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Strain differentiation of *Mycobacterium tuberculosis* complex isolated from sputum of pulmonary tuberculosis patients

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Summary

Objective

This study represents an early attempt to determine the diversity of *Mycobacterium tuberculosis* in Egypt, particularly of drug-resistant strains.

Methods

We characterized 45 *Mycobacterium tuberculosis* complex isolates from sputum samples of Egyptian patients with pulmonary tuberculosis, in order to establish a database of strain types and antimicrobial susceptibility patterns.

Results

One *Mycobacterium bovis* and 44 *Mycobacterium tuberculosis* (MTB) isolates were identified by PCR-restriction fragment length polymorphism (RFLP) analysis of the *oxyR* gene. Twenty-five (56.8%) of the 44 MTB isolates were susceptible in vitro to all anti-tuberculosis drugs tested; five (11.4%) were mono-resistant to isoniazid or streptomycin (four were resistant to streptomycin and only one was resistant to isoniazid) and 14 (31.8%) were resistant to more than one drug (multidrug-resistant, MDR). Among the 44 MTB isolates tested by RFLP analysis in this study, 40 different RFLP patterns were obtained. The number of IS6110 copies ranged from 5 to 16. Studying the IS6110 RFLP patterns indicated that the 44 isolates did not cluster

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together but were generally scattered. None of the 14 MDR isolates were clustered. Twenty-two different spoligotypes were identified among the 44 MTB isolates, of which 13 were unique. The remaining 31 isolates were grouped into nine clusters of strains sharing identical spoligotypes.

Conclusions

We have demonstrated evidence of diversity among the drug-susceptible and resistant MTB strains. Continued surveillance for strains of MTB involved in pulmonary tuberculosis in Egypt, and especially for drug-resistant strains, is warranted.

Keywords

- Pulmonary tuberculosis;
- IS6110 RFLP;
- Spoligotyping