

## **SERUM LEPTIN LEVELS ARE STRONGLY ASSOCIATED WITH BODY FAT MASS BUT NOT WITH CARDIO-METABOLIC RISK FACTORS OR INSULIN RESISTANCE WITH PATIENTS TYPE 2 DIABETES IN GEORGIAN STUDY**

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**Objective:** Diabetes mellitus is a chronic disease that concerns over a billion people all over the world. Obesity and insulin resistance is a major risk factor of many complications and increases the risk of several life-threatening diseases, like diabetes mellitus, cardiovascular disease and cancer. The excess deposition of adipose tissue appears, as it is a factor responsible for this situation. Adipose tissue is a place of synthesis of several metabolically active proteins, called adipokines. One of such adipokines is leptin. Leptin acts as a lipostat to the hypothalamus affecting the numerous aspects of physiology, including metabolism, immune function and reproduction. In humans, circulating leptin levels increases with obesity and has been shown that it is directly proportional with the body fat mass, suggesting that the hallmark of obesity is not its deficiency but leptin resistance. The aim of present study is to find correlation between leptin and risk factors of cardio-metabolic disease and diabetes mellitus.

**Materials and Methods:** The case-control study was conducted in a group of Georgian people. A total of 186 participants aged 20-70 were included for the study. The subjects who were overweight or obese were enrolled in the study group, whereas the subjects with normal weight were enrolled in the control group. The study group consisted of 166 overweight or obese patients. The control group consisted of 20 subjects with normal weight. In both groups following measurements were done: assessment of height, weight, BMI, waist circumference

and blood pressure. Venous blood sample was obtained for plasma leptin, insulin, glucose and lipid profile (including total cholesterol, triglycerides, high density lipoprotein cholesterol and low-density lipoprotein cholesterol) analysis. Insulin resistance index (HOMA IR) was calculated for each patient. The risk of cardio-vascular disease was calculated according the Framingham heart risk calculator. Body fat distribution was measured using Dual Energy

X-ray Absorptiometer (DXA). Statistical analyses were performed using the SPSS 19.0 software package (SPSS, Inc., Chicago, IL).

**Results:** Our study revealed that there was a correlation between serum leptin and anthropometric characteristics in the whole study population, but when the population was divided into groups the correlation was lost. The most significant correlation was seen between serum leptin levels and body fat distribution. The positive correlation was with every region of the body in whole study population and in patients with obesity I and II degree. The correlation was not seen in patients with normal weight, over weight and morbidly obese patients. The correlation between leptin and cardio-metabolic risk factors was not detected.

**Conclusion:** In our study, serum leptin levels are dependent mostly on body fat percentage and body fat mass. Serum leptin levels did not associate with cardio-metabolic risk factors.

### **Biography**

In 2009, Shota Janjgava graduated Ivane Javakishvili 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, Janjgava is employed as endocrinologist-andrologist at the National Institute of Endocrinology. In 2015, he completed his PhD. Since 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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