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NONTUBERCULOUS MYCOBACTERIA-A CAUSE FOR NON HEALING SURGICAL WOUNDS

General Surgery

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ABSTRACT

Background: Non Tuberculous mycobacterium (NTM) are also referred to as atypical mycobacteria which are ubiquitous in the environment and can cause colonization and infection in health care settings.

Aims and Objectives: We looked at all the patients who had surgical site infection with non tuberculous bacteria from January 2016 to December 2019.

Results: There were 4 patients with NTM isolated from surgical site infection. All of them had hernia surgery with mesh insitu done elsewhere. Removal of mesh was done in each of these cases and they were given Inj Amikacin, Tab levofloxacin and Tab Clarithromycin to which all of them responded.

Conclusion: Non tuberculous mycobacterial infections should be considered in surgical site infections which are not responding to conventional antibiotics. The morbidity associated with these infections can be prevented by following strict sterilization protocols, early detection and treatment using appropriate antibiotics and surgery.

KEYWORDS

Nontuberculous mycobacteria, M.fortutium , M. chelonae

INTRODUCTION:

Nontuberculous mycobacteria (NTM) are mycobacteria other than M. tuberculosis (MOTT) and M. leprae. NTM are also referred to as atypical mycobacteria which are ubiquitous in the environment and can cause colonization and infection in health care settings. NTM colonization in potable water system are found in hospitals. NTM infections in surgical patients have been reported in a wide variety of settings. Here we report a case series of NTM post hernia repair.

Case 1

This 64 years old lady presented with non-healing wound with discharge from the umbilicus since 8 years following a laparoscopic umbilical hernia repair. Her hemogram was normal except for eosinophilia. (Hb- 12.6g%, Total leucocyte count-6600/mm3, neutrophils 48%, lymphocytes 30%, eosinophil 14%, monocytes 8%, Erythrocyte sedimentation rate 17mm/hr).Viral markers were non-reactive. Chest X-ray was unremarkable. CT sinusogram was performed and the contrast was seen extravasating into the anterior abdominal wall through a track from the umbilicus measuring 8.5 x 2.0 cm and was limited to the anterior abdominal wall. Patient underwent open mesh removal and wound exploration and pus was sent for culture. Bacterial and fungal culture were negative. Biopsy revealed chronic inflammation with sinus tract. Acid fast Bacilli (AFB) were noted on Zeihl nelson staining. TB PCR was negative. The culture revealed rapid growers suggesting Non tuberculous mycobacteria.

She was initiated on inj Amikacin 1 gm thrice weekly along with Tab Clarithromycin 500mg twice daily and Tab Levofloxacin 750 mg once a day. Within a month of initiation of treatment, the wound healed completely. Injection Amikacin was stopped after 2 months and Levofloxacin and clarithromycin was advised for a total of 6 months.

Case 2

This 73 years old gentleman came with induration and swelling in the inguinal region for 5 months. He had undergone laparoscopic umbilical hernia repair with a mesh insitu at an outside hospital 6 months ago. He was noted to have this induration a month after the surgery. Ultrasonogram of abdomen revealed fluid collection around the mesh. He went for a second opinion and returned with a CT scan of the abdomen which revealed increase in the subcutaneous swelling. The pus was aspirated at an outside hospital and he was given a course of antibiotics. He continued to have pus discharge and he underwent surgical repair and removal of the mesh a month later.

He returned back to our hospital with persistence of the discharge. Pus culture for AFB grew rapid growing mycobacteria. Gene Xpert was negative. He was initiated on Inj Amikacin 1 g once a day along with Tab Clarithromycin 500mg twice daily and Tab Levofloxacin 750 mg once daily. In view of mild derangement of renal functions dose of Inj Amikacin was titrated to thrice weekly for a total of 2 months duration. The discharge gradually decreased. However, 5 months later patient was noted to have recurrence of discharge. Ultrasound revealed subcutaneous tract in the right iliac fossa. He underwent resection of the sinus tract. Repeat cultures did not isolate mycobacterium species. His medications were continued for another 4 months and he had complete healing.

Case 3

This 76 years old male presented with complaints of discharge from the umbilicus for 4 months. Patient had undergone an umbilical mesh repair from an outside hospital. He was also a known patient of Diabetes Mellitus and was on insulin therapy for the same.

