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Effect of *CYP1A1* and *GSTM1* genetic polymorphisms on bone tumor susceptibility

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ABSTRACT. Tumor gene polymorphisms are often associated with individual susceptibility to genetic diseases. Cytochrome P4501A1 (*CYP1A1*) and glutathione S-transferase mu 1 (*GSTM1*) gene polymorphisms are closely related to the susceptibility of the body to chemical carcinogens in the environment. Therefore, we explored the relationship between *CYP1A1* and *GSTM1* gene polymorphisms and susceptibility to bone tumors. Multiplex-polymerase chain reaction (PCR), allelic-specific PCR, and PCR-restriction fragment length polymorphism techniques were used to analyze *CYP1A1* and *GSTM1* gene polymorphisms in 52 bone tumor patients and 100 healthy subjects. The allelic variation frequency of the *CYP1A1* gene at exon 7 (Ile 462 Val) in bone tumor patients was 0.462, which was significantly higher than that in the normal controls (0.223). The frequency of the absence of the *GSTM1* homozygous genotype in the patients (0.65) was also markedly higher than that in the control group (0.41). Subjects with *CYP1A1* Val/Val homozygous mutations and absence of the *GSTM1* homozygous genotype were at markedly increased risk of developing bone tumors [ORs 4.15 (95%CI: 1.268-13.30) and 2.35 (95%CI: 1.15-

4.85), respectively]. The OR for the combined effect of the *CYP1A1* and *GSTM1* gene polymorphisms was 8.55 (95%CI: 1.75-41.50). *CYP1A1* and *GSTM1* polymorphisms are genetic risk factors in patients with bone tumors, and the allelic variation of these genes increases the risk of bone tumor occurrence.

Key words: Bone tumor; *CYP1A1*; *GSTM1*; Genetic susceptibility; Genotype

