

Influence of HbA1c on Nitric Oxide Level in Patients with Type 2 Diabetes Mellitus

Authors : Dara Kutsyk, Olga Bondarenko, Mariya Sorochka

Abstract : In 21-century type 2 diabetes (T2D) has become a global health and social problem in the whole world. The goal of treatment for patients with T2D is to prevent complications of diabetes - macrovascular diseases (heart disease, stroke, and peripheral vascular disease) and microvascular diseases (retinopathy, neuropathy and nephropathy). Nitric oxide (NO) plays an important role in maintaining vascular homeostasis. Loss of NO function is one of the earliest indicators of disease and its progression especially in patients with T2D. Aim: To compare NO level between patients with well and bad controlled glycaemia in T2D. Methods: The study included 32 patients with T2D. The diagnosis of T2D was confirmed due to International Diabetes Federation (IDF) criteria 2015. Patients were divided into two groups: with well controlled glycaemia (HbA1c < 7%) and bad controlled glycaemia (HbA1c > 7%). The control group consists of 15 healthy subjects. Results: NO level in patients with T2D is significantly higher ($27,2 \pm 3,1 \mu\text{mol}$), compared to controls ($18,86 \pm 0,9 \mu\text{mol}$; $p < 0,001$). A significant difference in NO level was found between patients with bad controlled glycaemia ($25,9 \pm 2,2 \mu\text{mol}$) and well controlled glycaemia ($28,7 \pm 3,0 \mu\text{mol}$; $p < 0,01$). The study showed a moderate negative correlation between NO level and HbA1c ($-0,399$; $p < 0,05$). Conclusions: Production of NO is impaired in patients with T2D, especially with badly controlled glycaemia. With the increase in HbAc serum NO decreases. This can be the main target for prevention vascular complication in T2D.

Keywords : type 2 diabetes, glycated hemoglobin, nitric oxide, Diabetes mellitus

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