Patient underwent mesh removal and the tissue and the pus were sent for AFB and bacterial smear and culture. The culture grew mycobacterium species which were rapid growers. He was initiated on Inj Amikacin 1 g once daily for 2 months along with Tab Clarithromycin 500mg twice daily and Tab Levofloxacin 750 mg once daily. At the end of 6 months repeat ultra-sonogram revealed a thin rim of sub-acute collection. Levofloxacin and clarithromycin were extended to 3 more months after which there was complete resolution.

Case 4

This 59 years old male not a known patient of Diabetes Mellitus had undergone laparoscopic repair for left inguinal hernia at an outside hospital. He developed fever soon after the surgery which subsided within a week. He presented to our hospital 2 weeks later with complaints of swelling followed by discharge from the surgical site. Debridement of the wound was done. Since patient was residing abroad, he went back after 2 weeks and decided to follow up there. He continued to have pus discharge for 5 months for which he returned back to our hospital for further management. Open inguinal exploration and mesh removal was performed. Pus was sent for culture. He was advised Inj Amikacin, Levofloxacin and Clarithromycin. Culture grew Mycobacterium chelonae which was sensitive to Amikacin, Clarithromycin and intermediately sensitive to moxifloxacin. He continued his treatment at another medical facility. He received Inj Amikacin thrice weekly for 3 months and he took treatment for a total of 6 months. One month into the treatment his wound healed completely.

DISCUSSION:

NTM are environmental organisms that can be found in soil, dust, and water including natural water sources (such as lakes, rivers, and streams) and municipal water sources. 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.[1]Post laparoscopic wound infections, mesh site infections and other surgical site infections have been increasingly reported.[2] Lahri etal reported a case series of postsurgical infections due to Mycobacterium fortutium in patients who underwent laparoscopic tubectomies or herniorrhaphy.[3] *M. fortutium* and *M. chelonae* have caused multiple outbreaks of sternal wound infection and endocarditis after cardiac surgery.[4] *M. abscessus* that had colonized aqueous solutions used to mark the incision site prior to surgery has led to 2 outbreaks of wound infections.[5] *M. fortutium* and *M. chelonae* are responsible for the majority of the NTM infections seen after augmentation mammoplasty.[6]*M. fortutium* has also caused wound infections in patients after breast surgery that does not involve prosthetic implants.[6] *M. fortutium* has caused postoperative infections after abdominal surgery. Reported cases include an abdominal wall infection after the repair of a ventral hernia that involved synthetic mesh and peritonitis in a patient who had undergone gastrectomy.[7]

In this clinical series all the four patients had developed mycobacterial infection in the surgical site following hernia repair with mesh insertion.

Long incubation periods of the surgical site infections are quite typical of NTM.[8] The first 2 cases developed symptoms one month after surgery and they were symptomatic for 5 months and 6 months respectively where as in the third case the patient was symptomatic for 8 years. The fourth patient also had symptoms for 6months.

Skin and soft tissue infections are the most common presentation for the rapid-growing species Mycobacterium fortutium, M. abscessus, and M. chelonae.[9] Certain slow growing species of mycobacteria, namely Mycobacterium marinum, M. ulcerans, M. chimaera, and M. haemophilum, are also more frequently associated with skin disease.[10-12]

The recommended duration of therapy for cutaneous Rapid growing mycobacteria infection is usually 4 months for mild disease and 6 months for severe disease. Multidrug therapy is recommended to mitigate the risk of emergent antibiotic resistance. *M. abscessus* complex is usually susceptible to Amikacin and imipenem/cefoxitin.[13] Macrolides are considered a standard tool in the treatment of NTM infections. *M. chelonae* is susceptible to macrolides.[9] *M. fortutium* strains are usually susceptible to Amikacin, cefoxitin, ciprofloxacin, doxycycline, gentamicin, and minocycline, and resistant to sulfa, clarithromycin, azithromycin, and amoxicillin/clavulanate.[14] *M. marinum* is susceptible to clarithromycin, rifampin, ethambutol, Amikacin, linezolid, and trimethoprim/sulfamethoxazole.[15]

A combination of aminoglycoside, macrolide and quinolone successfully treated each of these cases even though we could not identify the species in the first three cases. In certain cases we may have to extend the duration of therapy to 9 months as in two of our cases.

CONCLUSION:

Non tuberculous mycobacterial infections should be considered in surgical site infections which are not responding to conventional antibiotics. Long incubation period could give a lead for the clinicians. A combination of aminoglycosides, macrolides and quinolones is quite promising in treating these cases even if the species are not identified.

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