GENETIC POLYMORPHISMS AMONG MYCOBACTERIUM TUBERCULOSIS ISOLATES FROM PATIENTS WITH PULMONARY TUBERCULOSIS IN NORTHERN INDIA

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Abstract. Restriction fragment length polymorphism (RFLP) based on IS6110 is considered the gold standard for Mycobacterium tuberculosis molecular typing. It is useful to discriminate among M. tuberculosis strains, investigate outbreaks and distinguish between reactivation and re-infection. We studied polymorphisms among M. tuberculosis isolates from northern India using RFLP to determine the presence of a correlation between IS6110 based fingerprints and drug resistance and to look for relapse and transmission among patients and their contacts. RFLP patterns of PvuII digested genomic DNA of 100 M. tuberculosis isolates were analyzed using southern blotting with a 245 bp IS6110 probe. Drug sensitivity testing (DST) was conducted for rifampicin (40 µg/ml), isoniazid (1 µg/ml), ethambutol (2 µg/ml) and streptomycin (4 µg/ml) using the proportion method. A high degree of polymorphism was seen among the M. tuberculosis isolates and the number of IS6110 copies varied from 0 to 14, with a predominance of isolates with 11 bands. Seventy-five isolates had a high number of bands, 9 had an intermediate number, 6 isolates had a low number and 10 isolates had no bands. No correlation between IS6110 band numbers and RFLP banding patterns was found with drug resistance or for any particular geographical area, although clustering was seen amongst MDR-TB cases. No cases of relapses or transmissions were seen.

Keywords: Mycobacterium tuberculosis, RFLP, IS6110, MDR-TB, northern India

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