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XRCC1 Arg194Trp and *XRCC1* Arg399Gln Polymorphisms Affect Clinical Features and Prognosis of Myelodysplastic Syndromes

Batchimeg Norjmaa[1], Takayuki Saitoh[1], Tetsuhiro Kasamatsu[1], Yusuke Minato[2] and Hirokazu Murakami[1]

1 Department of Laboratory Sciences, Course of Sciences, Gunma University Graduate School of Health Sciences, Maebashi, Gunma 371-8514, Japan
2 Department of Virology and Preventive Medicine, Gunma University Graduate School of Medicine, Maebashi, Gunma 371-8511, Japan

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Corresponding author:
Takayuki Saitoh
Department of Laboratory Sciences, Course of Sciences, Gunma University Graduate School of Health Sciences, 3-39-22 Showa-machi, Maebashi, Gunma 371-8514, Japan
Tel: +81-27-220-8938
E-mail: tsaitoh@gunma-u.ac.jp

Backgrounds & Aims

X-ray repair cross-complementing group 1 (*XRCC1*) plays an important role in base excision repair (BER) system, which is critical for genome maintenance. Polymorphisms in *XRCC1* that result alteration of DNA repair capacity are reportedly associated with cancer risk and treatment response. However, whether these polymorphisms alter the susceptibility and clinical outcomes of patients with myelodysplastic syndromes (MDS) is unknown. The aim of this study was to evaluate the association of two polymorphisms, *XRCC1* Arg194Trp and *XRCC1* Arg399Gln, with susceptibility to and clinical outcome of MDS.

Methods

Our study included 119 patients with MDS or chronic myelomonocytic leukemia [median 67.9 years, range 17.1-86.5 years; male/female 81/38] and 202 healthy control subjects. Genotypes were determined via PCR-restriction fragment length polymorphism (PCR-RFLP).

Results

Differences in allele or genotype frequencies for *XRCC1* Arg194Trp or *XRCC1* Arg399Gln between patients with MDS and the control group were not significant. However, *XRCC1* 399 non-Arg/Arg genotypes were significantly associated with previous history of radiotherapy and multiple cancers. Furthermore, *XRCC1* 194 non-Arg/Arg genotypes and *XRCC1* 399 Arg/Arg genotype were each significantly associated with poor prognosis for patients with MDS.

Conclusions

Our studies suggest that *XRCC1* polymorphisms affected clinical features of MDS and may be useful prognostic marker for MDS.

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