Persistent Laparoscopic Port-site Discharging Sinus: A Rare Case of Mycobacterium senegalense Infection

Vettakkara Kandy Muhammed Niyas, Vishakh C. Keri, Binit Kumar Singh¹, Prabhat Kumar²
Departments of Medicine and Microbiology and ¹Medicine, All India Institute of Medical Sciences, ²Department of Medicine, ABVIMS and Dr. R M L Hospital, New Delhi, India

Abstract

Laparoscopic port-site infections, though infrequent, undermine the advantages provided by minimally invasive surgeries. Persistent nonhealing discharging sinuses, not responding to conventional antibiotic therapy, pose diagnostic and therapeutic challenges. Sizeable number of these infections is caused by rapidly growing nontuberculous mycobacteria (NTM), and diagnosing these requires a high index of suspicion. We present a case of a nonhealing laparoscopic cholecystectomy umbilical port-site infection caused by Mycobacterium senegalense, a rare NTM. The patient recovered completely after 6 months of combination therapy with clarithromycin, trimethoprim-sulfamethoxazole, and levofloxacin.

Keywords: Cholecystectomy, mycobacteria growth indicator tube, nontuberculous mycobacteria

Case Report

A 26-year-old female patient, resident of Haryana, India, presented with swelling and discharge from the umbilical port for 2 months, which started after 10 days of laparoscopic cholecystectomy surgery done for acute cholecystitis at a local hospital. The discharge was purulent and nonfoul smelling.

Despite multiple incision and drainages and multiple courses of antibiotics, it showed no signs of healing. Over a period of 2 months, it developed into chronic discharging sinuses with diffuse swelling around the site. There was no history of fever, loss of weight, or other systemic symptoms. On examination, there were two sinuses around the umbilicus with regular edges and granulation tissue with serosanguinous discharge surrounded by scars of multiple healed sinuses [Figure 1]. A diffuse non tender swelling incorporating the sinuses was palpated. Blood investigations showed elevated erythrocyte sedimentation rate of 38 mm/h with normal biochemical parameters. Ultrasound of the swelling revealed a 5 mm x 7 mm x 17 mm hypoechoic collection in the anterior abdominal wall communicating superficially up to the cutaneous space through the previous surgical site.

Address for correspondence: Dr. Vishakh C. Keri, Department of Medicine and Microbiology, All India Institute of Medical Sciences, New Delhi - 110 029, India.
E-mail: vckeri@gmail.com

ORCID: https://orcid.org/0000000311098739

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Nondependent aspirate from the swelling showed acid-fast bacilli and was grown on Mycobacteria Growth Indicator Tube (MGIT) liquid culture within 48 h. The growth was identified as *M. senegalense* by matrix-assisted laser desorption–ionization time-of-flight (MALDI-TOF) technique. The isolated DNA from MGIT culture-positive specimen was subjected to line probe assay using genotype CM/AS kit (Hain Lifescience, Germany) and DNA sequencing (Sanger sequencing, Applied Biosystems, Waltham, MA, USA) for 16s-23s rRNA gene internal transcribed spacer (ITS) region with the primers ITS (F) 5’-GAAGTCGTAACAAGGTAGCCG-3’ and ITS 3’-GACAGCTCCCCGAGGCTTATCGCA-5’. The nucleotide sequence of the ITS region of the NTM isolates was analyzed using CLUSTAL-W software and basic local alignment search tool and was confirmed as *M. senegalense*.

The patient was started on oral levofloxacin (750 mg once daily), trimethoprim-sulfamethoxazole (160/800 twice daily), and clarithromycin (500 mg twice daily). The swelling started decreasing and the discharge ceased within the first 2 weeks of therapy. Complete resolution occurred in 2 months. The treatment was continued for a total duration of 6 months. A repeat ultrasound scan after treatment completion showed resolution of the soft-tissue collection.

**Discussion**

Rapidly growing NTM are considered saprophytes which colonize the environment, soil, and tap water. They are known to cause nonhealing skin and soft-tissue infections, 3–4 weeks postsurgery due to exogenous contamination during sterile procedures sporadically or as outbreaks.[7-10] The most common reason for port-site infection of atypical mycobacteria is the break in the sterilization protocol of laparoscopic instruments.[10] Our patient too underwent laparoscopic cholecystectomy and developed a chronic nonhealing port-site infection. Due to the chronicity of the infection with the history of a surgical procedure, exogenous contamination by NTM was suspected in our patient. Accordingly, the patient was worked up with a pus culture growing NTM on MGIT, which was later speciated as *M. senegalense* by MALDI-TOF and DNA sequencing.

*M. senegalense* is a rapidly growing NTM belonging to the *M. fortuitum* group. It is mainly a disease of the cattle causing bovine farcy characterized by multiple abscesses, draining sinuses, and granulomas, mainly found in East Africa.[11] Recognition in humans as a pathogen has improved as a result of DNA sequencing which differentiates it from the closely related *Mycobacterium farcinogenes*. The organism can be identified by MALDI-TOF technique also. MALDI-TOF is based on proteomics and uses mass spectrometry to identify organisms rapidly and accurately. It was seen in a study that 97.4% of the atypical mycobacterial isolates were identified accurately by MALDI-TOF.[12]

Three human case reports have been published with varied clinical manifestations.[4-6] which includes distal tibial osteomyelitis, catheter-related bloodstream infection, and skin and soft-tissue infection of a lacerated wound. Two of the reported cases occurred in immunocompetent patients, while one patient who was diagnosed to have *M. senegalense* bloodstream infection had underlying Hodgkin lymphoma. Our patient did not have any underlying immunodeiciencies.

Appropriate therapy for *M. senegalense* has not been established. In the previous case reports, it has been treated with local control of the disease by surgical debridement or removal of the device along with combination antibiotic therapy. Combination therapy is recommended in rapidly growing mycobacteria due to the high frequency of resistance and relapse. In the absence of drug susceptibility data, we relied on the reported susceptibility data from the previous reports. Susceptibility to amikacin (MIC 0.5 μg/mL), clarithromycin (MIC 0.5 μg/mL), ciprofloxacin (MIC 0.25 μg/mL), doxycycline (MIC 0.25 μg/mL), cefoxitin (MIC 8 μg/mL), and trimethoprim/sulfamethoxazole (MIC 0.5/8.5 μg/mL) has been demonstrated.[3] We treated with a combination of clarithromycin, trimethoprim/sulfamethoxazole, and levofloxacin. Treatment responses have been seen in 5 weeks, 3 months, and 6 months in the published case reports. Our patient showed a complete response in 2 months, and the treatment was continued for a total of 6 months.

**Conclusion**

A high index of suspicion of NTM infections should be kept in chronic nonhealing sinuses, especially in the background of epidemiological clues. Accurate identification through newer rapid diagnostic modalities and sequencing leads to the identification of novel pathogens. This case report adds to the literature on the diagnosis and management of *M. senegalense* infections.

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have...
given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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**Conflicts of interest**

There are no conflicts of interest.

**REFERENCES**