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Pharmacogenetic role of *XRCC1* polymorphisms on the clinical outcome of gastric cancer patients with platinum-based chemotherapy: a systematic review and meta-analysis

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ABSTRACT. It is still controversial whether X-ray repair cross-complementing group (*XRCC1*) gene polymorphisms (Arg194Trp and Arg399Gln) are associated with the clinical outcome of platinum-based chemotherapy in gastric cancer patients based on published studies. Meta-analysis was performed to provide a systematic review of the findings. Eligible articles from the PubMed, SinoMed, and CNKI databases before September 1, 2012, were selected. Objective response (complete response + partial response *vs* progressive disease + stable disease), progress-free survival (PFS) and overall survival (OS) were applied to evaluate clinical outcomes. We calculated the odds ratio or hazard risk (HR) with 95% confidence interval (CI) using the STATA software. Eleven eligible articles including 1274 gastric cancer patients with platinum-based treatment were enrolled in our meta-analysis. The results indicated that the A allele of the *XRCC1*

Arg399Gln polymorphism was significantly associated with poor OS (HR = 1.40; 95%CI = 1.04-1.90) of gastric cancer but not for platinum-based chemotherapy response or PFS. No significant associations were observed between *XRCC1* Arg194Trp and objective response. The data suggest that the *XRCC1* Arg399Gln polymorphism may be a prognostic biomarker of OS for platinum-based gastric cancer treatment. However, further cohorts with larger sample sizes from different ethnic backgrounds and with improved experimental design are needed to confirm these findings.

Key words: Chemotherapy; *XRCC1*; Polymorphism; Meta-analysis; Gastric cancer

