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Endoscopic Manifestations of Gastroesophageal Reflux Disease in Patients with Type 2 Diabetes Mellitus

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Background: the high medical and social significance of type 2 diabetes mellitus (T2DM) is not only due to its prevalence, but also to various comorbidity that lead to a decrease in the quality of patient's life. Objectives: to study the features of the endoscopic manifestations of gastroesophageal reflux disease (GERD) in patients with T2DM. Methods: 67 patients with T2DM in comorbidity with GERD (main group) and 40 patients with isolated GERD (comparison group) were examined. Determination of the GERD form was performed during endoscopic examination («Fuginon», Japan), while establishing grades of esophagitis according to the Los Angeles classification. Results: the study shows that in patients of main group only in 5 (7.5%) cases the non-erosive form was found and in 62 (92.5%) cases the erosive esophagitis, while in comparison group - 15 (37.5%) and 25 (62.5%) respectively ($df=1$, $\chi^2=14.869$, $p<0.001$). Detailed analysis of the esophagitis degrees showed that the course of GERD against the background of T2DM is accompanied by a statistically significant redistribution of GERD grades: grade A was found in 15 patients of main group and in 3 patients of comparison group, grade B - 17 and 15, grade C - 26 and 6, grade D - 4 and 1 respectively ($df=3$, $\chi^2=8.166$, $p=0.04$). Conclusions: the presence of T2DM in patients with GERD is associated with an increase in the incidence of the erosive form of GERD with a significant redistribution towards the aggravation of the severity of the erosive esophagitis.

Keywords: gastroesophageal reflux disease, type 2 diabetes mellitus, endoscopy

Abbreviations: GERD – gastroesophageal reflux disease T2DM - type 2 diabetes mellitus

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Non-alcoholic Fatty Liver Disease in Patients with Hypertension: Carbohydrate Metabolism and Liver Parenchyma Condition

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Background: Non-alcoholic fatty liver disease (NAFLD) is the most common chronic liver diseases. Considerable attention is paid to the

comorbidity of NAFLD with arterial hypertension (HT), assessment of carbohydrate metabolism, the level of fibrosis and hepatic steatosis in these patients. Objective: To study the effect of HT on carbohydrate metabolism and the state of the liver parenchyma in patients with NAFLD. Methods: 115 patients with NAFLD on stage of steatohepatitis were divided into two groups: 63 patients with NAFLD and HT and 52 patients with isolated NAFLD. Clinical and laboratory parameters, including fasting glucose were determined. Fibrosis-4 (FIB-4), NAFLD fibrosis score (NSF) and Ultrasound fatty liver indicator (US-FLI) results were calculated. Results: Fasting glucose were significantly higher in patients with HT (5.87 mmol/l (95% CI 5.76; 5.98)) in comparison with the isolated NAFLD group (5.62 mmol/l (95% CI 5.43; 5.60 mmol/l)) ($p < 0.001$). Direct correlations between FIB-4 and NSF results and fasting glucose were determined in the NAFLD and HT group ($r = 0.25$ and $r = 0.33$, respectively; $p < 0.05$), and in the isolated NAFLD patients ($r = 0.27$ and $r = 0.27$, respectively; $p < 0.05$). The US-FLI results became unfavorable according to the glucose increase in all NAFLD patients ($r = 0.36$; $p < 0.05$). Conclusions: The obtained results indicate the correlation between the liver fibrosis severity and the state of carbohydrate metabolism in NAFLD, as well as the negative impact of HT on carbohydrate metabolism and changes in the liver parenchyma in these patients.

Keywords: non-alcoholic fatty liver disease, NAFLD comorbidity, hypertension, carbohydrate metabolism, liver steatosis

Abbreviations: NAFLD – Non-alcoholic fatty liver disease HT – Hypertension FIB-4 – Fibrosis- 4 index NSF – Non-alcoholic fatty liver disease fibrosis score US-FLI – Ultrasound fatty liver indicator

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Neurovascularization In Patients with Type 2 Diabetes Mellitus Using Different Methods of Magnetic Resonance Perfusion

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Objective: to evaluate neurovascularization using contrast and non-contrast magnetic resonance perfusion. Materials and methods: 140 patients with type 2 diabetes with and without cognitive impairment were included in the study. We assessed the variability of glycemia, magnetic resonance imaging (MRI): contrast and non-contrast. Results: brain neurovascularization change is associated with glycemia variability, with contrast advantage revealed in the contrast study. Microcirculation disorder occurs in both cortical (grey matter area) and subcortical structures. The greatest influence on brain vascularization disturbance in type 2 diabetes was revealed in terms of age, body mass index, arterial hypertension. Hyperglycemia and its duration, as well as hypoglycemia, control quality, average amplitude of oscillation, average time in the target range determined the alterations in vascularization. Conclusions: understanding the pathogenesis of microcirculation disorders and the role of glycemia variability in the brain in type 2 diabetes, it is possible to correct the glycemic curve in time and eliminate modifiable risk factors (body mass index, arterial hypertension) affecting the development of cognitive disorders.

Keywords: type 2 diabetes mellitus, neurovascularization, magnetic resonance perfusion, cognitive impairment.

Abbreviations: MRI