

UNUSUAL CAUSE OF HYPOGLYCEMIA

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Anamnesis. Girl, a 1st child. In the 3rd trimester was found polyhydramnios — susp. esophageal atresia. Term vaginal delivery at 38 weeks' gestation. Birth weight 2650 g, birth lengths 48 cm, Apgar score 8/9. Esophageal atresia with tracheoesophageal fistula, anal atresia with rectovestibular fistula. 1st day performed surgical repair of tracheoesophageal fistula and anal atresia; primary repair of esophageal atresia with cervicostomy and gastrostomy. 14 months - definite esophageal reconstructions reverse gastric tube from the greater gastric curve method. Until the time of admission no difficulties with swallowing, barium swallow exam — no signs of stricture; slow weight gain and well controlled asthma, otherwise normal PM history. At the age of 3 years recurrent brief episodes of pallor, tremor, sweating, fatigue and confusion, episodes resolved promptly after ingestion of sweet beverages and food. General practitioner provided neurological exam, cardiological exam, EEG, echocardiography, abdominal ultrasound: no abnormal findings. At the age of 5 years, during one such episode of pallor and fatigue, girl's grandmother (type 2 diabetic) measured glucose 2.0 mmol/l, during the following months, parents continued measuring the glucose-recurrent episodes of symptomatic hypoglycemia with glucose levels as low as 1.2 mmol/l. On admission: symptomatic hypoglycemia occurred 90 minutes after breakfast, glucose 2.3 mmol/l, no urine ketones, glycosuria of 28 mmol/l, increased plasma insulin of 23.7 mIU/l, normal levels of cortisol and growth hormone. Glucagon challenge test: glucose — 0 minute (2,3 mmol/l) - 30 minute (9,4 mmol/l). Critical sample analyses confirmed the diagnosis of nonketotic hyperinsulinemic hypoglycemia. Oral glucose tolerance test: delayed and hyperinsulinemic response to oral glucose, hyperglycemia during the first 60 minutes, followed by a rapid lowering of blood glucose level during the second hour of oral glucose tolerance test. **Diagnosis.** Postprandial hyperinsulinism, caused by a delayed and hyperinsulinemic response to carbohydrate intake, as a result of esophagogastric surgery. It represents one end of the «post-bariatric surgery hypoglycemia» spectrum, distinct from the «dumping syndrome». Initial treatment: diet with complex carbohydrates, no sweets or juices, higher dietary fat intake, first week of diet, no hypoglycemic events were detected, occasional episodes of postprandial hyperglycemia 12-month follow-up: without symptoms and no hypoglycemic events were detected, apart from occasional sweets, the girl's diet was as prescribed, HbA_{1c} 5.2%, CGM: frequent postprandial hyperglycemia up to 21.1 mmol/l. **Conclusion.** Case of a child with PHH following esophageal reconstructions benefits of using the CGM/FGM in the diagnosis, therapy of hypoglycemia.

KEYWORDS: hypoglycemia, postprandial hyperinsulinism, post-bariatric surgery, hypoglycemia.

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MAGNETIC RESONANCE SPECTROSCOPY OF THE BRAIN IN PATIENTS WITH TYPE 1 DIABETES MELLITUS

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Introduction. Currently, there are more and more techniques to assess the state of the brain in patients with type 1 diabetes mellitus (DM type 1). Proton magnetic resonance spectroscopy (1H-MRS) of the brain provides detailed information on the structure, dynamics, status of reactions and the chemical state of molecules. This method was approved by the United States Food and Drug Administration (FDA) in 1995, however, according to the literature, it has not yet found wide application in patients with type 1 diabetes. **Aim.** To study the data of 1H-MRS of the brain in patients with DM type 1. **Material and methods.** Were examined 22 patients at the age 24.6 ± 0.4 years with DM type 1, the control group consisted of 10 healthy young adults, matched by sex and age. All patients underwent clinical and laboratory diagnostics. Magnetic resonance imaging (MRI) and 1H-MRS of the brain performed on apparatus Siemens Magnetom 1,0 T. in the standard method. Statistical analysis was performed using the R-system package. **Results.** In assessing the state of carbohydrate metabolism average blood glucose levels in patients with T1DM 10.2 ± 4.7 mmol/l, HbA_{1c} $8.1 \pm 1.6\%$. According to the standard MRI in patients with type 1 diabetes was found expansion arachnoid spaces liquorocystic character, spaces of Virchow-Robin and convexity spaces. Also detected a correlation between the expansion of liquorocystic spaces and indexes HbA_{1c} ($r=0.4$; $p=0.001$), and fasting blood glucose ($r=0.5$; $p=0.001$), as well as with the expansion of Virchow—Robin spaces ($r=0.5$; $p=0.001$, $r=0.5$; $p=0.001$) and convexity spaces ($r=0.4$; $p=0.003$; $r=0.4$; $p=0.003$). During the 1H-MRS identified changes in metabolite ratios in the thalamus, namely the reduction of NAA/Cho ratio of 1.07 ± 0.14 to the right, left 1.14 ± 0.02 (the rate of more than 1.6), a significant increase in Cho/Cr ratio of 2.16 ± 0.34 right, left 2.23 ± 0.17 (rate of less than 1.2). **Conclusions.** Conducting 1H-MRS in patients with DM type 1 allows studying the metabolism of the brain, predicting possible cognitive impairment, as well as carry out adequate correction of the revealed disorders. However, the study requires an increase in the sample of patients for a more thorough analysis.

KEYWORDS: type 1 diabetes mellitus, proton magnetic resonance spectroscopy (1H-MRS) of the brain, carbohydrate metabolism.

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