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XPD and hOGG1 gene polymorphisms in reperfusion oxidative stress

O. İsbir[1], U. Görmüş[2], H.A. Ergen[3], B. Çakmakoğlu[3], Ö.T. Kahraman[3] and N. Baykan[1]

[1]Department of Anesthesiology and Reanimation,
Faculty of Medicine, Acibadem University, Istanbul, Turkey
[2]Department of Biochemistry, Faculty of Medicine,
Istanbul Bilim University, Istanbul, Turkey
[3]Department of Molecular Medicine, Institute for Experimental Medicine,
Istanbul University, Istanbul, Turkey

Corresponding author: O. İsbir
E-mail: olcayisbir@yahoo.com

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ABSTRACT. Knee replacement surgery is an ischemia/reperfusion model, as it uses tourniquet applied to the knee area to stop the blood flow during the operation. Fifty patients that were undergoing elective arthroscopic knee surgery were included in our study. Human 8-oxoguanine glycosylase 1 (hOGG1) is an enzyme to repair specific DNA lesions and a good marker of hydroxyl radical damage to DNA. XPD is another DNA repair gene. We investigated the effect of hOGG1 (Ser326Cys) and XPD (Lys751Gln) polymorphisms on the oxidative stress level after reperfusion. To evaluate oxidative stress conditions, we measured 8-hydroxyguanosine and malondialdehyde (MDA) levels. Polymorphism analyses were done by PCR-RFLP; serum 8-hydroxyguanosine and MDA levels were determined by enzyme-linked immunoassay. There were no significant differences between serum MDA and 8-hydroxyguanosine levels in the samples taken before and after tourniquet application; none of these parameters were related with hOGG1 genotypes. However, we

observed increased MDA levels after tourniquet application in M allele carriers for the XPD gene; this could mean that M allele carriers are more prone to DNA damage due to oxidative activity.

Key words: Oxidative stress; XPD; hOGG1; Polymorphisms

