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Common gene variants in RAD51, XRCC2 and XPD are not associated with clinical outcome in soft-tissue sarcoma patients

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Background: DNA repair mechanisms play a major role in cancer risk and progression. Germline variants in DNA repair genes may result in altered gene function and/or activity, thereby causing interindividual differences in a patient's tumor recurrence capacity. In genes of the DNA repair pathway the gene variants RAD51 rs1801320 G>C, XRCC2 rs3218536 G>A and XPD rs13181 A>C have been previously related to genetic predisposition and prognosis of various cancer entities. Therefore, we investigated the association between RAD51 rs1801320 G>C, XRCC2 rs3218536 G>A and XPD rs13181 A>C polymorphisms and time to tumor recurrence (TTR) and overall survival (OS) in soft-tissue sarcoma (STS) patients after curative surgery.
Methods: A total of 260 patients were included in this retrospective study. Germline DNA was genotyped by 5'-exonuclease (TaqMan) technology. Genotypes of each polymorphism were tested for association with TTR and OS using univariate and multivariate Cox-regression analysis.
Results: A statistically significant association was observed between tumor grade and adjuvant radiotherapy and TTR and between tumor grade and OS. However, no association was found between RAD51 rs1801320 G>C, XRCC2 rs3218536 G>A and XPD rs13181 A>C and TTR and OS in univariate and multivariate analysis including tumor grade and adjuvant radiotherapy.
Conclusion: In conclusion, our results underline a prognostic effect of tumor grade and adjuvant radiotherapy in STS patients but indicate no association between RAD51 rs1801320 G>C, XRCC2 rs3218536 G>A and XPD rs13181 A>C and clinical outcome in STS patients after curative surgery.

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