Identification of Clinical Isolates of Mycobacteria Recovered from Iranian Patients by Phenotypic and Molecular Methods

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Abstract

Aim and Background. As mycobacterial species have different drug susceptibilities, precise identification is crucial for adoption of correct drug therapy and can ultimately influence patient outcome. Among various molecular methods, PCR-restriction fragment length polymorphism (PRA) based on hsp65 gene is preferred since it offers an easy, rapid, and inexpensive means of identifying pathogenic mycobacterial isolates to species level.

A combination of phenotypic tests and PCR-restriction fragment length polymorphism (PRA) method targeting 441 bp hsp65 DNA used to find species diversity of Iranian clinical strains of mycobacteria.

Materials and Methods. The test strains consisted of 270 clinical isolates of mycobacteria recovered from 2358 patients in two reference laboratories. A total of 207 isolates belong to M. tuberculosis were initially identified using conventional phenotypic techniques and specific PCR, based on detection of IS 6110. The isolates belonging to non tuberculosis mycobacteria (NTM) were subjected to further definitive identification using batteries of phenotypic tests and hsp65-PRA.

Results. Out of 270 clinical strains, 207 isolates were found to be M. tuberculosis by phenotypic techniques and specific PCR based on detection of IS 6110. NTM strains (63 isolates) represented a variety of the species comprised of 12 M. simiae, 9 M. fortuitum, 5 M. gordonae, 5 M. abscessus, 5 M. kansasii and some rare species including 3 M. massilainase, 3 M. thermoressibille, 2 M. senegalense type 2, 1 M. conceptionense type 1 or M. senegalense type 1, 1 M. phlei, 1 M. chelonae, 1 M. nonchromogenicum, 1 M. genavense, 1 M. montefiorense or M. triplex, 1 M. branderi, 1 M. novocastrense, 1 M. nebraskense, 1 M. lentiflavum and 1 M. avium.

Conclusion. This study showed that hsp65-PRA technique offers a simple, rapid, and accurate method for the identification of NTM clinical isolates.
**Key words.** Non-Tuberculous Mycobacteria, Identification, *hsp65*, PRA.