First report of osteomyelitis caused by the novel species Mycobacterium mantenii

Fanourios Kontos¹, Liana Sybardi², Sotirios Tsiodras³, Vasiliki Mollaki⁴, Helen Giamarellou⁵, George L. Petrikkos⁶, Spyros Pournaras⁷

¹Attikon University Hospital; Microbiology
²Thriasio General Hospital of Elefsis; 1st Department of Internal Medicine
³Fourth Academic Department of Internal Medicine, University of Athens Medical School
⁴Hellenic National Bioethics Commission
⁵Hygeia General Hospital; 6th Dept. of Internal Medicine
⁶Attikon University Hospital; National and Kapodistrian University of Athens
⁷Medical School, University of Athens; Department of Microbiology

Background: Mycobacterium mantenii is a slow growing, scotochromogenic NTM species, most closely related to Mycobacterium scrofulaceum that was described firstly in 2009. Little is known about its clinical significance, natural habitat and virulence. We report for the first time a case of chronic osteomyelitis caused by M. mantenii in an immunocompromised patient with sarcoidosis and diabetes mellitus.

Material/methods: A 59-year old woman was referred to an outpatient clinic for the management of a chronic inflammation on the top of the left forefinger, lasting for eight months. The patient had a history of sarcoidosis and renal failure as a complication of diabetes mellitus and was receiving insulin, corticosteroids and thyroxin. The hand radiograph revealed a destructive process at the final phalanx of the left forefinger (sequestra).

Results: A fine needle aspiration was performed from the lesion and sent for cultures which were negative for common bacteria and fungi. Mycobacterial cultures were inoculated into Lowenstein-Jensen slants (bioMerieux) and the MGIT960 automated system (Becton Dickinson). Ziehl-Neelsen stain was negative. After 15 days of incubation, a mycobacterium isolate was recovered only by the
MGIT960 system and identified as *M. intracellulare* by the Genotype Mycobacterium CM (Hain Lifescience) test. On the contrary, the sequences of the genes 16S rDNA (1248 bp, GU827992), *hsp65* (439 bp, GU827993) and *rpoB* (340 bp, JN661704) were 100% identical with those of the type strain *M. mantenii* NLA000401474. MICs, determined by the standard broth microdilution method (CLSI M24-A2) using the SLOMYCOI assay (TREK Diagnostic systems) showed susceptibility to clarithromycin (0.25 μg/ml), rifabutin (≤0.25 μg/ml), rifampin (1 μg/ml), ethambutol (4 μg/ml), amikacin (8 μg/ml), linezolid (4 μg/ml) and moxifloxacin (2 μg/ml) and resistance to ciprofloxacin (16 μg/ml), ethionamide (10 μg/ml), isoniazid (≥8 μg/ml), and streptomycin (32 μg/ml). A triple therapy with clarithromycin, moxifloxacin and ethambutol for 5 weeks was initiated and moxifloxacin plus ethambutol followed for six months. The patient experienced considerable clinical improvement and a follow-up fine needle specimen, three months after the initiation of therapy was negative in both liquid and solid culture media.

**Conclusions:** Our findings suggest that the novel species *M. mantenii* caused osteomyelitis in an immunocompromised patient. Sequencing analysis of the genes *hsp65*, 16S *rDNA* and *rpoB* allowed the identification of this less common mycobacterial species, which was misidentified by commercial probes.