Infections Due to the Newly Described Species
Mycobacterium parascrofulaceum

Enrico Tortoli,1* Leonardo Chianura,2 Lionella Fabbro,3 Alessandro Mariottini,1,4 Nuria Martín-Casabona,5 Gianna Mazzarelli,1,6 Cristina Russo,7 and Mario Spinelli8

Regional Reference Center for Mycobacteria, Microbiology and Virology Laboratory,1 Cytogenetics and Genetics Unit,4 and Microbiological and Virological Serum-Immunology Laboratory,4 Careggi Hospital, Florence, Infectious Diseases Unit, Niguarda Hospital, Milan,2 Social Hygiene Dispensary, Turin,3 Microbiology Laboratory, Bambino Gesù Hospital, Rome, and Clinical Laboratory, Sant’Anna Hospital, Como,8 Italy, and Microbiology Laboratory, Vall d’Hebron Hospital, Autonoma University, Barcelona, Spain5

Received 29 March 2005/Returned for modification 29 April 2005/Accepted 18 May 2005

We report on four cases of infection by the recently described species Mycobacterium parascrofulaceum. In two cases the mycobacterium was isolated from AIDS patients, while in the others it was responsible for pulmonary disease in elderly men. Our findings suggest that M. parascrofulaceum is an opportunistic pathogen, like many other nontuberculous mycobacterial species.

CASE REPORTS

Case 1. A 35-year-old male with AIDS presented, in 1997, along with a very low CD4 lymphocyte count (7/ml) cerebral neurotoxoplasmosis, cytomegalovirus disease, and systemic cryptococcosis. His major symptoms included chorea, fever, and diarrhea. From his sputa, which were smear negative, a nontuberculous mycobacterium, not identified at that time (FI-97251), was isolated twice. The patient was treated with ethambutol and rifabutin until death, which came 1 month later.

Case 2. An unidentified mycobacterium (FI-00121) was grown in 2000 from a blood culture of a 40-year-old AIDS patient. The man was severely immunocompromised (39 CD4 lymphocytes/ml) and presented esophageal candidosis, cytomegalovirus infection, and fever. He was not treated with antituberculous drugs and died 6 months later.

Case 3. A 67-year-old Spanish male with epidermoid carcinoma of the left lung and mediastinom presented with chronic obstructive pulmonary disease and emphysema since 1997. Between August 2003 and April 2004, a nontuberculous mycobacterium (FI-03077), at first identified as Mycobacterium scrofulaceum, was isolated seven times from the sputum, which was microscopically negative for acid-fast bacilli. No information is available about treatment and follow-up.

Case 4. A 63-year-old patient, previously subjected to lobectomy because of bronchiectasis, presented in 2004 a cavitation of the left lung. A clinical sample obtained by means of bronchial aspiration was strongly positive for acid-fast bacilli and yielded in culture a strain (FI-04199) which was initially identified as M. scrofulaceum. Treatment with isoniazid, ethambutol, and rifampin was undertaken but did not produce any radiological improvement, the inability of the patient to produce sputum did not allow a microbiological follow-up. The man died 4 months later because of worsening respiratory insufficiency.

An a posteriori reexamination of a cluster of mycobacteria showed that the four strains reported above belong to the newly described species M. parascrofulaceum.

The description of M. parascrofulaceum was based on a thorough analysis of multiple genetic regions of unidentified mycobacteria (7) previously named MCRO 33 (3). It was realized that several strains of unnamed mycobacteria reported in the literature or listed in public-domain nucleic acid databases in fact belong to the newly established species (7), to which also must be assigned several reference strains previously assigned to the species M. scrofulaceum and M. simiae. (7).

We were stimulated to investigate the presence of M. parascrofulaceum by the paper describing the new species (7), in which the authors refer to two strains of ours reported in an article concerning unidentified mycobacteria (5). In addition to the above strains, others were detected by sequencing the first 500 bp of the 16S rRNA gene (8) and the gene encoding the 65-kDa heat shock protein (hsp65) (7) in a group of 45 clinical mycobacteria collected in our laboratory since 1987. This group had been selected by screening the collection database on the basis of a number of phenotypic traits: slow growth at 25 and 37°C but not at 45°C, scotochromogenicity, negative Tween 80 hydrolysis, positive urease, and a high-performance liquid chromatography profile (HPLC) characterized by three peak clusters as reported by Turenne and coworkers for M. parascrofulaceum (7). Forty-five strains fit this pattern; 6 of them were unidentified, while 39 had been assigned to the species M. scrofulaceum, mostly on the basis of the identification obtained with the commercial inverse hybridization test INNO-LIPA Mycobacteria (LiPA; Innogenetics, Ghent, Belgium).

Four strains turned out to belong to the new species M. parascrofulaceum; two of these had not been identified before,
while two had been previously considered to belong to the species *M. scrofulaceum*. With LiPA, all such strains hybridized, in addition to the genus specific probe, also with the ones recognizing the group *M. avium-M. intracellulare-M. scrofulaceum* and the species *M. scrofulaceum*. With another commercially available hybridization assay, GenoType Mycobacterium CM (Hain, Nehren, Germany), the line probes specific for *M. avium* and the species *M. scrofulaceum* were positive, as was the one recognizing the whole genus *Mycobacterium* and lines 9 and 10, which pattern is considered distinctive of *M. scrofulaceum*.

Differentiation of *M. parascrofulaceum* from *M. scrofulaceum* is a major problem. The biochemical and cultural tests are not discriminative, and the same is true for HPLC of mycolic acids. Both commercial DNA probes intended for the identification of *M. scrofulaceum* assign *M. parascrofulaceum* to the latter species; this is surprising, as they are aimed at different genetic targets, the 16S-23S internal transcribed spacer and the species *M. parascrofulaceum*. From the clinical point of view, *M. parascrofulaceum* is about 10%. The probability that such strains actually belong to the species *M. parascrofulaceum* is advisable. In patients considered distinctive of *M. scrofulaceum* is about 10%.

From the clinical point of view, *M. parascrofulaceum* seems to behave like the majority of nontuberculous mycobacteria (1, 4); its preferred target appears to be the lung, in particular in elderly patients with predisposing conditions. In one such patient, as in the case reported in the description of the new species, *M. parascrofulaceum* was responsible for cavitations. In severely immunocompromised patients, in particular those with AIDS, it can be responsible for pulmonary or disseminated infection. None of the strains investigated so far was responsible for neck lymphadenitis, which is considered the most frequent disease due to the closely related species *M. scrofulaceum* (9).

From the present cases, little can be said about the response to antitubercular treatment. Therefore, the value of the in vitro susceptibility pattern, showing sensitivity to rifampin, clarithromycin, and amikacin (7) in all the strains investigated so far, remains uncertain.

REFERENCES