Evaluation of Oxidative Stress Parameters in Patients with Metabolic Syndrome

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Introduction. Overweight and obesity is a worldwide public health problem. In the world, approximately 15% of population has got a metabolic syndrome (MS) [Hanfeld, 2010] aged 40–75 years old. MS represents a cluster of physiological and anthropometric abnormalities. Oxidative process (OS) is an important pathophysiological factor in aetiology of chronic latent inflammation in the body. It is produced by the increased generation of free radicals as reactive oxygen species (ROS) and reactive nitrogen species (RNS) or by the decreased antioxidant production. Oxidative stress is associated with diabetes, hypertension and other cardiovascular diseases, while the role of oxidative stress in pathogenesis of MS is not clearly defined.

The aim, materials and methods. The purpose of this study is to investigate the status of oxidative stress in patients with MS.-The inclusion criteria for MS, according to the International Diabetes Federation, was observed when selecting the participants of the study. The control group comprised healthy individuals with normal blood biochemical values. Clinical inspection entailed detection of patients' blood pressure and waist circumstance. The levels of inflammatory markers C-reactive protein, Interleukin-6 (IL-6), oxidative stress marker malondialdehyde (MDA) and superoxide dismutase (SOD), glutathionperoxidase (Se) were measured in serum, as well as, cholesterol level, glucose level, lipid fractions were observed. All data were calculated using *SPSS 19* for Windows software. Differences between the groups were assessed using Mann-Whitney test. Coefficients of correlation were calculated using Spearman correlation analysis.

Results. 49 both gender patients were evaluated and separated in two groups: control group (n = 15) and a group with MS (n = 34). Subjects with MS had significantly higher concentrations of inflammatory markers. Positive correlation (p = 0.04) was found between increased serum MDA levels in patients with MS and controls (M = 2.5 mM/L, SD = 0.6). Presence of metabolic syndrome significantly correlated with CRP (0.02). A higher level of cholesterol (6.1 mmol/l, SD = 1.2) and LDL (3.5 mmol/l, SD = 0.9) or a lower level of HDL (1.5 mmol/l, SD = 0.3) were associated with MS.

Conclusion. Subjects suffering from MS seem to have higher inflammation status (CRP) and a higher level of oxidative stress, which is characterized by the increase in MDA levels. This might probably contribute to the additional progression of MS related problems.