capillary density with n.suralis EPV ($p < 0.05$), and inverse correlation with increased n.peroneus Mr-TT ($p < 0.05$). The interrelation between EF and n.suralis Mr-A was determined. The correlation of PWV was revealed with: n.suralis Mr-TT and n.peroneus increase, n.peroneus low-amplitude F-waves with fallout and EPV.

Conclusions: Motor neuropathy was found more distinct than sensorial in 7≤HbA1C<9% group. Interrelation between microvascular and neurological disorders identified minimally. Only capillary density correlated with EPV n.suralis, n.peroneus Mr-TT. Macrovascular violations (PWV increase, EF decrease) more than microvascular were associated with nerves electrical activity impairment. Interrelations between microcirculation, stimulation electromyography parameters and glucose+HbA1C were found.

594 / Abstract ID 645

ANTHROPOMETRIC, IMMUNOLOGICAL AND METABOLIC PARAMETERS IN CHILDREN WITH TYPE 1 DIABETES AND COEXISTING AUTOIMMUNE DISEASES

ADVANCED MEDICAL TECHNOLOGIES TO BE USED IN HOSPITALS

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Background and Aims: Aims: to assess the effects of associated autoimmune diseases on glycemic control, growth, metabolic parameters in children with type 1 diabetes (T1D) and to select the most predictive genetic, immune and metabolic risk factors of polyglandular autoimmunity in children with T1D.

Methods: 72 children with combined autoimmune pathology (main group, age 11.98 ± 3.79 years) and 75 patients with isolated T1D (control group, age 11.09 ± 3.31 years) were recruited. Groups were comparable in age ($p = 0.17$) and T1D duration ($p = 0.26$). Anthropometric parameters, insulin doses, biochemical blood parameters, glycosylated hemoglobin (HbA1c), thyroid hormones and thyroid peroxidase antibodies (anti-TPO) levels were assessed.

Results: In the main group 49 children had combinations of T1D with autoimmune thyroiditis (AIT), 17 – celiac disease, 2 – Graves' disease, 4 – AIT and celiac disease. Body mass index and height z-scores in both groups corresponded to the mean age values and didn't differ significantly ($p = 0.82$ and 0.71 respectively). HbA1c level in children with combined autoimmune pathology was higher than in the control group (8.23 ± 1.91% vs 7.47 ± 1.22%, $p = 0.006$). There was no difference in insulin requirement ($p = 0.93$). Both groups demonstrated similar values of biochemical blood parameters: lipidogram, serum iron, and ferritin ($p > 0.05$). Higher anti-TPO antibodies were revealed in the main group (327.41 ± 469.91 IU/ml) compared to the control group (40.42 ± 26.33 IU/ml, $p = 0.0001$).

Conclusions: At the present stage of the study we hasn't found any difference in anthropometric and biochemical parameters in children with coexisting disorders compared with patients with isolated T1D. Children with polyglandular autoimmune pathology showed more poor glycemic control indicators.

595 / Abstract ID 298

NEW ATTEMPT IN PREVENTION OF INSULIN INDUCED LIPOHYPERTROPHY IN DIABETIC PATIENTS

ADVANCED MEDICAL TECHNOLOGIES TO BE USED IN HOSPITALS

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Background and Aims: Lipohypertrophy (LH) is a chronic complication of diabetes mellitus that caused by subcutaneous injections of insulin. Nowadays, on the basis of results of ultrasonography of subcutaneous fat prevalence of LH in diabetic patients is still high. The aim has been to develop prevention of insulin induced LH in diabetic patients.

Methods: This study was done on 140 diabetic patients on insulin therapy a mean 8 years. On first stage patients were divided into two groups. First–117 patients with LH, second–23 diabetics without LH. All known LH risk factors were statistically processed using Spearman rank correlation coefficients. Results were statistically significant when $p < 0{,}05$. On second stage 65 patients from first group were divided into two subgroups. First–50 patients with LH and corrected risk factors, second (control)–15 diabetics with LH and uncorrected risk factors. Ultrasonography were used in assessing new LH in these subgroups after 3 and 6 month.

Results: 10 factors were remained after statistic analysis on first stage ($p > 0{,}05$). Further, in first subgroup only 2 patients (4%) had new LH, while in second–9 diabetics (60%) had new pathologic areas of subcutaneous fat after 3 month. And in first subgroup only 6 patients (12%) had new pathologic areas of subcutaneous fat, while in second–12 diabetics (80%) had new LH after 6 month.

Conclusions: There were stated that only 10 risk factors strongly influence on LH progress. Correction of these risk factors doesn't lead to development of new subcutaneous fat pathological changes and could be used to prevent LH in diabetic patients in clinical daily practice.

597 / Abstract ID 877

NON-CLASSICAL PHENOTYPES OF CIRCULATING ENDOTHELIAL CELL-DERIVED PROGENITOR CELLS IN ABDOMINAL OBESITY PATIENTS WITH ASYMPTOMATIC CARDIAC DYSFUNCTION

NEW TECHNOLOGIES FOR TREATING OBESITY AND PREVENTING RELATED DIABETES

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Background and Aims: Abdominal obesity strongly associates with multiple metabolic abnormalities (dyslipidemia, insulin resistance [IR], increased fasting glucose and impaired glucose tolerance) and higher cardiovascular (CV) risk. The aim of the study: to investigate the number of circulating EPCs in patients

with asymptomatic cardiac dysfunction and different phenotypes of obesity.

