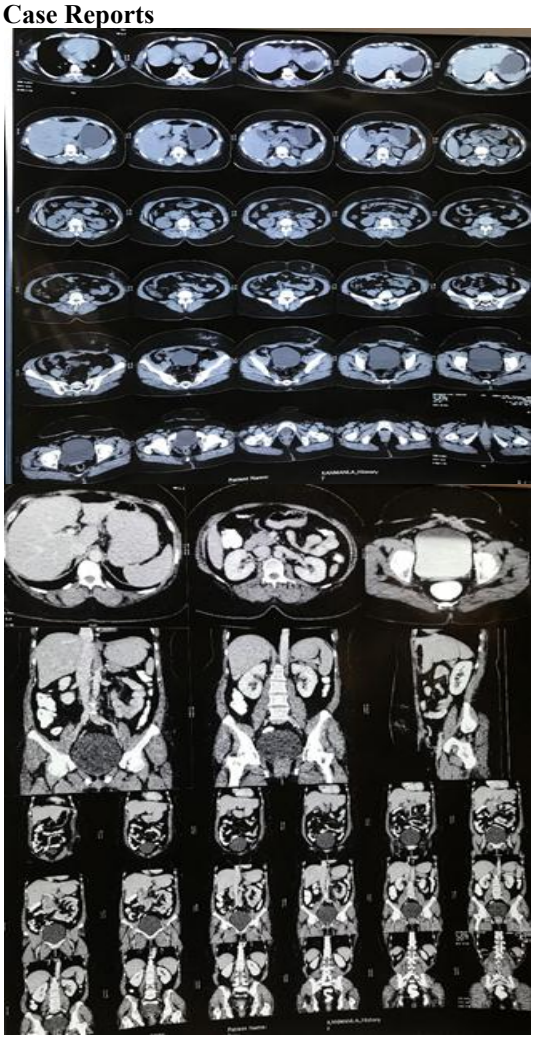
The infection from surgical wounds can be prevented by adequately sterilizing tools and endoscopes. The literature depicts the contamination of instruments and surgical site infections.[4]

MATERIALS AND METHODS

This study was conducted at Institute of thoracic Medicine, Madras Medical College India.

RESULTS

Case Reports

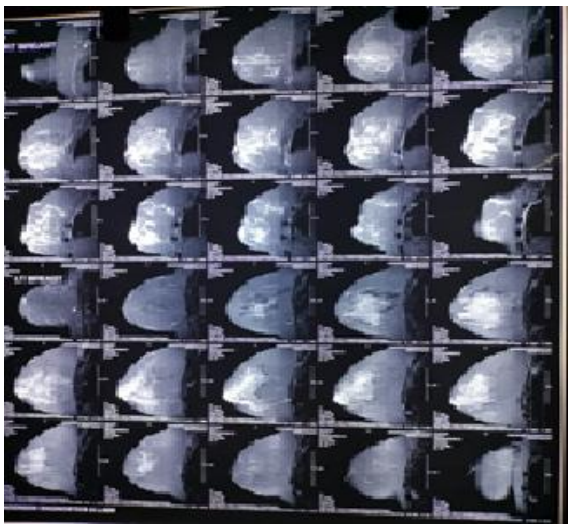


Case 1: 45 years old female was developed multiple sinus over the anterior abdominal wall after hysterectomy surgery 1.5 years back. Patient did not have any comorbids. Cect- abdomen plain and contrast – complex sinus tract in the subcutaneous fat plane of the anterior abdominal wall, involving hypogastrium, left upper and lower quadrants. No evidence of intra-abdominal extensions. Post hysterectomy status. Small umbilical hernia present.
Patient underwent excision and closure of anterior abdominal sinuses.
Hpe : acute on chronic inflammation.
Sinus tract with granulation tissue.
Tissue for mgit – mycobacterium fortuitum species detected. Patient was treated with clarithromycin, moxifloxacin, doxycycline and cotrimoxazole.

Case 2: 49 years old male , was operated for right inguinal hernia in November 2021, 3 months after surgery he developed discharge from the sutured incision site ; the pus sample was sent for MGIT ,which revealed Mycobacterium fortuitum growth on LJ medium.

Case 3: 60 years old female, known case of CKD stage 5, on chronic ambulatory peritoneal dialysis, was evaluated for low grade fever and cloudy effluent. Peritoneal dialysis fluid shows NTM growth. Species was identified to be Mycobacterium abscessus, sensitive to Amikacin and clarithromycin. Blood cultures remained negative. Patient responded well within 8 weeks of treatment.

