The Importance Of Mother's Weight In Pregnancy With Gestational Diabetes

Migena PRIFTI, PhD[1], Brizida Refatllari, PhD[2], Prof.Marsida Krasniqi[3], Prof. Floreta Kurti[4]

[1]*obstetrician-gynecologist at gynecological clinic "NENA", Faculty of Technical Medical Sciences, University "Aleksander Moisiu ", Durres, ALBANIA*
[2]*Faculty of Technical Medical Sciences, University of Medicine, Albania*
[3]*Head of the Medical Studies department in University "Aleksander Moisiu ", Durres, ALBANIA*
[4]*Faculty of Technical Medical Sciences, University of Medicine, Albania*

KEYWORDS

Pregnancy, Risk Group, Obesity, Glycemia, Complications

ABSTRACT

Introduction Gestational diabetes is known as a pathology that appears during pregnancy, accompanied by changes not only in the health of the mother, but also in the growth and intrauterine development of the child from its first weeks. The factors that influence the appearance of this pathology are different. In fact, in the last 10 years, an increase in obesity has been noticed, which is one of the most important in the group of risk factors for diabetes. This increase comes not only from malnutrition but also from the lifestyle and work of women in our country. **Objective**: The role played by obesity in the occurrence of changes in fast glycaemia levels in pregnant women, predisposed or diagnosed with gestational diabetes. **Methodology**. After the primary processing of the data obtained from the patients, the pregnant women who had monitored their pregnancy for at least 7 months at least with the body mass index (BMI) and with the fast glycaemi values were selected. The data were processed in 2*2 statistical tables, where the selected number of participants with prediabetes or gestational diabetes was associated with a risk factor: weight, to analyze the respective data in our population. **Results**. In about 176 patients with GE changes, statistically significant changes were observed in the group with maternal obesity. The number of obese patients in the group that had changes in glycemic levels was 3 times higher. During the second trimester, the entire group that ended the pregnancy within the 22-24th week for fetal reasons, was assessed to have changes in fast glycemic levels, which varied in the values of prediabetes and gestational diabetes. Also, within the same group with DG, women with high BMI have a higher risk of developing various pregnancy complications, especially during the third trimester.

1. Introduction

Obesity is a daily risk factor in our lives for many pathologies. The change in lifestyle, socio-economic conditions and the change in nutrition have significantly increased obesity in the population as a whole. According to studies from 1975 to 2016, this figure has tripled (1,2) The pregnant woman is a special part hers, which due to the very nature of the condition in which she is deprived of many daily activities, of a selected food (especially in the first trimester affected by nausea and vomiting) or maintaining a certain regime. This makes it a group with a tendency to gain weight above the norm and, as a result, a higher risk for various pathologies (3).

It is already known that BMI is included in the group of risk factors for developing gestational diabetes and prediabetes during pregnancy. In the list of main factors, obesity ranks second after the woman's age (4.5). In some studies, DG was diagnosed in 6.7% of women in general, where it was noted that women with BMI > 30% constituted 12.3% of the risk group. (6,7)

2. Methodology

This study is retrospective based on the statistical data observed for a period of time of approximately 2 years In the population of pregnant women, who were monitored near the Durres Regional Hospital and the Gynecological Clinic "NENA", we separated the women who fulfilled the following characteristics:

1. They had followed the pregnancy monitoring protocol: laboratory examinations, echography, CTG, weight measurement and arterial pressure.
2. They had performed the fast glycaemia measurement, the glucose load test and the glycated hemoglobin at least once during the monitoring

3. They had body weight monitoring for at least 7 months of the current pregnancy, if this pregnancy had ended successfully or until the end of the pregnancy if it ended prematurely

Considering that not all women carry the pregnancy to the end, but also to draw a clearer conclusion on complications in GDM, this group was divided according to trimesters of pregnancy. It was observed that 90% of pregnant women started their monitoring after the 8th week of pregnancy and this made the number of patients in the study invalid for conclusions in the first trimester. All patients who had changes in the level of glycemia were divided into groups according to weight and evaluated with 2*2 tables. Control of mother's weight was done in all regularly with monthly weighing during their presentation to our cabinet. All patients who started their pregnancy with high weight (IMT over 30%) and those who gained more than 25 kg during the months of pregnancy were included in the obese group.

3. Result and Discussion

Based on the groups that were created, it was found that in pregnant women, who ended their pregnancy up to the 24th week (within the second trimester), due to anomalies that appear during pregnancy or mother's complications, in the group with changes in glucose levels participated 16 women. Of these, 10 were of normal body weight and 6 were obese. The comparison was made between prediabetes and diabetes groups as well as those with normal weight and obesity

Table 1. The data of the study groups in the second trimester.

Mother's weight	**Glycaemi level**		**Total**	
	Prediabet	**DG**		
Normal	8	2	10	P<0.001
Obeze	2	4	6	
Total	10	6	16	

