# LIPID PROFILE CHANGES RELATIONS TO BODY FAT DISTRIBUTION CHANGES DETERMINED WITH DUAL-ENERGY X-RAY ABSORPTIOMETRY DURING THE WEIGHT LOSS

Slavica Shubeska Stratrova

University Clinic of Endocrinology, Diabetes and Metabolic Disorders, Faculty of Medical Sciences,

University "Ss. Cyril and Methodius" Skopje, N. Macedonia, slavass02@yahoo.com

Danijela Janicevic Ivanovska

University Clinic of Clinical Biochemistry, Skopje, Faculty of Medical Sciences, "University Goce

Delchev", Shtip, N. Macedonia, djanicevic@yahoo.com

Vesna Velikj Stefanovska

Institute of epidemiology and biostatistics, Faculty of Medicine, Ss Cyril and Methodius of Skopje, N.

Macedonia vesnamia@t-mk

# INTRODUCTION

Obesity and central body fat distribution are known risk factors for cardiovascular and metabolic diseases. Dual-energy x-ray absorptiometry (DXA) enables precise, accurate body composition and body fat distribution assessment and it measures and monitors body composition changes in obese patients undergoing weight loss. Obesity is associated with dyslipidemic profile.

# MATERIAL AND METHODS

Low HDL-C levels are frequently associated with raised levels of plasma triglycerides and increased risk of cardiovascular disease and TG/HDL-C ratio may be a better predictor of insulin resistance and cardiovascular disease. LDL-C is one of the major culprits in the development of atherosclerotic heart disease and reduction of LDL-C levels is the primary target of therapy. The effect of weight loss on body fat distribution was examined through android, legs and android/legs tissue and fat mass ratios indexes of central, abdominal obesity determined by DXA and their relationship with lipid profile changes. The following parameters were determined before and after weight loss: body mass index (BMI), body weight (BW), android (A) and legs (L) tissue mass (TM) and fat mass (FM), their % with DXA, their ratios, indexes of abdominal fat distribution A/L-TM and TM% and A/L-FM and FM%, as well as lipid profile: total cholesterol (C), triglycerides (TG), HDL-C, LDL-C, LDL/HDL-C, C/HDL-C and TG/HDL-C.

# DISCUSSION

BW of 62.96±1.2 kg and BMI value of 28.98±0.78 kg/m2 before the weight loss lowered to 49.96±1.3 kg (p<0.012), and normal BMI 22.81±0.62 kg/m2 (p<0.012). A-TMf% value decrease from 50.41±1.7% to 29.55±1.34% after weight loss was significant (p<0.006) and A-FM% 49.92±1.2% decrease to 29.25±1.34% was also highly significant (p<0.005). A-TM 5.43±0.71 kg and A-FM 2.74±0.71 kg lowered to 3.76±0.25 kg and 1.11±0.12 kg after weight loss (p<0.05). L-TMf% 50.31±1.7% lowered to 35.2±2.12% (p<0.018) and L-TM 19.69±0.71 kg lowered to 16.15±0.55 kg (p<0.033). L-FM% 48.51±1.14% lowered to 33.8±1.98% (p<0.009) and L-FM 9.89±0.64 kg lowered to 5.68±0.16 kg (p<0.0002). A/L-TMf% value decrease from 1.01±0.07% to 0.84±0.014% and A/L-FM% value decrease from 1.03±0.04 to 0.87±0.07 were also significant (p<0.05).

# RESULTS

TG values decrease from 1.21±0.01 mmol/l to 0.83±0.07 mmol/l was significant (p<0.002) and C values decrease from 6.5±0.01 mmol/l to 5.43±0.37 mmol/l was also significant (p<0.05). LDL-C values 4.3±0.1 mmol/l lowered to 3.39±0.34 mmol/l (p<0.026) and TG/HDL-C ratio 0.73±0.01 lowered to 0.52±0.03 (p<0.011).

# CONCLUSION

This study showed that A-TMf% and A-FM% lowered highly significantly, indicating significant FM% reduction in android, abdominal TM. Atherogenic lipids TG, C and LDL-C and atherogenic index TG/HDL-C ratio lowered significantly. Also, it was confirmed that DXA indexes of central, abdominal obesity A/L-TM% and A/L-FM% were increased in overweight subjects before the weight loss and lowered highly significantly after the weight loss and increased A/L TM and A/L FM values lowered to normal values, indicating that normal BMI and BW reached after the weight loss were associated with normalized body fat distribution, and significant reduction of the atherogenic lipid profile indicating reduced atherogenic risk.