Ratio of Serum Levels of AGEs to Soluble Form of RAGE Is a Predictor of Metabolic Syndrome

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Abstract

Metabolic syndrome (MetS) is a common metabolic disorder that coexist diseases such as dyslipidemia, hypertension, hyperglycemia, and obesity, that increase the risk for developing type 2 diabetes and cardiovascular disease. RAGE (receptor for advanced glycation end-products) is a receptor of the immunoglobulin superfamily, has been implicated in diabetes and its complications, inflammation, and atherosclerosis. RAGE binds multi-ligands such as AGEs (advanced glycation end products) and S100 proteins and binding of ligands activates signaling pathways that involved in cellular stress responses. AGEs are a broad range of species that generate from the nonenzymatic glycation and oxidation of proteins and lipids that accumulate in inflammatory status and diabetes. S100 proteins consist of a multigenic family of calcium binding proteins that involved in numerous cellular functions such as cell growth and differentiation, calcium homeostasis, or energy metabolism. The purpose of the study was to evaluate serum levels of sRAGE (soluble form of RAGE), AGE and S100 proteins and their correlations in subjects with MetS and without MetS. In this study, 60 individuals with MetS (mean BMI was 35.2±7.0 kg/m^2) and 60 individuals without MetS (mean BMI was 30.47±5.1 kg/m^2) were participated. The serum levels of sRAGE, AGE and S100 proteins were measured by using ELISA kits. The subjects with MetS had significantly higher levels of AGE and S100 proteins than those in the subjects without MetS. It was found that there was no significant difference in sRAGE levels between groups. However, subjects with MetS presented a significant increase of AGE/sRAGE serum concentration compared subjects without MetS. There were also positive correlations among all parameters. Our results suggested that AGE, S100 proteins and AGE/sRAGE ratio may be involved in the pathogenesis of MetS as a consequence of activation of RAGE.

Keywords: AGE, Inflammation, RAGE, S100, Metabolic syndrome

Acknowledgement: This study (02/2018-21) was supported by the Unit of Gazi University Scientific Research Projects.