LEUKOCYTE CONTRIBUTION TO CARDIOVASCULAR PATHOLOGY OF OBSTRUCTIVE SLEEP APNEA

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Background: Obstructive sleep apnea (OSA) patients are at higher risk for cardiovascular disease (CVD). Our previous study showed some changes in circulating adhesion molecules, like selectins in plasma, according to the severity of OSA. The recognition of the earliest stage of the development of atherosclerosis, involving selectins and leukocytes, may improve the understanding of cardiovascular phenomenon in obstructive sleep apnea (OSA) syndrome. The aim of the study was to analyze concentrations of the specific for leukocyte selectin (L-selectin) circulating in plasma and expressions of gene for L-selectin in leukocytes, in different stage-OSA patients. **Methods:** OSA-suspected males with no acute or severe chronic disease were enrolled into the study. Non-smoking Caucasians aged 34-64 with body mass index (BMI) 25,0-35,0 kg/m^2 submitted clinical, biochemical and polysomnographic examinations. EMBLA system was used to establish the apnea/hypopnea index (AHI). The results of oral glucose tolerance test were to select normal glucose tolerance persons only (excluding diabetes and pre-diabetes). Age and BMI-comparable subjects were divided into groups: OSA-0 with AHI <5, OSA-1 with AHI 5-15, OSA-2 with AHI 16-30, OSA-3 with AHI≥31, each consisting of 18 males. Complete blood count (CBC), fasting plasma lipid profile (T-C, HDL-C, TG, LDL-C), insulin concentration and high sensitivity C-reactive protein (hsCRP) along with insulin resistance indices calculated, were estimated to characterize the study population. The subjects were determined plasma concentrations of L-selectin (L-sel) by ELISA method (R&D Systems, USA) and leukocyte expression of gene for L-selectins (xL-sel) by real-time quantitative PCR analysis (Roche Diagnostics, Germany). Statistical analysis was performed using Statistica 10.0 program for Windows. **Results:** 1. The groups did not differ in their age, BMI, systolic and diastolic blood pressure, markers of glucose metabolism, leukocyte count, hsCRP level and lipid profile, except LDL-C increased in OSA-3 groups as compared with OSA-0. 2. Increasing concentration of L-sel was observed from OSA-0 to OSA-3 persons (p=0,0000). The expression of gene (xL-sel) differed among the groups studied (p=0,0000): OSA-2 subjects presented higher values *versus* OSA-0 individuals, and OSA-3 subjects had higher xL-sel compared with OSA-0 and OSA-1, respectively. 3. The whole study population (OSA-0, 1, 2 and 3) was found the correlations: L-sel & AHI (R=0,75), xL-sel & AHI (R=0,71) and L-sel & xL-sel (R=0,52), and the exponential relationships were observed. Additionally, different correlations concerning L-selectin and metabolic factors were observed in OSA diagnosed patients (OSA-1, 2 and 3). **Conclusions:** In excessive body mass but normal glucose tolerance persons obstructive sleep apnea pathology increases an expression and a concentration of L-selectin in blood. However the additional metabolic abnormalities may affect the L-selectin levels in different stages of OSA.