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Serum levels of TNF-α but not CRP predict retinopathy prior to diabetic diagnosis

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Objective: It is shown that chronic inflammation is the leading cause of many diseases including coronary heart disease, type 2 diabetes and even some cancers. Increase C reactive protein (CRP) and tumor necrosis factor α (TNF-α) levels are associated with the incidence of diabetes and its major complication. It was hypothesized that the active immune system predicts the long term diabetes complications. Here we aimed to study two important inflammatory markers, TNF-α and CRP in patients with and without diabetic retinopathy as well as newly diagnosed diabetes, and also evaluate the effects of metformin therapy on these markers.

Methods: A cross sectional study on patients with long standing diabetes and patients with newly diagnosed diabetes were performed. The patients with long standing diabetes were classified into three groups: Proliferative diabetic retinopathy (PDR), non-proliferative diabetic retinopathy (NPDR), and diabetes without retinopathy (NDR). Patients with newly diagnosed diabetes were diagnosed within recent 6 months who not on any type of treatment. Another follow up study for patients with newly diagnosed diabetes before and after 3 months of therapy with metformin. Serum level of TNF-α and CRP were measured in patients with long standing diabetes and also, in patients with newly diagnosed diabetes before and after of therapy. The local ethics review committee of Tehran University of Medical Sciences approved the study protocol. The statistical package SPSS 17 for windows (Chicago, Illinois, USA), was used for analysis.

Results: Of the 113 patients enrolled including 83 patients had long standing diabetes (29 with PDR, 27 with NPDR, and 27 with NDR) and 30 patients had newly diagnosed diabetes. There were no significant differences in the serum TNF-α level between patients with retinopathy compared to those with newly diagnosed diabetes. Although, serum TNF-α levels in patients with retinopathy (either PDR or NPDR) were significantly higher than those without retinopathy (p value <0.01). Whereas, there was no significant difference found between groups in serum levels of CRP. Serum levels of CRP were significantly lower in patients with newly diagnosed diabetes compared to other groups (p value <0.01). After therapy with metfomin in groups with newly diagnosed diabetes, no significant change was observed in serum levels of TNF-α or CRP.

Conclusions: Our findings show TNF-α was not affected by diabetes duration or therapy by metformin, but the incidence of retinopathy is predictable by the primary level of TNF-α. Serum level of CRP was lowest in patients with newly diagnosed diabetes, although presence of retinopathy or therapy by metformin does not influence the serum level of CRP.

Biography

Mohammad Javad Alemzadeh-Ansari graduated as a general physician with a first degree from Jondishapour University of Medical Sciences, Ahwaz, Iran. In the same year, he was accepted as resident of cardiology in the Tehran University of Medical Sciences, Iran. He has participated in various international conferences, such as 4th, 5th, and 6th International Online Medical Conferences (IOMC), 17th congress of Iranian Heart Association, and World Congress of Cardiology 2012. Also in 4th and 6th International Online Medical Conferences participated as a member of Conference Students' Board. He has published 26 articles in various international journals, and acts as a reviewer for some international journal including BMJ Journal, Anatolian Journal of Cardiology, African Journal of Biotechnology, and Saudi Journal of Kidney Disease and Transplantation.

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