Case 4: 30 years old male,working in oil factory in West Bengal, came with the complaints of cough with expectoration and loss of weight since 1 month, CXR-PA shows multiple cavities in right lung fields; sputum for Ntm c/s shows rapid growers - NTM, culture identified the species as M.abscessus. Patient was started on appropriate oral regimen for NTM consisting of amikacin, azithromycin and linezolid.



Case 5: 43 years female patient came with complaints of right breast pain since 2 years - on and off. History of surgery for fibroadenoma right breast done in private hospital in February 2021. Few weeks after surgery, she developed tenderness and purple not discharge from right nipple. Patient was initiated on empirical anti tuberculous regimen but did not show improvement after 8 months, hence NTM was suspected and culture sent for the same. Tissue MGIT identified NTM growth, species - fortuitum. Patient started on doxycycline, moxifloxacin, clarithromycin, and ethambutol. After 3 months of drug initiation, ultrasound of the right breast shows no focal lesion or collection. Patient has completed 1 year of treatment and continuing medicines and symptomatically better.

DISCUSSION

NTM infections in surgical patients have been reported in a wide variety of settings. The use of colonized aqueous solutions and inadequate sterilization or disinfection of surgical equipment are often factors in these infections. M. fortuitum and M. chelonae have caused multiple outbreaks of sternal wound infection and endocarditis after cardiac surgery.[5] Typically surgical site infections due to atypical mycobacteria have long incubation periods, as evident in our case where the patient presented with discharge one month after the surgery . Initially, the post-operative wound seemed to have healed, but later turned erythematous and gradually developed into a discharging wound. There was no fever, pain or any other systemic symptoms. A chronic non-healing wound may therefore present a confusing picture and in such cases mycobacterial infection should always be ruled out. Atypical mycobacteria were isolated from 80% of the cases of delayed post-operative wound healing.[6] Rapid growers such as MABC (M. abscessus subsp. abscessus, M. abscessus subsp. Bolletii, and M. abscessus subsp. massiliense), M. fortuitum group (including Mycobacterium senegalense, Mycobacteriumsepticum, and Mycobacteriumbrisbanense), and M. chelonae are important causes of pulmonary infection and surgical site infection.[7] Rapid growers are commonly health care associated (prosthetic devices, post injection abscesses, cosmetic, and laparoscopic procedures) because of their ubiquitous presence in water and ability to form biofilms.[8] Drug susceptibility of NTM is not available in most centres and it is difficult to predict response without susceptibility. This results in use of more drugs than recommended in absence of early response because of fear of no susceptibility. For this reason, most of our patients were on three to four drugs at a time. Microbiological cure is often very difficult to achieve, and therefore, duration of treatment in most cases has to be decided on a case-to-case basis. The average duration in our series was more than a year. The treatment outcome in NTM depends on the underlying host factors, organ involved, and the disease severity.[9]

Prevention: Instruments that contact mucous membranes require high-level disinfection. Glutaraldehyde is a proven and effective mycobactericidal agent in both laboratory and clinical testing and is used widely, especially in the disinfection of semi critical medical devices.[10] Agents that have also been reported to be effective endoscope disinfectants include 0.2%–0.35% peracetic acid, a 0.5% glutaraldehyde-0.03% phenolic compound mixture, and iodophors. Ethyl and isopropyl alcohol are excellent mycobactericidal agents, but rapid evaporation limits contact time.[11] Long-term drug use results in adverse effects such as hepatotoxicity, gastrointestinal disturbances, hearing impairment, allergies, cardiac changes like prolonged QT, cytopenia, nephrotoxicity, and hypersensitivity as indicated. This requires constant clinical monitoring, blood profiling, ECG, audiometry among others during the start and along the course of antibiotic treatment.[12]

CONCLUSION

NTM infections in post-operative wound though rare should be suspected in all post-operative wound infections which occurs late, lack local and systemic signs of pyogenic infections and have sterile cultures. High index of suspicion for NTM infection will allow identification and treatment of these patients with long-term antimicrobial therapy alone without the need for surgical intervention. Most of the patients with NTM are misdiagnosed and are treated as tuberculosis, sometimes with a multidrug resistance regimen, which results in significant morbidity and mortality. Need for increased suspicion, better diagnostic facilities that provide drug-susceptibility testing, and newer evidence-informed treatment guidelines.

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