Genetic Polymorphism Among Clinical Isolates of *Mycobacterium tuberculosis* from Patients with Pulmonary Tuberculosis in the Northern Region of India

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Introduction: Molecular epidemiological studies of *M. tuberculosis* strains by using DNA fingerprinting have provided valuable information about mechanism of transmission of tuberculosis. However there are limited number of epidemiological studies conducted in India which comprised small number of patients. In this study we investigated the genetic polymorphism among *Mycobacterium tuberculosis* (*M. tuberculosis*) isolates of northern region of India by restriction fragment length polymorphism (RFLP) also attempted to ascertain correlation between IS6110 based fingerprints and drug resistance pattern.

Methods: DNA fingerprinting of 100 clinical isolates of *M. tuberculosis* obtained from patients with confirmed TB from northern India was carried out using restriction fragment length polymorphism (RFLP) associated with IS6110 element in *M. tuberculosis* genome. RFLP patterns of PvuII digested genomic DNA of these *M. tuberculosis* isolates were analyzed by southern blotting using 245 bp IS6110 probe.

Results: Most of the isolates (90/100) had IS6110 element and substantial degree of polymorphism was seen among the *M. tuberculosis* isolates. The range of IS6110 copies varied from 0 to 14 and there was predominance of the isolates with 11 bands and 6 *M. tuberculosis* isolates had only single band & No W-Beijing strain was found. High copy number of DNA bands (more than five bands) was present in 75 isolates and Low copy number (less than six bands) in 15 isolates. Of 7 clusters, 6 were found in Multiple drug resistant (MDR-TB) strains and RFLP pattern had no relation to drug resistance. No correlation could be observed with any particular MIC or geographical location.

Conclusion: The findings suggest that the tuberculosis is a public health problem among tribal population of the district. There is an urgent need to intensify tuberculosis control measures on a sustained and long term basis in this area.

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