Sirt1 expression is associated with formation of atherosclerotic plaques in diabetic patients

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Atherosclerosis as the most common cause of cardiovascular diseases (CVDs) is a major problem in patients with type 2 diabetes mellitus (T2DM). Atherosclerosis is a multifactorial disease and recently is characterized as a chronic inflammatory disease. Accumulating data have shown that inflammatory cytokines are up-regulated in patients with coronary plaques (CAD). Sirtuin 1 (Sirt1) (a member of the silent information regulator) is a NAD-dependent histone deacetylase which is implicated in a wide variety of physiological processes including immune response, caloric restriction, mitochondrial biogenesis and cell senescence. Dysregulation of Sirt1 have been shown to be involved in age-related diseases, such as cancer, metabolic diseases, cardiovascular disease, and neurodegenerative diseases. Given the role of Sirt1, the aim of the present study was to compare expression level of Sirt1 in T2DM patients with and without atherosclerotic plaques.

Materials: Whole blood were collected from 56 patients with T2DM (29 patients with atherosclerotic plaques (CAD+)) who underwent coronary angiography at Tehran Heart Center. PBMCs were collected and total RNA was extracted. The mRNA expression level of Sirt1 was evaluated by real-time PCR and ACTB was used as an internal control.

Results: Statistical analysis of ΔCt values revealed that the expression of Sirt1 has a significant difference between CAD+ versus CAD- diabetic patients. Data from Receiver Operating Characteristic (ROC) curve analysis have indicated that Sirt1 could be considered as a biomarker in diabetic patients for detecting CAD.

Conclusion: Our data showed that expression level of Sirt1 is associate with atherosclerosis in T2DM patients.

Keywords: Atherosclerosis, T2DM, Sirt1 and Inflammation