



## Leprosy after interleukin 6 inhibitor therapy in a patient with rheumatoid arthritis

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A 62-year-old white woman with severe rheumatoid arthritis began monthly infusions of the interleukin 6 (IL-6) inhibitor tocilizumab (received eight doses of 4 mg/kg each) alongside daily oral prednisone (5 mg) and weekly methotrexate injections (20 mg subcutaneously), after unsuccessful treatment with tumour necrosis factor (TNF) inhibitor therapy (etanercept 50 mg weekly and adalimumab 40 mg every other week). Because of inadequate clinical response after receiving eight 4 mg/kg doses, the dose of tocilizumab was increased from 4 to 8 mg/kg. 2 weeks after dose escalation, the patient presented to our hospital with a multiple polymorphic, partly raised, confluent, erythematous non-pruritic maculopapular rash with central clearing over her back, abdomen, arms, and legs, including palms and soles (figure), with progressively worsening tingling and numbness in her hands and feet.

A skin biopsy was done, which revealed a granulomatous inflammatory infiltrate replacing 10–15% of the dermis, with well formed epithelioid granulomas in a linear pattern in the mid-dermis and involvement of cutaneous nerves. Fite's stain showed acid-fast organisms in the perineural infiltrates, indicating borderline tuberculoid leprosy. Following this diagnosis, tocilizumab, methotrexate, and prednisone were discontinued. The patient was started on oral rifampicin 600 mg daily and dapsone 100 mg daily. Because of intractable nausea and vomiting, rifampicin was replaced with minocycline 100 mg daily 2 weeks after initiation of treatment. The total duration of treatment with dapsone and minocycline was 18 months.

The rash resolved after 6 months of therapy, but the patient continued to have progressive paraesthesia from sensorimotor polyneuropathy, resulting in neuropathic ulcers requiring aggressive wound care. Wound care included mechanical debridement and antimicrobial hydrofiber dressing every alternate day. Subsequently, she was in remission for 4 years when she developed recurrence of rash. A biopsy of the rash confirmed type 1 reversal reaction, which resolved with augmentation of immunosuppression with oral prednisone tapered over 6 months. 4 years later, she has no symptoms except for persistent numbness and tingling in her hands and feet. She said she had never travelled outside the USA, had contact with people with leprosy, or had any contact with armadillos.

Diagnosis can be challenging in countries where leprosy is not endemic. An association exists between leprosy and TNF inhibitor therapy, but this is the first case, to our knowledge, of leprosy after use of an IL-6 inhibitor. Incidental contact with armadillos in the southern USA might also play a role in the transmission of leprosy. However, with increasing use of immunomodulators, physicians should reconsider infections that have become almost non-existent.

### Contributors

PHN and MK contributed to the writing of this manuscript. MK, BAN, and SQH contributed to patient care. All authors reviewed and approved the final version of this manuscript.

### Declaration of interests

We declare no competing interests.

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Figure: Rash on the back of the patient