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Increased oxidative stress according to number of risk factors in metabolic syndrome patients

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Introduction: Metabolic syndrome (MetS) comprises pathological conditions that include insulin resistance, arterial hypertension, visceral adiposity and dyslipidemia, which favors the development of cardiovascular diseases and type-2 diabetes. Advanced oxidation protein products (AOPPs) have been reported as the most appropriate parameter for determination of oxidative stress (OS) in MetS patients and are formed during oxidative stress by the action of chloraminated oxidants, mainly hypochlorous acid and chloramines, produced by myeloperoxidase in activated neutrophils.

Aim: The objective of the present study was to correlate two biomarkers of OS with metabolic features in MetS patients.

Methods: This cross-sectional study evaluated 48 women, aged 32-58 years recruited from University Hospital of Londrina, Parana, Brazil. The groups were divided according to MetS components in three groups, G1 (with three components), G2 (with four components) and G3 (with five components). MetS was defined following the Adult Treatment Panel III (ATP III) criteria. After fasting for 12 hours, the subjects underwent the following laboratory blood analysis: Glucose, total cholesterol (TC), high density lipoprotein cholesterol (HDLc), low density lipoprotein cholesterol (LDLc), triacylglycerol (TG), uric acid and C reactive protein (CRP) which were evaluated by a biochemical auto-analyzer (Dimension Dade AR, Dade Behring, Deerfield, IL, USA), using Dade Behring kits. Advanced oxidation protein products (AOPP), as markers of protein damage and total antioxidant capacity (TRAP) as antioxidant were evaluated by the semi-automated method described by Witko-Sarsat and chemiluminescence, respectively. Pro-oxidant-antioxidant imbalance (PAI) was calculated divided AOPP/TRAP. Mandob Enyegue Damaris The G3 group presented significant high levels of BMI, WC, serum levels of glucose, CRP, uric acid, AOPP and PAI when compared with G1, whereas TRAP was significantly lower in the G3 group when compared to G1 and G2 groups. G3 also presented high levels of glucose, CRP, AOPP and lower levels of TRAP when compared to G2 group. With regard to the relationship between oxidative stress markers and metabolic syndrome components, there were a positive correlation between AOPP and TG ($r: 0.810$; $p: 0.0002$), LDL ($r: 0.630$; $p: 0.015$) and CRP ($r: 0.593$; $p: 0.019$).

Conclusion: This study showed that the metabolic disorders observed in MetS patients were determinant for the redox imbalance, characterized by increased plasma oxidation and reduced antioxidant capacity.

Biography

Venturini Danielle has graduated in pharmacy and biochemistry from the University of Londrina (1995); Master's degree in medical sciences and health by UEL (2007). PhD in Health Sciences from University of Londrina. She is currently teaching at the University of Londrina crowded in the Pathology Department Clinical and toxicological teaching the discipline of clinical biochemistry; acts as biochemistry in the Biochemistry exercising supervision activities in examinations; acts tutorials of medical school at University of Londrina. Graduate teaching in Clinical Analysis, Clinical Nutrition and hospital infection control. She has experience in the area of Clinical, working mainly in the following areas: clinical biochemistry, hematology and transfusion medicine, Nutritional interventions, exercises. She operates in research on the following topics: inflammation, oxidative stress, metabolic syndrome, viral hepatitis, functional foods. She operates in strict sense programs and directs master's and doctoral students.

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