CASE REPORT

Oyster-related tenosynovitis: a rare case of *Mycobacterium szulgai* in the immunocompromised

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SUMMARY

A 66-year-old man with a history of renal transplant on chronic immunosuppression presented to his primary care physician with a swollen right index finger. On examination, mild swelling was present. Conservative management failed and initial plain films were negative. Corticosteroid injection was performed by orthopaedics, but symptoms recurred several months later and an MRI showed flexor digitorum tenosynovitis and abscesses of the superficialis and profundus tendons. A flexor tenolysis was performed with cultures positive for *Mycobacterium szulgai*, a rare, non-tuberculous mycobacterial infection. Treatment was initiated with moxifloxacin, ethambutol and azithromycin daily for nearly 4 months. Repeat MRI 3 months after completion of antibiotics showed near resolution of the tenosynovitis.

of relative hypointensity concerning for abscess (figure 2).

DIFFERENTIAL DIAGNOSIS

The patient's complex medical history, including a renal transplant and being on chronic immunosuppressive therapy, led to referral to orthopaedics more rapidly after limited conservative management failed. After standard therapy for suspected stenosing tenosynovitis with corticosteroid injection was unsuccessful, the differential was broadened to include chronic inflammatory conditions, including rheumatoid arthritis and an indolent infection. Further laboratory workup was not suggestive of rheumatoid arthritis, and MRI imaging was more suggestive of infection, and culture specimens obtained in surgery revealed non-tuberculous mycobacteria, confirming an infectious tenosynovitis (figure 2). Mycobacteria are opportunistic pathogens and infection can occur due to direct injury from fish fins, shellfish, turtles and oysters by cutaneous trauma or exposure to contaminated water.² Further history obtained near the end of treatment revealed the patient had sustained cutaneous trauma to his right hand on an oyster prior to the development of symptoms.

TREATMENT

A flexor tenolysis was performed by orthopaedic surgery and involved tenosynovectomy followed by collection of tissue for both microbiology and pathology. Time to surgery was delayed for over 3 months, as the patient desired a second opinion, which took 6 weeks to obtain. Following two recommendations to proceed with surgery, the case was scheduled 4 weeks later.

OUTCOME AND FOLLOW-UP

Pharmacotherapy included moxifloxacin, ethambutol and azithromycin for over 4 months per recommendations from infectious disease. Culture sensitivities returned in 2 weeks following initiation of therapy demonstrating resistance to moxifloxacin; however, this was not identified until the patient's follow-up visit with ID nearly 3 months later. At the 3-month follow-up, the patient had made a near complete recovery. Moxifloxacin was discontinued at that time, and antibiotics were continued for 2 weeks following repeat MRI, which demonstrated disease resolution (figure 2). After

BACKGROUND

Finger swelling and pain are common complaints in a primary care office. Though rare, non-tuberculous mycobacterial (NTM) infections occur in roughly 10%–15% of all mycobacterium infections, and extrapulmonary manifestations include tenosynovitis.¹ This case report may serve as a model for a diagnostic and therapeutic approach to *Mycobacterium szulgai* infection as it relates to a common presentation of finger swelling. A multidisciplinary approach was needed to treat this patient with primary care, orthopaedic surgery, radiology and infectious disease all playing important roles.

CASE PRESENTATION

A 66-year-old man with a medical history of renal transplant for polycystic kidney disease on chronic immunosuppression presented to his primary care physician with several weeks of a swollen right index finger without systemic symptoms and no history of numbness or trauma. On examination, the index finger was swollen and non-erythematous without pain on movement.

INVESTIGATIONS

Initial workup included plain films, which demonstrated no abnormality. Repeat films were performed at a subsequent encounter following MRI evaluation that showed diffuse soft tissue swelling (figure 1).

MRI of the right hand demonstrated a prominent enhancement surrounding the near entirety of the second digit flexor tendons with an area

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Figure 1 X-ray, right index finger series, with no acute abnormality (left). X-ray of right hand with diffuse soft tissue swelling of the right index finger without osseous abnormality or evidence of erosive or inflammatory arthropathy taken months later at a follow-up visit (right).

1 year following completion of antibiotics, the patient did not have disease recurrence.

DISCUSSION

The incidence of infectious and inflammatory tenosynovitis is unknown in the primary care setting.³ In the absence of visible pus or erythema, it may be difficult to distinguish between infectious and inflammatory tenosynovitis. The majority of cases of infectious tenosynovitis are due to *Staphylococcus aureus*.⁴ In this case, *M. szulgai* was identified, which was first isolated in 1972 and is a rare form of NTM accounting for 0.5% of all isolates obtained from patients with NTM infection.¹ NTM infections occur in approximately 10%–15% of all mycobacterium infections.¹ Although rare, extrapulmonary isolation of *M. szulgai* is seen in immunocompromised individuals as described in this case report. Literature on extrapulmonary infections including finger tenosynovitis caused by *M. szulgai* is limited to isolated case reports.

In the majority of case reports, diagnosis was delayed by months due to lack of clinical suspicion by providers, and patients usually received corticosteroid injections for initial treatment.⁵ Immunosuppression was found to be a risk factor,

but not present in all case reports. Our patient's first evaluation for this complaint to time of surgery and diagnosis took over 12 months, which is consistent with the average delay noted in the literature.⁶ Although NTM is a rare cause of infectious tenosynovitis, this patient's history should raise the index of suspicion. He was immunocompromised and also had an oyster exposure unknown to providers on initial assessment. Environmental sources including aquarium water, swimming pools and tropical fish exposure have been linked to NTM infections.² Limited case reports and literature are available describing *M. szulgai* infections and other related NTM species linked to oyster exposure.⁷ This case exemplifies the need for a multidisciplinary approach as demonstrated by the involvement of family medicine, orthopaedics, radiology and infectious disease providers. Unlike other NTM infections, *M. szulgai* responds well to antibiotic therapy. Treatment options for *M. szulgai* may consist of a combination of rifampicin, ethambutol, macrolides and a quinolone depending on culture sensitivities.² In conclusion, a focused history and high clinical suspicion are key to diagnosing extrapulmonary NTM infections in patients with risk factors including immunosuppression and environmental exposures.

Learning points

- *Mycobacterium szulgai*, a rare NTM, may present as a common complaint in the primary care setting including tenosynovitis or bursitis of the hand/wrist.
- A focused history and high clinical suspicion are key to diagnosing extrapulmonary NTM infections in patients with risk factors including immunosuppression and environmental exposures.
- Diagnosis and management include imaging (X-ray, MRI), tissue biopsy and culture (bacterial, fungal, acid-fast bacillus (AFB)) and combination anti-NTM pharmacotherapy.
- Unlike other NTM infections, *M. szulgai* responds well to therapy, which may include a combination of rifampicin, ethambutol, macrolides and fluoroquinolones. Extrapulmonary infections typically require 4–6 months of antibiotics.

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Figure 2 Coronal T1 postcontrast MRI of the right hand with prominent enhancement surrounding the near entirety of the second digit flexor tendons (arrows) (right). Axial T1 postcontrast MRI of the right hand: high T2 signal surrounding the second digit flexor tendons (arrow) consistent with inflammation, with an area of relative hypointensity concerning for abscess (top left). Axial T1 postcontrast MRI of the right hand with resolution of enhancement (arrow) obtained after antibiotic completion (bottom left).

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