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Association between *ERCC1* and *ERCC2* gene polymorphisms and chemotherapy response and overall survival in osteosarcoma

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ABSTRACT. We aimed to evaluate the influence of four SNPs in *ERCC1* and *ERCC2* on the response to cisplatin-based treatment and on clinical outcome in patients with osteosarcoma. We identified 186 patients with osteosarcoma diagnosed between April 2009 and April 2011 who were eligible for inclusion in our study. Genotyping of *ERCC1* rs11615, rs3212986, and rs2298881; and *ERCC2* rs1799793 and rs13181 was conducted by a polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP) assay. By conditional logistic regression analysis, patients carrying the CC genotypes of *ERCC1* rs11615 and rs2298881 were shown to be more likely to have good response to chemotherapy when compared with patients carrying wild-type genotypes; the ORs (95%CIs) were 2.56 (1.02-7.35) and 3.01 (1.07-9.71), respectively. By Cox regression analysis, individuals carrying the CC genotype of *ERCC1* rs11615 were associated with longer overall survival time and decreased risk of death from osteosarcoma; the hazards

ratio (95%CI) was 0.32 (0.07-0.98). In summary, our results suggested that the *ERCC1* rs11615 and rs2298881 polymorphisms play important roles in the response to chemotherapy mediated by the DNA repair pathway and in the clinical outcome of osteosarcoma.

Key words: *ERCC1*; *ERCC2*; Polymorphism; Clinical outcome; Osteosarcoma

