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CLINICAL AND ANAMNESTIC CHARACTERISTICS OF PATIENTS WITH GESTATIONAL DIABETES MELLITUS

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Abstract
Gestational diabetes mellitus (GDM) is a disease characterized by hyperglycemia, first detected during pregnancy, but does not meet the diagnostic criteria for manifest diabetes mellitus (DM). Hyperglycemia during pregnancy is a risk factor for complications from both the mother and the fetus, with about 80% of all cases of hyperglycemia being gestational diabetes mellitus (GDM). A number of risk factors are identified in patients with gestational diabetes mellitus, among which the most significant are family predisposition to diabetes mellitus, overweight, obstetric history, aggravated by preeclampsia and fetal macrosomia.

Keywords: Gestational diabetes mellitus, glucose tolerance, body mass index, perinatal outcomes, fetal macrosomia.

Introduction

Gestational diabetes mellitus (GDM) is a disease characterized by hyperglycemia, first detected during pregnancy, but does not meet the diagnostic criteria for manifest diabetes mellitus (DM) [1]. According to modern concepts, pregnancy is a "diabetogenic factor" [2], since during gestation there is a change in the hemostasis of the female body, including carbohydrate metabolism.

The incidence of diabetes mellitus has continued to increase throughout the world over the past ten years [3]. Hyperglycemia during pregnancy is a risk factor for complications from both the mother and the fetus, with about 80% of all cases of hyperglycemia being gestational diabetes mellitus (GDM) [4]. An increase in the

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incidence of obesity in women of reproductive age, late reproductive age, and low public awareness of the negative effects of hyperglycemia on outcomes increase the incidence of GDM [5, 6]. The revision of the diagnostic criteria for hyperglycemia during pregnancy, based on the results of the study "Hyperglycemia and adverse perinatal outcomes", led to an even greater increase in prevalence [5, 6].

The risk factors for developing GDM have been identified by leading global medical organizations, but new factors are currently emerging that increase the frequency of hyperglycemia during pregnancy [7, 8].

The purpose of the study:

To analyze the clinical and anamnestic characteristics of patients with GDM and identify risk factors for adverse perinatal outcomes.

Materials and Methods

A retrospective observational non-combined case-control study was conducted. As a result, clinical and anamnestic risk factors for GDM and factors influencing the development of adverse perinatal outcomes in this obstetric complication were identified. The study included 65 pregnant women.

Groups were identified for the study. The main group consisted of 45 pregnant women who were diagnosed with gestational diabetes mellitus. The control group included 20 pregnant women with no carbohydrate metabolism disorders. The observation groups were formed using a simple random sampling method. The criteria for the diagnosis of gestational diabetes corresponded to the criteria regulated by clinical guidelines [14]. The diagnostic threshold for gestational diabetes mellitus was an increase in fasting blood sugar ≥5.1mmol/l, or during a glucose tolerance test with 75 g of glucose during pregnancy at 24-28 weeks (after 1 hour ≥10.0 mmol/l and after 2 hours ≥8.5 mmol/l), but not exceeding the diagnostic criteria for manifest diabetes diabetes (fasting venous plasma glucose level ≥7.0 mmol/L, or venous plasma glucose level greater than 11.1 mmol/L, regardless of meal time).

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In order to identify risk factors for the development of carbohydrate metabolism disorders, special attention was paid to studying the data of hereditary and own medical history regarding the manifestations of insulin resistance. The somatic status was assessed by determining the presence of extragenital pathology in pregnant women, and the somatic index was determined – the total number of diseases detected in one pregnant woman.

When assessing the obstetric and gynecological history, the peculiarities of menstrual function, gynecological pathology, the course and outcomes of previous pregnancies were taken into account.

All patients with GDM are consulted by an endocrinologist and other specialized specialists, depending on the identified extragenital pathology.

In the group of pregnant women with GDM, the time and method of diagnosing GDM (fasting hyperglycemia or PHTT with 75 g of glucose), the method of correcting hyperglycemia, the time and indications for prescribing insulin therapy, the patient's compliance, and the achievement of targets for normal sugar levels were taken into account.

BMI was assessed according to WHO criteria (2004) [10], the adequacy of body weight gain during pregnancy was assessed based on the criteria of the Institute of Health and Strategic Development (2019).

