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## Weight loss therapy in patients with metabolic syndrome: A randomized clinical trial

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**Background:** Prevalence of metabolic syndrome (MS) is increasing in worldwide. Main reason of development of MS is considered as an insulinoreistance (IR), but care of IR does not treat MS components.

**Objective:** Aim of this study is to evaluate the weight loss program in treated MS patients in randomized controlled trial.

**Methods:** A randomized prospective clinical trial was performed including 548 patients (305 females, aged  $47.8 \pm 0.5$  years; 352 Asian, Kazakh and 196 European, Russian) with treated MS, who received a hormonal ( $n=451$ ) and non-hormonal sugar-lower therapy and antihypertensive therapy. Before study, the 451 patients were received insulin dozed from 16 to 72 units per day. All the patients had hypertension. All including patients had abdominal obesity in average with waist circumference (WC)  $102.5 \pm 0.3$  cm and body mass index (BMI)  $27.1 \pm 0.1$  kg/m<sup>2</sup>. The weight loss program included calorie restriction with 100-150 kcal/day, fat-free vegetable-salt diet, and optimum physical activity. Oral glucose tolerance test, insulin resistance, lipids and hormones profiles, blood hypertension, reactive oxygen species, and body composition were measured. Statistical analysis was performed using SPSS version 21.0.

**Results:** The patients' weight loss were ranging between 10 and 35 kg (15-40% from an initial weight,  $P<0.00001$ ). Weight loss was achieved due to fatty mass reduction only ( $P<0.00001$ ). No differences in weight loss were found between patients with Asian/European ethnicities. Systolic/diastolic blood pressures, oxidative products of lipids/proteins were decreased ( $P<0.00001$ ). Hemoglobin levels and heel bone mineral density was increased ( $P<0.00001$ ). Weight loss led to a decrease in blood insulin level 73.0% ( $P<0.00001$ ), decrease in blood cortisol 44.2% ( $P<0.00001$ ), and increase in blood testosterone in men ( $n=243$ ) 2.6 times ( $P<0.00001$ ). As clinical symptoms were being improved, as the previous anti-diabetic, antihypertensive and other symptomatic conventional drugs were being adequately decreased.

**Conclusion:** In patients with MS, more the fat mass is, the less muscle, bone, and water masses are. The weight loss program included a caloric restriction, fat-free vegetables and salt diet with optimum physical activity which is an effective treatment method in patients with MS in insulin-treated stage. The weight loss program is aimed to cure and control endogen metabolic intoxication improved glycemia, tissue insulin sensitivity, hypertension, lipids and hormones profiles, electrolyte and biochemical indices, reactive oxygen species, competent decrease of previous hypoglycemic, hypotensive and other symptomatic drugs up to complete abolition.

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