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SHC 25. THE EFFECT OF MUTATED DNA REPAIR GENES ON DNA DAMAGE IN INDIVIDUALS OCCUPATIONALLY EXPOSED TO ARSENIC

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Investigating association of variant genotypes of DNA repair enzyms with DNA damages has an important place on revealing metal toxicity mechanisms. The aim of this study was to investigate the effect of mutated DNA repair genes on lymphocyte DNA damage in individuals occupationally exposed to arsenic.

In this study, X-ray repair cross complementing group 1 (XRCC1) Arg399Gln and X-ray cross-complementing group 3 (XRCC3) Thr241Met gene polymorphisms were analyzed by Polymerase Chain Reaction- Restriksiyon Fragment Lenght Polymorphism (PCR-RFLP) technique to detect individual susceptibility. DNA damages of the peripheral blood lymphocytes were evaluated according to the alkaline comet assay parameters including Comet Lenght (CL), Tail Intensity (TI), Tail Lenght (TL) in 175 individuals ocupationally exposed to arsenic and blood arsenic level was detected by graphite furnace atomic absorption spectroscopy (GFAAS).

Lymphocyte DNA damages were found significantly higher in individuals occupationally exposed to arsenic with XRCC1/XRCC3 homozygote atypical (Gln/Gln; Met/Met) genotypes than these with homozygote typical (Arg/Arg; Thr/Thr) genotypes and heterozygote (Arg/Gln;Thr/Met) genotypes ($p<0.01$). Furthermore, a statistically significant association was found between blood arsenic level and DNA repair genes (XRCC1/XRCC3) ($p<0.001$).

Our study showed that mutated DNA repair genes (XRCC1/XRCC3) caused much more lymphocyte DNA damages than homozygote typical and heterozygote genotypes in individuals occupationally exposed to arsenic.

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