Association of xeroderma pigmentosum group D (Asp312Asn, Lys751Gln) and cytidine deaminase (Lys27Gln, Ala70Thr) polymorphisms with outcome in Chinese non-small cell lung cancer patients treated with cisplatin-gemcitabine

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Received January 29, 2013
Accepted January 16, 2014
Published April 29, 2014
DOI http://dx.doi.org/10.4238/2014.April.29.9

ABSTRACT. Xeroderma pigmentosum group D (XPD) plays a key role in the repair of DNA and platinum resistance lesions. Cytidine deaminase (CDA) genes determine the velocity of gemcitabine catalysis. This study aimed to investigate the relationship between XPD and CDA genotypes and outcome in non-small lung cancer (NSCLC) patients. We used polymerase chain reaction-restriction fragment length polymorphism to evaluate genetic polymorphisms of XPD (Asp312Asn and Lys751Gln) and CDA (Lys27Gln and Ala70Thr) in 93 NSCLC patients treated with a cisplatin-gemcitabine regimen. There were no significant correlations between the XPD polymorphisms Asp312Asn and Lys751Gln with TTP (P > 0.05). Time to progression (TTP) did not differ between patients with wild type genotypes and those heterozygous for the single nucleotide polymorphism loci of
XPD. However, a significant difference was observed in overall survival (OS) between XPD Asp312Asp and XPD Asp312Asn individuals (20.0 vs 12.4 months, P = 0.04). Furthermore, the OS of patients with wild type genotypes was longer (20.5 months) than that of patients carrying the XPD 751Lys/Gln polymorphism (11.5 months). No significant differences in TTP or OS were observed in patients carrying different genotypes of CDA Lys27Gln, and no mutations were observed at the CDA Ala70Thr site. These results provide suggestive evidence of a favorable effect for the XPD 312Asp/Asp and XPD 751Lys/Lys genotypes with respect to overall survival rates in platinum-treated NSCLC patients. However, the CDA 27 polymorphism does not appear to affect the efficacy of gemcitabine.

Key words: Genetic polymorphisms; Cytidine deaminase; Lung cancer; Xeroderma pigmentosum complementary group D