Abstract

Introduction

Statistical data concerning the number of people struggling with overweight or obesity are shocking, and forecasts indicate a deepening of the scale of this problem. Health consequences and shortening life expectancy are inherent in obesity. Indicators of increasing health problems represent changes in the metabolic and hormonal profile of patients, which include basic biochemical blood parameters such as glucose, triglycerides and cholesterol, as well as hormones including insulin, ghrelin, leptin and adiponectin. Applying a proper diet and increasing physical activity are the most popular and easiest way to fight with this pathology. However, diets very often do not bring the expected results or due to improper use, the effect of their use is short-lasting. Therefore, some people who are overweight or obese reach for surgical methods in the hope of permanently getting rid of unnecessary kilograms. One such method is liposuction.

Hypothesis and aim

We raised a hypothesis that the effects of liposuction are reflected by metabolic profile and hormones involved in appetite regulation and maintaining energy balance.
The aim of the study was to examine whether VASER ultrasound assisted liposuction can play supporting role in the reduction of body mass, beneficially modulating selected metabolic parameters.

The goal has been achieved by examining the impact of liposuction on: (1) serum concentration of biochemical parameters: glucose, triglycerides, and cholesterol, (2) serum concentration of hormones: insulin, adiponectin, ghrelin, leptin with soluble leptin receptor, (3) insulin sensitivity index (QUICKI) and insulin resistance index (HOMA-IR)

Material and Methods

Study population consisted of 18 overweight patients (10 women and 8 men) undergoing ultrasound liposuction using the VASER system. To eliminate the confounding effects of postsurgical inflammation and to evaluate delayed metabolic effects, fasting blood was collected on the day of liposuction, within 1 month and 6 months after surgery. Colorimetric and enzymatic tests as well as specific enzyme-linked immunoassay (ELISA) and radio-immunoenzymatic (RIA) tests were used to determine metabolic and hormonal changes.

Results

Comparing resting values of the analyzed parameters between study group and the control, significantly increased values for BMI, glucose, insulin, HOMA-IR, triglycerides, total cholesterol and leptin were found in the overweight patients. QUICKI, ghrelin, adiponectin and soluble leptin receptor were lower in this study group.

Analyzing metabolic consequences of Vaser liposuction, I've noticed that one month after surgery the following parameters decreased: BMI, HOMA-IR, serum insulin, triglycerides and leptin, while serum active ghrelin significantly increased. Six months after liposuction BMI, HOMA-IR, triglycerides and leptin were still decreased, ghrelin was still increased, insulin dropped more and the following variables increased significantly: QUICKI, total ghrelin and adiponectin. Serum concentration of total cholesterol and soluble leptin receptor remained unchanged.

Conclusion

Ultrasound assisted liposuction using VASER system brings aesthetic and metabolic benefits which may have preventive application according to diseases of civilization such as obesity, diabetes or metabolic syndrome. The observation rises the possibility to perceive a

modern methods of liposuction as a supportive intervention in prevention and treatment of these disorders.