Polymorphisms in the \textit{XRCC1} gene are associated with treatment response to platinum chemotherapy in advanced non-small cell lung cancer patients based on meta-analysis

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Received December 6, 2012
Accepted June 7, 2013
Published May 16, 2014
DOI http://dx.doi.org/10.4238/2014.May.16.1

\textbf{ABSTRACT.} X-ray repair cross complementing group 1 (\textit{XRCC1}) polymorphisms have been implicated in interindividual variability of efficacy of platinum chemotherapy for treating non-small cell lung cancer (NSCLC); however, results of different studies have been inconsistent. We conducted a meta-analysis to investigate the association between polymorphisms in the \textit{XRCC1} gene and response rate of platinum chemotherapy in advanced NSCLC patients. Searches were performed on MEDLINE, PubMed, EMBASE, Chinese Biological Medicine Database, China National Knowledge Infrastructure, and Wangfang Data, covering all relevant studies published up to August 1, 2012. Statistical analyses were performed using the Revman 5.0 and STATA 10.0 software. Two polymorphisms, Arg399Gln (G>A) and Arg194Trp (C>T), were investigated in 19 studies, involving 2152 advanced NSCLC patients. For \textit{XRCC1} Arg399Gln, patients carrying two G alleles had a significantly increased response rate of platinum chemotherapy, when
compared with those carrying the A allele [odds ratio (OR) = 2.05, 95% confidence interval CI = 1.62-2.60 for GG vs GA+AA]. Similarly, the AA carriers had a 54% decreased response rate compared with the G allele carriers (OR = 0.46, 95%CI = 0.30-0.70 for AA vs GA+GG). For XRCC1 Arg194Trp, patients carrying two C alleles had a 62% decreased response rate compared with those carrying either one or two variant T alleles (OR = 0.38, 95%CI = 0.30-0.48 for CC vs CT+TT). However, although TT carriers had a better response rate compared with the C allele carriers, the difference was not significant (OR = 1.27, 95%CI = 0.92-1.77 for TT vs CC+CT). Based on this meta-analysis, we conclude that XRCC1 polymorphisms are associated with treatment response to platinum chemotherapy in advanced NSCLC patients.

**Key words:** Lung cancer; XRCC1; Gene polymorphism; Platinum; Chemotherapy; Meta-analysis