

Study of Age-Dependent Changes of Peripheral Blood Leukocytes Apoptotic Properties

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Abstract : Aging has a suppressive influence on human immune cells. Apoptosis may play important role in age-dependent immunosuppression and lymphopenia. Prevention of apoptosis may be promoted by BCL2-dependent and BCL2-independent manner. BCL2 is an antiapoptotic factor that has an antioxidative role by locating the glutathione at mitochondria and repressing oxidative stress. STAT3 may suppress apoptosis in BCL2-independent manner and promote cell survival blocking cytochrome-c release and reducing ROS production. The aim of our study was to estimate the influence of aging on BCL2-dependent and BCL2-independent prevention of apoptosis via measurement of BCL2 and STAT3 mRNAs expressions. The study was done on Armenian population (2 groups: 37 healthy young (mean age \pm SE; min/max age, male/female: 37.6 \pm 1.1; 20/54, 15/22), 28 healthy aged (66.7 \pm 1.5; 57/85, 12/16)). mRNA expression in peripheral blood leukocytes (PBL) was determined by RT-PCR using PSMB2 as the reference gene. Statistical analysis was done with Graph-Pad Prism 5; P < 0.05 considered as significant. The expression of BCL2 mRNA was lower in aged group (0.199) compared with young ones (0.643)(p < 0.01). Decrease expression was also recorded for female and male subgroups (p < 0.01). The expression level of STAT3 mRNA was increased (young, 0.228; aged, 0.428) (p < 0.05) during aging (in the whole age group and male/female subgroups). Decreased level of BCL2 mRNA may indicate about the suppression of BCL2-dependent prevention of apoptosis during aging in peripheral blood leukocytes. At the same time increased the level of STAT3 may suggest about activation of BCL2-independent prevention of apoptosis during aging.

Keywords : BCL2, STAT3, aging, apoptosis

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