

# Nocardial Infection after Treatment with Anti-TNF Alpha in a Patient with Psoriatic Arthropathy

Wakar Garra MD<sup>1,2</sup> and Yair Levy MD<sup>1,2</sup>

<sup>1</sup>Department of Internal Medicine E, Meir Medical Center, Kfar Saba, Israel

<sup>2</sup>Faculty of Medicine, Tel Aviv University, Tel Aviv, Israel

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**N**ocardia species are gram-positive aerobic bacteria, usually acquired by inhalation or traumatic percutaneous inoculation [1,2]. It is a rare opportunistic infection that mainly occurs in immunocompromised hosts, patients with human immunodeficiency virus (HIV), organ transplant recipients, and long-term corticosteroid treated patients [1,2]. It is associated with high morbidity and mortality rates. The increased use of tumor necrosis factor (TNF) inhibitors has been accompanied by increased risk of different opportunistic infections including reactivation of tuberculosis, viral hepatitis B and C, listeria, fungal and bacterial infections [3,4]. To date, there are scarce case reports regarding nocardial infection with anti-TNF, particularly during the first 6 months of treatment.

We present a case of nocardial tenosynovitis of the hand in a patient with psoriatic arthropathy who was followed in our rheumatology clinic in Meir medical center in Israel after treatment with an anti TNF therapy.

## PATIENT DESCRIPTION

A 64-year-old woman presented to our clinic with a history of hypothyroidism and psoriatic arthropathy, which was treated with 40 mg of prednisone

daily for 2 months as well as sulfasalazine 500 mg twice a day, methotrexate 15 mg weekly, and golimumab, an anti-TNF agent, 50 mg monthly for 3 years.

One week prior to her visit to our rheumatology clinic, she presented to the orthopedic clinic with pain and swelling of the right thumb. She was diagnosed with trigger finger of the right thumb and was treated with corticosteroid injections without remarkable improvement. She presented to our rheumatology clinic with worsening of right thumb pain and swelling over 2 months. Based on the suspected diagnosis of trigger finger, she was treated again with injectable corticosteroids without improvement. The pain and swelling extended over the proximal phalange of the right thumb. Physical examination showed tenderness with erythema and edema over the thumb. At presentation, her vital signs were normal, the serum C-reactive protein (CRP) level was high 4 mg/dl, compared to normal values before. All other laboratory findings were normal. Infection of the thumb was suspected. She was hospitalized for a workup diagnosis and treatment. Over the next hours, she experienced erythema, and swelling extended to the proximal interphalangeal joints of the right hand. Magnetic resonance imaging (MRI) of the right hand showed tenosynovitis with a thickened synovia of the flexor tendons, mostly of the flexor pollicis longus tendon, a collection of fluid 8 × 10 mm and edema within the first interphalangeal joint,

and the carpal tunnel. Surgical debridement was performed with extraction of purulent fluid. Cultures of fluid taken at the time of surgery grew nocardia species. Blood cultures were negative. The patient was treated initially with two antibiotics: Resprim, and imipenem. Due to resistance to imipenem and Resprim induced fever, the treatment was changed to ciprofloxacin according to the microbial susceptibility profile. The patient improved, and the CRP returned to normal. She was discharged with the recommendation to continue antibiotic treatment for 6 months.

## COMMENT

Our patient had a rare involvement of nocardia infection, called tenosynovitis. MRI of the hand showed tenosynovitis of the flexor tendons of the right hand, mostly the flexor pollicis longus. The most common extrapulmonary location for nocardiosis is the central nervous system [1]. Several cases of nocardiosis have been reported in association with anti-TNF therapy, including patients with psoriasis, rheumatoid arthritis, and inflammatory bowel disease with nocardia infection involving lungs, skin, brain, and adrenal glands [4]. To the best of our knowledge, our case is the first report of nocardial tenosynovitis complicating the use of anti-TNF agent.

Our patient had two risk factors for nocardia infection: steroid treatment and concomitant treatment with anti-TNF agent, golimumab. The clinical course of

nocardial infection is indolent [1]; therefore, a high index of suspicion is needed. Due to our high clinical suspicion, the patient was hospitalized and diagnosed with nocardial tenosynovitis. She was treated with antibiotics and surgical debridement with infection control.

Severe nocardial infection is treated initially with two antibiotic agents due to variability in antimicrobial susceptibility and resistance. Sulfonamides have been considered the first line therapy. Other antibiotics effective against nocardia include amikacin, imipenem and third generation cephalosporins. The treatment duration ranges between 6 and 12 months, depending on the severity of nocardiosis [5].

Our patient was initially treated with Resprim and imipenem. Due to resis-

tance to imipenem and Resprim induced fever, the treatment was changed to ciprofloxacin according to the microbial susceptibility. This treatment emphasizes the variability in antimicrobial susceptibility of nocardia species.

No data are available regarding the safety and the timing of re-initiation of anti-TNF. Re-initiation may increase the risk of nocardia recurrence. In our patient, treatment with anti-TNF was never re-initiated. Instead, she started treatment with secukinumab, an IL-17A agent.

# CONCLUSIONS

Clinicians should be aware of nocardia infection, a rare entity, and have a high clinical suspicion while treating patients with anti-TNF agents.

# Correspondence

**Dr. W. Garra**

Dept. of Internal Medicine E, Meir Medical Center, Kfar Saba 4428164, Israel

**Phone:** (972-9) 747-2658

**Fax:** (972-9) 747-1307

**Email:** wakar.garra@hotmail.com

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**What the Caterpillar calls the end of the world, the Master calls a butterfly.**

Richard Bach (born 1936), American writer

**I shall live badly if I do not write, and I shall write badly if I do not live.**

Francoise Sagan (1935–2004), French playwright, novelist, and screenwriter.

# Capsule

# Post-acute sequelae of COVID-19 at 2 years

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection can lead to post-acute sequelae in multiple organ systems, but evidence is mostly limited to the first year post-infection. **Bowe** and co-authors built a cohort of 138,818 individuals with SARS-CoV-2 infection and 5,985,227 noninfected control group from the U.S. Department of Veterans Affairs and followed them for 2 years to estimate the risks of death and 80 prespecified post-acute sequelae of COVID-19 (PASC) according to care setting during the acute phase of infection. The increased risk of death was not significant beyond 6 months after infection among non-hospitalized but remained significantly elevated through the 2 years in hospitalized individuals. Within the 80 prespecified sequelae, 69% and 35% of them became not significant

at 2 years after infection among non-hospitalized and hospitalized individuals, respectively. Cumulatively at 2 years, PASC contributed 80.4 (95% confidence interval [95%CI] 71.6–89.6) and 642.8 (95%CI 596.9–689.3) disability-adjusted life years (DALYs) per 1000 persons among non-hospitalized and hospitalized individuals; 25.3% (95%CI 18.9–31.0%) and 21.3% (95%CI 18.2–24.5%) of the cumulative 2-year DALYs in non-hospitalized and hospitalized were from the second year. While risks of many sequelae declined 2 years after infection, the substantial cumulative burden of health loss due to PASC calls for attention to the care needs of people with long-term health effects due to SARS-CoV-2 infection.

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Eitan Israeli