Methods: The study was retrospectively evolved 46 patients with asymptomatic chromic heart failure (left ventricular ejection fraction 40%-49%) and established abdominal obesity (47 patients with metabolically unhealthy obesity [Met-UHO] and 42 subjects with metabolically healthy obesity [Met-HO]) from the large cohort of dismetabolic patients (n = 268). High-Definition Fluorescence Activated Cell Sorter methodology was performed for measurement of the number of circulating endothelial progenitor cells co-expressed CD45, CD34, CD14, CD309, and Tie-2 antigens.

Results: A significant difference between number of circulating progenitor cells labeled CD45-CD34+ and CD14+CD309+ in Met-UHO and Met-HO patients was found. In contrast, Met-UHO patients had a significantly lower level of circulating $CD14^+$ $Tie\text{-}2^+$ cells and $CD309^+$ $Tie\text{-}2^+$cells compared with Met-HO individuals. In multivariate logistic regression analysis we found that HOMA-IR, hs-CRP, and number of CV risk factorswere independent predictors for depletion in numerous of circulating progenitor cells with immune phenotypes CD309/Tie2+ cells and CD14/Tie2+.

Conclusions: We found that the lowered circulating number of CD309/Tie2+ cells / CD14/Tie2+ cells produces the well balanced discrimination on Met-UHO development in Met-HO patients with co-existing preserved left ventricular ejection fraction than other models based on conventional CV risk factors.

598 / Abstract ID 514

EFFECT OF TCF7L2 VARIANTS ON BODY COMPOSITION CHANGING IN OVERWEIGHT PATIENTS

NEW TECHNOLOGIES FOR TREATING OBESITY AND PREVENTING RELATED DIABETES

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Background and Aims: *TCF7L2* gene encodes a transcription factor expressed in pancreatic β cells that regulates insulin production and processing. It is assumed that type 2 diabetes risk gene *TCF7L2* affects the response to diet therapy. We aimed to assess an effect of the single nucleotide polymorphism (SNP) rs7903146 T/C in the *TCF7L2* gene on the change of bioimpedance parameters in overweight patients who followed a generally accepted for obesity therapeutic diet for 3 months.

Methods: The study implicated 17 overweight or obese patients (15 women and 2 men) aged 23 to 60 years (average BMI on admission – $34.1 \pm 5.6\,kg/m^2$). Within 3 months, all patients have followed a balanced therapeutic diet with the exception of easily digestible and limited digestible carbohydrates and fats. Patient genotyping data were compared with the European population (Project ''1000 Genomes'', n = 503). DNA was extracted from a venous blood. Gene polymorphisms were identified by real-time PCR (CFX96, USA).

Results: The observed genotype distribution was consistent with the Hardy-Weinberg equilibrium ($p > 0.05$) and was not significantly different from the European frequency distribution. CC homozygotes of the SNP demonstrated a significant decrease in body cell mass (BCM) and total water (in kg) after 3 months of diet therapy compared to the T-allele carriers ($p = 0.013$ and $p = 0.018$, respectively).

Conclusions: Carriers of risk allele T demonstrated a better response to diet therapy manifested in BCM gain. More detailed study may suggest a suitable diet to compensate the adverse effect of genotype in risk allele carriers.

599 / Abstract ID 568

ASSOCIATIONS BETWEEN HANDGRIP STRENGTH, DIABETES MELLITUS, AND ALL-CAUSE MORTALITY AMONG THE POPULATION OF 55 YEARS AND OLDER

NEW TECHNOLOGIES FOR TREATING OBESITY AND PREVENTING RELATED DIABETES

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Background and Aims: To investigate the association between handgrip strength and history of diabetes mellitus and all-cause mortality among the population of 55 years and older.

Methods: Data of 1876 adults 55 years and older (47.9% males) from the prospective population-based cohort study named the Stress, Aging and Health in Russia (SAHR) was used. Handgrip strength was measured 3 times for each hand by a hand-held dynamometer. Low handgrip strength corresponded to the bottom quintile (≤32 kg for males, ≤17 kg for females). The history of diabetes mellitus (DM) was included into analysis. The mean follow-up was 9 years, 547 deaths occurred. Logistic regression model was used to determine the risk of decreased muscle strength in case of DM. Association between handgrip strength, DM and all-cause mortality was evaluated by Cox regression model after adjustment for sex and age.

Results: Overall, 11,3% of participants had history of DM, 22,8% - low handgrip strength and 5,7% - both of conditions. DM associated with low handgrip strength among population 55 years and older [OR 1,62 (95%CI 1,14–2,29), p = 0,007], after adjustment for potential covariates (sex and age). The hazard ratio for all-cause mortality was higher in patients with DM and low handgrip strength (HR 1,86, 95%CI 1,63–2,44, p = 0,0001), compared with those who had only one condition.

Conclusions: The risk for all-cause mortality increased by 86% among individuals with low handgrip strength, suffering from DM. Therefore, the measurement of the handgrip strength in population aged 55 years and older with DM should be considered as all-cause mortality prevention measure.

600 / Abstract ID 424

STABLE LIQUID CO-FORMULATION OF PEPTIDE YY AND LIRAGLUTIDE

NEW TECHNOLOGIES FOR TREATING OBESITY AND PREVENTING RELATED DIABETES

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