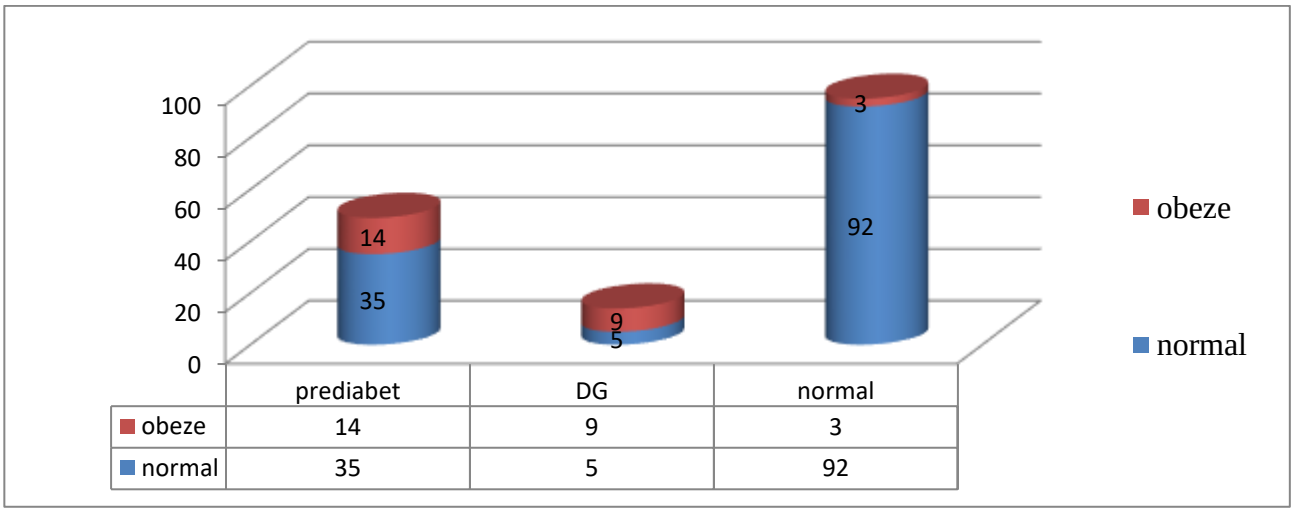
- With the increase in body weight in patients, changes in glycemia also increase. The difference observed between the two groups is statistically significant.
- For the second trimester, patients with normal weight have three times less risk of having diabetes compared to obese patients.
- Obese prediabetics also have a 2.4 increased risk compared to normal weight prediabetic patients.
- The odds ratio is 8 between the obese and the normal population, so we conclude that a woman's heavy weight is a risk factor for the development of gestational diabetes.

During third trimester, out of 168 patients with various maternal-fetal complications such as: hypertension, preeclampsia, fetal hypotrophy or urinary infections, 26 of them were overweight, 37% of which (63 patients) had changes in blood glucose levels.

Table 2. The data of the study groups in the third trimester.

Glycaemi level	**Mother's weight**		**Total**	
	normal	**Obez**		
Prediabet	35	14	49	P<0.001
DG	5	9	14	
Normal	92	3	95	
Total	132	26	168	

1. As the body weight increases in patients, the level of glycemia also increases. The difference observed between the two groups is statistically significant. (P 0.001)
2. Inside the prediabetic group, obesity increases at least 12 times the risk of having complications in the third trimester compared to those of normal weight.(OR=12)
3. Obese women in total have 17 times higher risk for changes in GE levels during the third trimester(OR= 17.3)
4. The ratio of odds over 30 in the group of women diagnosed with DG who are obese, clearly speaks of the influence that weight has on the occurrence of complications in GDM.(OR=35.4)



	prediabet	DG	normal
obeze	14	9	3
normal	35	5	92

Figure 3. Presentation of obesity cases compared to normal weight in the three groups

4. Conclusion and future scope

The influence of obesity or maternal weight on the development of gestational diabetes in our study took the first place among the risk factors. As observed from the analysis of the results, the value of P reached significant values to be taken into account in both trimesters and the odds ratio too.

In the conclusion reached on the correlations of maternal overweight during the first trimester, no significance was observed, due to the lack of data and the number of patients at this stage. But starting from the literature, it has been pointed out that the assessment of overweight from the first prenatal visit plays an important role in preventing the consequences of hyperglycemia[8,9]

In the second trimester, the P value was 0.001, so we are dealing with a statistically significant relationship, while the odds ratio [OR] of having gestational diabetes in an overweight woman during this time of pregnancy is 2.4 times higher than a woman of normal weight. Also in this trimester, a link was found between overweight and women with the group of women with prediabetes. The data showed that overweight in this group has a 2.4 times greater risk of having gestational diabetes compared to the normal weight group. The value OR=8 in the comparison of the data between the obese and normal population for this trimester shows that obesity is a risk factor in the occurrence of DG and fetal complications in the second trimester

In the third trimester, the data comparison brought out the probability value P 0.001, so it is statistically significant even at this time to be mentioned as an influencing factor. On the other hand, the odds ratio goes to the value of 30.3, which means a 30 times higher risk of the obese population than the normal weight population.

In conclusion, obesity takes the main place among the risk factors and this is verified or compared with other studies referred to in international conferences. The importance of obesity as well as the value it has in the consequences of diabetes in pregnancy is considered by many authors who refer to it as one of the main causes for this pathology and its complications. So Ciany et al[10] refers to a BMI higher than 30% that would be associated with a certain increase in the occurrence of gestational diabetes. While Torloni et al [11] refers that for every 1kg per m2 increase in body mass index, the prevalence of gestational diabetes increases by 0.92%, so the risk of GDM has direct correlations with BMI. In the study by Saldana et al [12] the correlation between BMI and GDM has come out with a P value of 0.0001, which indicates a significantly significant relationship between the two factors. While Thorsdottir et al[13] shows that during the study of the change of the woman's weight during pregnancy, an increase in weight of 11-20 kg during pregnancy is associated with fewer occurrences of GDM than changes of more than 20 kg for the same period. We find the same references on the importance of overweight in other studies [14,15,16,17]

Finally, the role played by BMI in the occurrence of GDM or prediabetes in pregnancy, bringing with it all its consequences for the mother and child, is important. This result should be presented in increasing the awareness of young mothers about the way of life and food from the first steps of a pregnancy with as few maternal-fetal health complications as possible.

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