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Influence of testosterone replacement therapy on metabolic disorders and autonomic diabetic neuropathy in patient with type 2 diabetes mellitus and Androgen deficiency

Introduction: Over the past few decades, obesity and Diabetes mellitus has become a global health challenge. Multiple epidemiological studies have shown that low testosterone levels are associated with and predict the future development of T2D and the metabolic syndrome.

Aim of study: The aim of study was to show the influence of testosterone replacement therapy on BMI, HbA1c level, Diabetic neuropathy, and CV-risk factors - with patient diabetes mellitus and Androgen deficiency.

Materials and Methods: 125 male patient with diabetes mellitus was screened, 85 subjects with 41-65 years and BMI 27,0 – 48,0 kg/m2 were randomized In placebo-controlled study, who underwent a routine physical examination and choose free testosterone examination. Also for assessment of autonomic diabetic neuropathy was used "Vegetotester" — digital instrument for vegetative nervous system study. According to the laboratory and clinical condition we divided patients into two groups. 1) First group treatment group 2) Second group placebo group. In the first group we used diet, physical activity (Lifestyle intervention implies reduced calorie diet (The reduction of daily calorie intake in 800-1200 calorie, it was selected individually), patient's antidiabetic therapy and testosterone replacement therapy (TRT), (testosterone undecanoate 250 mgr/ml intra- muscular 3 months 1 time). In second group we used diet, physical activity (Lifestyle intervention implies reduced calorie diet (The reduction of daily calorie intake in 800-1200 calorie, it was selected individually), patient's antidiabetic therapy and placebo.

Results: After six months of treatment we repeated the diagnostic assessments: We had some positive results cholesterol, triglyceride and LDL levels decreased, and HDL increased both of group but better results was in first group which was clinically significant. Free testosterone level increased in all groups but the best results was in I group which was clinically significant where was used of testosterone undecanoate. HbA1c decreased in both group but in I group we had the best result. BMI decreased in both groups but more reduction was in I group. leptin level after treatment was approximately same in both groups, but compared best results was achieved in I group, also blood pressure were reduced in both group, where we found alike results. Also in first group were positive results about autonomic diabetic neuropathy.

Discussion: Autonomic diabetic neuropathy, Serum testosterone, glycosylated hemoglobin, high-density lipoprotein cholesterol, triglyceride concentrations, and the BMI, Hypertension improved in both treatment groups after 26 weeks of treatment. We have shown that testosterone replacement therapy improves insulin resistance and glycemic control in hypogonadal men with diabetes.

Conclusion: This study demonstrated that it is possible to break into this vicious circle by raising testosterone levels in diabetic men and low testosterone level. Maybe low level of testosterone has some role in pathogenesis of autonomic diabetic neuropathy. Re-instituting physiological levels of testosterone in hypoandrogenic men as our small study shown, have an important role in reducing the prevalence of diabetic complication.

Biography

Shota Janjgava graduated in 2009 from Ivane Javakhishvili Tbilisi State University with honors and received MD degree. He continued his postgraduate education at Kiev Medical Academy of Professor Shupika, which he graduated ahead of schedule in 2010, and at the same institute took the courses of retreat with the specialization of Andrology. Since 2012, He is employed as endocrinologist-andrologist at the National Institute of Endocrinology. In 2015, he completed his PhD. Since 2015 he is Head of Andrology Department, and also from 2017 he is the head of Clinical Trials Department at the National Institute of Endocrinology, vice-president of Georgian Youth Association for the Study of Diabetes and Metabolic Disorders, associated Professor at Tbilisi Humanitarian University and guest professor at Tbilisi State University post-diploma educational medical program.

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