Interleukin-12 gene polymorphism in children with BCG-osis from Iran

Mona Afraei a,*, Maryam Hasanzad b, Parissa Farnia a, Shima Seif a, Ali Akbar Velayati a

a Mycobacteriology Research Center, National Research Institute of Tuberculosis and Lung Diseases (NRITLD), Shahid Beheshti University of Medical Sciences, Tehran, Iran
b Pediatric Respiratory Diseases Research Center, National Research Institute of Tuberculosis and Lung Diseases (NRITLD), Shahid Beheshti University of Medical Sciences, Tehran, Iran

ABSTRACT

Introduction: In many developing countries, like Iran, newborns receive the BCG vaccination for prophylaxis against mycobacterial infections. Although in many children or infants BCG infection after BCG vaccination is rare, children with primary immunodeficiency are at high risk of developing BCG-osis. According to many studies, some cytokines such as IL-12 play a major role in immunological responses in dealing with mycobacterial infections. Therefore, this research studies the relationship between polymorphism of genes encoding this cytokine and BCG-osis in Iranian children.

Method: Thirty-four children up to 7 years old with BCG-osis and 34 healthy children vaccinated with BCG during the first two days of life were chosen for this analysis. DNA samples were extracted from both groups. Single nucleotide polymorphisms (SNPs) in IL-12 (at +705, +1158, +1196 and +1637) genes were assessed using PCR-RFLP. Allele and genotype frequencies in cases and controls were compared using the Pearson Chi-Square test.

Result: The prevalence of IL-12 705 AG (heterozygote mutant) genotype was 50% in patients, but in the control group this rate was 38.2%. Likewise, AA (frequent homozygote) genotypes were 52.9% and 38.2% in patients and control groups, respectively (p-Value >0.05). It was observed only homozygote alleles for 1158, 1196, 1637 and 1664 positions in both patients and control groups. However, there was no significant association between case and control groups.

Conclusions: BCG vaccination in infants can cause protective immunity, and IL-12 plays an important role in immune responses. However, this study did not show any significant association between polymorphisms in IL-12 (at +705, +1158, +1196 and +1637) and risk of developing BCG-osis.

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