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Frequency of rrs and rpsL mutations in streptomycin-resistant isolates of *Mycobacterium tuberculosis* from Iranian patients

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Streptomycin (SM) is one of the most effective drugs for the treatment of multidrug resistant (MDR) TB. However, resistance to SM is increasingly reported mainly due to mutations in rpsL and rrs genes. The present study was designed with the aim to determine the nature of SM resistance and the type and frequency of rpsL and rrs mutations among SM resistant *Mycobacterium tuberculosis* (MTB) isolates from Iran. One hundred clinical mono and multidrug-resistant MTB isolates were subjected to drug susceptibility testing (DST) for SM. SM resistant isolates were genotyped by using MIRU-VNTR typing. Fragments of the rpsL and rrs genes were amplified to investigate the most common mutations with subsequent sequence analysis. By DST, 32 (32%) isolates were identified as SM resistant, of which, 43.7% (14/32) were MDR. By MIRU-VNTR typing, the SM resistant isolates were classified into 20 different MIRU types and 8 clusters, with Beijing (39.13%) as the most prevalent genotype. Mutations in the rrs and rpsL genes were identified in 14 (43%) and 10 (31%) of the SM resistant isolates respectively. The most common mutations were at codon 128 (AAG→AGG, Lys43Arg), found in 7 (21%) isolates, and at codon 263 (A→G, Lys88Arg) in 3 (9%) isolates. The results suggest an association between the rpsL mutation and SM resistant strains of the Beijing genotype. The existence of 25% SM resistance in the isolates without mutation in rrs and rpsL genes, suggests the occurrence of further mechanisms associated with SM resistance in the isolates.

Biography

Azar Dokht Khoravi has her expertise in Mycobacteria genotyping and drug resistance. Her work in this field was started from her PhD course in University College London, where she had the opportunity to work with known scientists in this field Professors John Stanford and Graham Rook as her supervisors. Since Iran is an endemic country for tuberculosis, she and his colleagues and graduate students have recently established a research area in southwestern Iran linked with the public health tuberculosis reference laboratory which is under the WHO supervision, focusing on the drug resistance in *M. tuberculosis*. This is a promising area with the aim to minimize the rate of MDR tuberculosis in collaboration with health sectors for an improved treatment management of tuberculosis.

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