Association of the genetic polymorphisms of \textit{NFKB1} with susceptibility to ovarian cancer

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\textbf{ABSTRACT.} Nuclear factor-κB (NF-κB), a transcription factor that is activated by various stimuli, is associated with the pathogenesis of several cancers. One functional polymorphism, -94 insertion/deletion ATTG (rs28362491), in the human \textit{NFKB1} gene (one member of the NF-κB gene family) is associated with increased risk of various cancers. However, only one study has reported that rs28362491 is significantly associated with ovarian cancer. The aim of this study was to analyze the association between single nucleotide polymorphisms (SNPs) and haplotypes in the \textit{NFKB1} gene and the risk of ovarian cancer in a Chinese population. We examined the potential association between ovarian cancer and 15 SNPs (rs28362491, rs3774932, rs1598856, rs230531, rs230530, rs230528, rs230521, rs230498, rs230539, rs1005819, rs3774956, rs4648055, rs4648068, rs3774964, rs3774968) of the \textit{NFKB1} gene using the MassARRAY system. Participants included 411 patients with ovarian cancer and 438 healthy controls. The results showed that the allelic or genotypic frequencies of three polymorphisms, including rs28362491 (promoter region), rs230521 (intron 4), and rs4648068 (intron 12), in the patients with ovarian cancer, were significantly different from those in the healthy controls. Strong linkage disequilibrium was observed in four blocks (D’ > 0.9).
Significantly more A-C (block 2: rs230528-rs230521) haplotypes (P = 0.0003 after Bonferroni’s corrections) and G-A-A (block 4: rs4648068-rs3774964-rs3774968) haplotypes (P = 0.021) were found in the patients with ovarian cancer. These findings point to a role of the NFKB1 polymorphism in patients with ovarian cancer among a Chinese Han population, and may be informative for future genetic or biological studies on ovarian cancer.

**Key words:** Nuclear factor-kB; Single nucleotide polymorphisms; Ovarian cancer