

Human Genetic Susceptibility to Tuberculosis

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Abstract

Introduction: Recent advances in the understanding of human susceptibility to tuberculosis have resulted from the application of molecular techniques to answer mechanistic questions on genetic regulation of host defense. **Methods:** This review is based upon a MEDLINE search of articles relevant to human genetic susceptibility to mycobacteria. **Results:** The impact of natural selection in shaping susceptibility to infectious disease should be taken into account when different ethnic groups are compared. Molecular typing has improved the accuracy of HLA analysis. However, most of the recent advances have come from research in non-HLA genes. Multiple non-HLA genes controlling susceptibility to tuberculosis have been identified by family-based linkage studies and population-based case-control studies. Comparative genomic studies based upon a mice model have identified a new resistance-associated protein in human macrophages. Several rare inherited disorders of mycobacterial immunity are caused by isolated gene mutations in the interferon γ -interleukin 12 pathways. Allelic variations in the vitamin D receptor have also been related to tuberculosis. A locus on human chromosome 17q have been linked to tuberculosis in a family-based genomic screening study. **Conclusion:** Susceptibility to tuberculosis involves large number genes inherited in a complex manner. Further discoveries are expected in the wake of rapid progress in the human genome project.

Ann Acad Med Singapore 2000; 29:298-304

Key words: Genetic susceptibility, Immunogenetics, Natural resistance-associated macrophage protein 1, Tuberculosis

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