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Novel Association of Interleukin-10 Promoter Polymorphisms with Nasopharyngeal Carcinoma Susceptibility

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Backgrounds: Nasopharyngeal carcinoma (NPC) is a multifactorial type of cancer and cytokines driving the immune response seem to be disturbed in NPC patients. The interleukin-10 (IL-10) is an immunosuppressive cytokine which may facilitate carcinogenesis by down-regulating interferon gamma production and supporting tumor escape from the immune response. W proposed that differential expression levels among individuals can be contributed to polymorphisms within the promoter of *IL-10* gene and associated with NPC susceptibility. Therefore, the current study aimed at investigating the association of *IL-10* promoter genotypes with and examining the interaction among *IL-10* genotype and individual smoking habit in Taiwan NPC susceptibility. **Materials and Methods:** A total of 698 native Taiwanese consisting of 176 cases and 522 controls were enrolled in this hospital-based study, and three single nucleotide polymorphism sites at promoter region of *IL-10,* A-1082G (rs1800896), T-819C (rs3021097), and A-592C (rs1800872) were genotyped by polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP) and their interaction with smoking habit for NPC risk were evaluated. **Results:** There were significant differential distribution among NPC and control subjects in the genotypic (P=0.0004) and allelic (P=0.0222) frequencies of *IL-10* A-1082G. Individuals who carried AG or GG genotype on *IL-10* A-1082G had a 1.91- and 3.26-fold higher risk of developing NPC compared to those who carried AA genotype (95% confidence interval=1.28-2.85 and 1.35-7.85). None of the other polymorphisms investigated appear to affect NPC risk. In gene-environment interaction analysis, we have firstly provided evidence showing that there is an obvious joint effect of *IL-10* A-1082G genotype with individual smoking habit on NPC risk. **Conclusion:** The results support the concept that the interleukins may play a role in NPC development and that *IL-10* A-1082G which closely related to its protein expression maybe a useful biomarker for NPC progression.