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Microevolution of *Mycobacterium tuberculosis* in a Tuberculosis Patient

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ABSTRACT

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Five *Mycobacterium tuberculosis* isolates were obtained from three body sites from a Dutch patient. The isolates displayed a single genotype by 24-locus MIRU-VNTR typing (except for a single locus not amplified from one isolate) but were differentiated by small variations in IS*6110* fingerprints, spoligotypes, 6 hypervariable MIRU-VNTR loci, and/or DiversiLab profiles, revealing patterns of microevolution in a clonal infection.

CASE REPORT

Go to:

A 56-year-old woman born in the Netherlands, a low-tuberculosis (TB)-incidence country, presented with diffuse nodular abnormalities on her chest X-ray. She had no history of TB. The tuberculin skin test result was 0 mm. Bronchoscopy was performed, and sarcoidosis was diagnosed. Treatment of sarcoidosis was started and was given for a year and a half. Five years later, she returned with an inflammatory finger. Under suspicion of relapse of her sarcoidosis, treatment with prednisone was started. At the start of treatment with prednisone, a urine sample (23 May 1986) was collected. Due to deterioration of the patient's condition, 2 months later, 2 more urine samples were collected on the same day (30 July 1986). The following day, samples from sputum (31 July 1986) and pus from her finger (31 July 1986) were also collected. The isolates were cultured on Lowenstein-Jensen medium after routine decontamination with 4% Na-OH. Cultures of the sputum, urine, and pus were all positive for *Mycobacterium tuberculosis*. At that time, antituberculosis treatment with isoniazide (INH), rifampin, and pyrazinamide was started, after a 4-month period of prednisone treatment. All five isolates were sensitive to INH (MIC, 0.2 μg/ml), ethambutol (MIC, 4 μg/ml), and rifampin (MIC, 0.5 μg/ml); the result for susceptibility to pyrazinamide was not available. Treatment was ended successfully after 12 months.

For IS*6110* restriction fragment length polymorphism (RFLP) and DiversiLab analysis, DNA was extracted and purified, respectively, from *M. tuberculosis* cultures on Middlebrook 7H10 slants, using proteinase K and NaCl-cetyltrimethylammonium bromide (24). IS*6110*-RFLP was performed according to the standardized protocol recommended by van Embden et al. (24). DiversiLab analysis, a