Correction of Cardiovascular Disorders GLP-1 Mimetic in Patients with Type 2 Diabetes

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Background: To study the effects of GLP-1 mimetic exenatide on diastolic and endothelial function, markers of cardiovascular risk in patients with type 2 diabetes.

Methods: In 70 patients with type 2 diabetes were studied echocardiography, parameters of diastolic function (E and A), endothelial function by test with postocclusive reactive hyperemia, the level of HbA1c, lipid profile, markers of cardiovascular risk: C-reactive protein (CRP), tumor necrosis factor – alpha (TNF), N-terminal propeptide natriuretic hormone (NT-ProBNP), anthropometric indices. Patients were divided randomly into 2 groups: the main - 50 people to oral hypoglycemic drugs plus GLP-1 mimetic exenatide, comparison group - 20 people continued to receive prior glucose-lowering therapy. The study lasted 26 weeks.

Results: Indicators of diastolic and endothelial function improved in the main group, E/A increased from 0.8 ± 0.2 to 0.9 ± 0.2 (P = 0.01). There is a tendency to increase brachial artery diameters after occlusion of 3.6% to 4.8% (P = 0.3). Only in the main group received reducing markers of cardiovascular risk: CRP 0.5 mg / dl to 0.3 mg / dl (P = 0.0002), there is a tendency to reduce TNF-alpha from 9.4 pg / ml to 8.6 pg / ml (P = 0.2). Level of NT-ProBNP unchanged in both groups. In the main group achieved significant improvement in carbohydrate metabolism, lipid parameters, weight loss patients at 6 kg.

Conclusions: GLP-1 mimetic (exenatide) has a beneficial effect on the condition of markers of cardiovascular risk, improves endothelial and diastolic function that allows the use of the drug for the correction of cardiovascular disorders, that observed in the majority of patients with type 2 diabetes.

Achieving Target Blood Pressure in Type 2 Diabetes Therapy Optimization

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The combination of diabetes mellitus (DM) and hypertension (BP) occurs in 85-90%. Mechanisms of hypertension are heterogeneous. Hyperinsulinemia precedes diabetes for many years and persists in patients with DM type 2. Hyperinsulinemia - a leading pathogenic mechanism of hypertension in patients with metabolic syndrome and diabetes type 2.

Materials and Methods: 72 patients with type 2 diabetes and hypertension 1-2 items, high risk were randomized into 2 groups. Patients in both groups were comparable in terms of anthropometric indicators HbA1c, hemodynamic parameters, for the duration of diabetes and glucose-lowering therapy. The 1 group - to hypoglycemic therapy was added exenatid standard scheme. Patients 2 groups conducted previously conducted dose titration hypoglycemic drugs. Duration study was 3 months. Status of carbohydrate metabolism was evaluated by using HbA1c and glucose by monitoring parallel BP monitoring. Monitoring of glucose and blood pressure was performed before therapy correction DM and 3 months.

Conclusions: 1.Group I patients (exenatide) glycemic targets were achieved in significantly earlier. Was achieved in Group 1 patients stable glycemic daily index in the range of 4-6 mmol / l, in group II, daily glycemic index was 6.8 mmol / l. There was a significant reduction in HbA1c in group I when compared with 2.2. Patients Group I achieving glycemic targets contributed to the normalization of systolic and diastolic blood pressure at a constant antihypertensive therapy. Increasing the daily index systolic BP by 32.4%, reducing the variability in systolic BP and diastolic BP respectively 21.8% and 16.4%, confirms the role of hyperglycemia and hyperinsulinemia on increase BP by patients DM. Patients group I category non-diypper at the end of research went into category dipper.

Risk Assessment of Insulin Induced Lipohypertrophy in Diabetic Patients

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Background: Lipohypertrophy (LH) is a chronic complication of diabetes mellitus that is caused by frequent subcutaneous injections of insulin. Nowadays, visual appearance of LH is less obvious due to good quality insulin and expansion their concentration. As a result, some difficulties of its diagnostics have been appeared. The aim of this study has been to develop the estimation risk model of insulin induced LH in diabetic patients.

Methods: This study was done on 140 diabetic patients who had been under the treatment with insulin a mean 8 years. Ultrasoundographic of subcutaneous fat were used in assessing LH in these diabetics. All patients were divided into two groups. First group included 117 patients with LH, second – 23 diabetics without LH. Further, all LH and non-LH were statistically processed using Spearman`s, Kendall tau, Gamma rank correlation coefficients and binary logistic regression. Results were statistically significant when p<0,05. Also measure AUC was determined.

Results: All risk factors were analyzed using correlation coefficients on first stage. Statistically insignificant parameters were eliminated (p>0.05). 10 factors from 23 were remained after first stage. Further, 10 parameters were subjected to ROC-analysis. Measure AUC was determined. All risk factors had high predictive value (AUC > 0.5). On the basis of binary logistic regression the estimation risk model was created on next stage. Predictive value of model was 86% taking into account threshold cutoff 0.3 and confidence interval 95%. Efficacy of estimation risk model were tested on 34 diabetic patients.

Conclusions: LH remains severe insulinotherapy complication. Since there is no any LH treatment, its early diagnostics is absolutely necessary for diabetic patients. Thus, we developed new noninvasive painless method of LH diagnostic with good quality and high predictive value (86%) for patients who are under the treatment with insulin.

Preoperative Risk Assessment for Surgical Mortality in Patients with Diabetes: A Nationwide Population-Based Retrospective Cohort Study

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Background: To identify and assess the preoperative risk factors for postoperative mortality in patients with diabetes.

Methods: Using reimbursment claims, we performed a nationwide retrospective cohort study of 339,053 patients with diabetes undergoing major surgery. Sociodemographic factors, preoperative coexisting medical conditions, and types of surgery were evaluated for the 30-day postoperative mortality rates. Using conditional logistic regression, adjusted odds ratios (ORs) with 95% confidence intervals (CIs) and risk scores were analyzed.

Results: Among surgical patients with diabetes, 30-day postoperative in-hospital mortality was 1.31%. Gastroectomy (OR 8.02 [95% CI 6.42-10.03]), cardiovascular surgery (OR 6.57 [5.51-7.83]), and neurosurgery (OR 6.01 [5.06-7.14]) were associated with the highest postoperative mortality. Renal dialysis (OR 2.60 [2.38-2.85]) and low income (OR 2.19 [1.90-2.54]) were also important predictors for postoperative mortality in diabetic patients. Diabetic patients with risk scores higher than 15 had the highest postoperative mortality compared with those with baseline scores (OR 27.6 [18.0-42.6]). Thirty-day postoperative mortality correlates closely with increased risk scores (P for trend <0.0001).

Conclusions: This study provides preoperative risk scores to predict 30-day postoperative mortality rates in diabetic patients. Type of surgery, renal dialysis and low income were the most influential factors for postoperative mortality in diabetic patients.