

identified. However, their prevalence may have regional differences. Our aim was to study the possible association of the *FTO* rs9939609, *PPARG* rs180128, *PPARGC1A* rs8192678 polymorphisms with the development of type 2 diabetes mellitus (T2DM) and early carbohydrate metabolism disorders in the residents of the Republic of Tatarstan.

Methods: The study included 272 obese patients: a group of patients with T2DM and a group with prediabetes. The control group was taken from the 1000 genomes database (European population, n=503). DNA was isolated from leukocytes, followed by the determination of alleles and genotypes using real-time PCR.

Results: Bearing of the AA genotype and A allele of the *FTO* gene polymorphism increases the risk of both T2DM (OR=1.73, p=0.0006; OR=1.73, p<0.05, respectively) and prediabetes (OR=2.93, p<0.05; OR=2.51, p<0.05, respectively) development. Bearing of the G allele and GG genotype of the *PPARG* gene polymorphism significantly increases the risk of T2DM (OR=1.63, p=0.009; OR=7.29, p=0.0002, respectively), but no association with prediabetes was identified. *PPARGC1A* gene polymorphism showed a significant effect of the C allele and CC genotype both in T2DM (OR=1.58, p=0.003; OR=1.86, p=0.007, respectively) and prediabetes (OR=1.63, p=0.001; OR=1.87, p=0.005, respectively).

Conclusions: The associations of aforesaid polymorphic markers with the T2DM development in the Republic of Tatarstan have been proved, as well as the associations of the *FTO* and *PPARGC1A* genes polymorphisms with the development of early carbohydrate metabolism disorders.

609 / Abstract ID 653

THE EFFECT OF KINESIOTHERAPY ON WEIGHT LOSS AND MUSCLE FUNCTION IN OBESITY PATIENTS

NEW TECHNOLOGIES FOR TREATING OBESITY AND PREVENTING RELATED DIABETES

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Background and Aims: was to estimate the affect of complex treatment with kinesiotherapy on body weight loss and muscle function in patients with obesity.

Methods: 80 men and women aged 21–69 years old with obesity were enrolled in the study. The complex kinesiotherapy included interactive sensorimotor trainings. Weight, WC, HC, fall number were measured at baseline and after the treatment was completed. Muscle strength and walking speed functional tests results assessment were performed.

Results: There was a significant reduction in body weight (111.3 ± 24.4 kg at baseline vs 107.9 ± 23.1 kg in 3 weeks; p=0.000), in BMI (40.3 ± 8.1 vs 39.1 ± 7.7 kg/m²; p=0.000), in treated obese patients. 10-meters-walk speed increased from 0.84 ± 0.15 m/sec at baseline to 0.88 ± 0.17 m/sec to (p=0.000). Up-and-go test improved from 8.4 ± 2.1 to 7.9 ± 2.09 sec (p=0.000). We registered endurance to static loading in abdomen muscles from 13.1 ± 9.7 to 16.49 ± 12.8 sec (p=0.000) and in back muscles from 14.8 ± 11.9 sec to 18.6 ± 14.9 sec (p=0.000). The endurance to dynamic loading increased in abdomen muscles from 29.9 ± 11.2 to 34.84 ± 11.93 times (p=0.000) and also in back muscles from 9.1 ± 7.4 to 12.2 ± 9.2 times (p=0.000). Fall number markably decreased from 0.14 ± 0.34 at baseline to 0.0 (95%CI: 0.02; 0.25) after treatment.

Conclusions: Investigated complex treatment with kinesiotherapy methods promotes body weight loss, WC and HC reduction in obesity. Special training of obese patients is associated with increasing in gate speed and lower extremities muscle strength, and it also causes improvement in static and dynamic loading endurance of back and abdomen muscles. Those changes may probably improve balance function and decrease risk of falling in obese patients.

611 / Abstract ID 332

ASSOCIATION OF ADIPONECTIN POLYMORPHISM WITH ADIPONECTIN LEVELS IN PATIENTS WITH TYPE 2 DIABETES MELLITUS WHO HAVE BEEN TAKING METFORMIN AND INSULIN FOR A LONG TIME

BLOOD GLUCOSE MONITORING AND GLYCEMIC CONTROL IN THE HOSPITALS

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Background and Aims: The purpose is to examine the adiponectin polymorphism ADIPQQ-g93054571A > G and its association with adiponectin concentration in the serum, to research the effect of sugar-lowering therapy on adiponectin levels.

Methods: 58 patients with type 2 DM were examined, 28 used metformin, 30 used insulin. The average age at the time of the survey was 56.65 ± 1.51 years. Disease duration averaged 5.8 ± 3.5 years. The serum concentration of adiponectin was determined by ELISA (Germany) using the Mediagnost E09 Adiponectin test kit. Insulin resistance was calculated with HOMA-IR index; glycated hemoglobin (HbA1). The polymorphism of adiponektin (ADIPQQ-g93054571A > G) was conducted by the method of using MALDI-TOF mass spectrometer company Sequenom (USA).

Results: The average value of glycosylated hemoglobin amounted to $8.66 \pm 2.2\%$. Adiponectin median was 11.78 ± 4.32 mg / ml in patients taking metformin, and -3.52 ± 2.02 mg / ml in patients taking insulin. HOMA-IR on metformin was $5.15-3.32$ μ g / ml, on insulin it was 17.23 ± 9.78 μ g / ml According to our data, the ratio of Adiponectin / Homa (A / H) on the background of therapy with Metformin was 2.29 , while with insulin it was 0.204.

Conclusions: The results confirm the need to include metformin in the treatment complex of patients with type 2 DM to increase adiponectin level. In patients taking metformin adiponectin content is significantly increased compared with the figure for insulin therapy, this is 3.35 times (p<0.01). Metformin eliminates the phenomenon of "hyperglycemic memory", normalizes weight and lipid metabolism.

612 / Abstract ID 79

ASSESSMENT OF LIPID ABNORMALITIES AND CARDIOVASCULAR RISK INDICES IN TYPE 2DIABETES MELLITUS

BLOOD GLUCOSE MONITORING AND GLYCEMIC CONTROL IN THE HOSPITALS

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