Results and Discussion

To identify the risk factors for GDM, the features of the course of pregnancy and childbirth in patients with this obstetric complication, as well as the effect of gestational hyperglycemia on perinatal outcomes, a comparative clinical and anamnestic characteristic of pregnant women in the main group (n=150) suffering from GDM was performed with those in pregnant women in the control group who do not have impaired carbohydrate metabolism (n=100). Noninvasive diagnostic methods included Echo-cardiotocography, ultrasound of internal organs, neurosonoscopy, duplex scanning of cerebral vessels, and chest X-ray.

The average age of pregnant women with GDM compared with patients without impaired carbohydrate metabolism was older and amounted to 31.16±5.39 years (95% CI 30.2-32.08) and 28.76±4.90 years (95% CI 27.71-29.81), respectively

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(p=0.001). The majority of women in the main and control groups were in the optimal reproductive period, but pregnant women with GDM were more likely to perform their reproductive function after 35 years of age.

The average age of menarche in pregnant women of the compared groups was identical and amounted to 13.4±1.4 years and 13.1±1.1 years (p=0.95). The sexual debut of the patients in the comparison groups also did not differ: 18.4±1.2 years and 18.0±1.1 years, respectively (p=0.65).

An analysis of the gynecological morbidity of the patients in the comparison groups was also performed.

The main place in the structure of morbidity of patients is the pathology of the cervix with its comparable frequency in the comparison groups. Uterine fibroids were more often detected in women with GDM, against the background of existing metabolic disorders. The frequency of habitual pregnancy loss in women in the main group tended to be higher in frequency than in the control group.

When analyzing the obstetric history, it was found that pregnant women with GDM had more pregnancies than pregnant women with normoglycemia. The number of pregnancies that ended in childbirth was more common in patients of the control group, whereas in pregnant women with GDM, on the contrary, induced abortions and early reproductive losses prevailed.

Comparative characteristics of complications of previous pregnancies showed that in the group of pregnant women with GDM, fetal births with a body weight of more than 90 percentile in the anamnesis were more common. The statistically significant difference is observed in the incidence of macrosomia, which is higher in the main group compared to the control group.

The incidence of preeclampsia in the anamnesis in pregnant women with GDM was close to a statistically significant level.

When assessing the hereditary history, it was found that patients with GDM were more likely to have first-line relatives suffering from type 2 diabetes mellitus. The incidence of hereditary obesity was close to statistically significant.

The assessment of anthropometric indicators at the dispensary showed that the average height in the pregnant comparison groups was identical and amounted to 1.64±0.03 m; 95% CI: 1.62-1.65, and 1.65±0.06 m; 95% CI: 1.64-1.66,

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respectively (p=0.807). The weight before pregnancy and the body mass index of women with GDM were higher than those without impaired carbohydrate metabolism. The median body mass index in the control group patients met the criteria of normal weight, while in the main group it was overweight.

To assess the somatic status, we determined the total number of chronic diseases detected in one patient. Compared with women in the control group, patients with GDM are more likely to suffer from obesity, gallstone disease, and vascular tone dysregulation. It should be noted that the majority of pregnant women with GI (73.7%) in the main group had a BMI of more than 30 kg/m2 (p=0.002) compared with the group of pregnant women without obesity, and the incidence of chronic arterial hypertension and autonomic dysfunction of vascular wall tone reached a statistically significant level among obese pregnant women – 86.4% (p=0.001).

Correlation analysis of fasting glycemia levels in pregnant women of the main group with BMI revealed a direct statistically significant association of low strength on the Cheddock scale (p=0.015; rxy=0.20). A direct correlation of moderate strength on the Chaddock scale was also established between the pregnant woman's BMI and the somatic index (p<0.001; rxy=0.377).

Conclusion

Thus, the medical and social "portrait" of patients with gestational diabetes mellitus is characterized by a number of features in comparison with women without impaired carbohydrate metabolism. They are more often in the late reproductive period, registered marriage, suffer from obesity, biliary tract diseases, and dysregulation of vascular tone. Their medical history is complicated by the presence of uterine fibroids, early reproductive losses, the birth of children with macrosomia and the presence of relatives with type 2 diabetes.

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