

The Incidence of the Third Trimester Complications in Gestational Diabetes in our Hospital

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Abstract: ***Introduction:** The increasing incidence of gestational diabetes is an important topic for the public health. Sedentary lifestyle is strongly associated with this pathology, while gestational diabetes is an important risk factor for fetal complications and complications during childbirth also. **Aim:** The incidence of gestational diabetes complications in third trimester in our hospital. **Methodology:** A double blind study was performed based in medical recording of the pregnant women ultrasound exam, value of the fasting plasma glucose and the oral glucose tolerance test OGTT, measured in the risk group. This study included 5019 pregnant women hospitalized in Regional Hospital of Durres during the period May 2012 till November 2013, and 57 of them were treated for problems related to gestational diabetes. **Results:** Premature birth (under 37 weeks) occurred in 138 women, 34 of those were diagnosed with GD. 159 cases were diagnosed with preeclampsia and 10 patients also were with GD. 30 women were diagnosed with fetal hypotrophy and five of them were also with GD. Urinary infection in GD patients was diagnosed in 110 women.*

Keywords: Gestational Diabetes, fasting plasma glucose FPG, pregnancy complications, third trimester.

1. Introduction

Gestational diabetes (GD) in pregnancy is defined as glucose intolerance. In pregnancy, the incidence rate is 2 to 4 % but global guidelines show that this index is related with risk factor and in the Mediterranean area (such as our country), the incidence value is between 3 to 5 %.(1 ,2,). The differences between the diagnose protocol criteria of our country with the others make difficult the met analyze. Also the relation between gestational diabetes prevalence and demographic factor is not very clear. We can say that ethnicity is an independent risk factor for GDM. In 2009, the term of *Prediabetes* was introduced in our protocol of treatment including all cases with fasting plasma glucose between 95 mg /dl and 110 mg/dl.(3,4). In prediabetes the patients has no somatic concerns or complains, nor problems linked to obesity. The prediabetes is used to highlight the group risk for developing diabetes disease. Cases with prediabetes has impaired tolerance for glucose (IGT)

Risk factors for GD (5,6,7)

- Ethnicity (Hispanic, afro-Americana or Asiatic)
 - Woman age up to 30 year old
 - Diabetes insulin dependent in family
 - Obesity
 - Recurrent urinary infections or genital infections
 - Multi parity
 - Missed abortion, fetus mort in uterus and fetal weight up to 4000 gram.
 - The presence of glucosuria
 - Microcosmic ovaries syndrome
- Studies shows that GD is diagnosed in 4.8 % of woman without risk factors (8)

2. Methodology

This is a prospective study, performed on the pregnant patients in the Regional Hospital of Durres. During 18 month of study (May 2012 until November 2013) we

collected also data from the medical records for the complications in the third trimester of pregnancy. To perform this study we use plasma glucose values measured. Also we use the fasting glucose test, oral glucose tolerance test (50gr of sugar) and HbA1C test to confirm diagnose. Obstetrical history and personal history were also useful.

The population

The patients were randomly selected during the routine control and patients hospitalized in pregnancy related disorders service PDS. 5019 cases were included in our study and from them we choose the risk group. Interpretation is based on venous plasma glucose results before and 2 hours after a 75 g oral glucose load.

OGTT

	Fasting	2 hours	
No diabetes	≥6.0	<7.8	No excess micro- nor macro-vascular risk
Prediabetes	6.1–6.9	7.8–11.0	Excess macro- but not micro-vascular risk
Diabetes	≥7.0	≥1.1	Excess macro- and micro-vascular risk

The treatment protocol of gestational diabetes in third trimester

We use the existing protocol for the gestational diabetes (9,10,11) in the third trimester:

- 1) The bio and physical profile: the fetal weight and the position of the fetus
- 2) Cardiotocography- monitoring of fetal cardiac activity
- 3) Biochemical examinations
- 4) Measure the weight and the blood pressure of the patient.
- 5) Control of fasting plasma glucose and oral glucose tolerance test (50gr of sugar) in 23th – 25th week of the pregnancy

The complications of the third trimester:

- 1) *Urinary infections and genital infections* (these infections might begin in the first trimester) (12)
- 2) Another complications related to diabetes is *preeclampsia*.(13,14) The preeclampsia is common at woman with diabetes (12%). Chronic hypertension is another complication that occurs in 1 to 10 diabetic women. The women that have chronic hypertension and diabetes have also high risk to develop fetal hypotrophy, preeclampsia, placental abruption and maternal malignant hypertension.
- 3) Fetal hypotrophy (15,16) ; Changes of the liquid amount (polyhydramnios and oligohydramnios) (17,18).
- 4) Premature partum(,19,20, 21)
- 5) Fetal macrosomia(22). All babies born from hyperglycemia moms have double odds for trauma during the partum. Odds for section cesarean in this case are triple comparing with healthy pregnant women. Babies born from hyperglycemia moms also are risked to recover in the Neonatal Intensive Care Unit for neonatal problems. That's why is necessary to prevent neonatal problems by monitoring the fetal weight.
- 6) Feto-morto in utero

3. Results

From all the cases (5019) in our hospital during the time of study, 1000 of them had shown complications during the third trimester. 490 patients out of these 1000, were hospitalized in the PDS of our hospital. In total, 98 patients were diagnosed with pre-diabetes and 5 patients with diabetes type 2, insulin dependent.

- 1) According to the studies we've been referring to, we see increasing proportions of gestational diabetes with urinary infections and genital infections up to 27.3%. In our study we have 10 cases with recurrent urinary infection with FPG >100mg/dl in 100 patients treated for urinary infections. So the results for this complication in gestational diabetes is 10%.
- 2) Preeclampsia. Its incidence at women with GDM is about 12%. (23). The odds for preeclampsia are positively correlated with the age of the woman and the level of glicemia. Results from another study have shown: when early glucose was < 105 mg/dL the rate of preeclampsia was 7, 8% but for early glucose level > 105 mg/dL preeclampsia rate was 13, 8%.(24).Also, from the same study, body mass index in pregnancy is related with preeclampsia. In our hospital, 159 cases were treated for preeclampsia, and only 10 of them (6.2% in total) had high values of glucose.

- 3) Fetal hypotrophy. Only 5 cases are registred with fetal hypotrophy and there in the pregnancy more the 41 weeks. Changes of the liquid amount (polyhydramnios and oligohydramnios) : From 7 cases who had polyhidramnios, five of them arrive until the 39 week of pregnancy. From the beginning of the week 32th, 5-7 % of cases had shown placenta calcification and oligohydramnios.
- 4) Premature partum is the most important complication to gestational diabetes. Some studies show the correlation between the DG and the premature partum is about 6.2 % (,25,26, 27). In our study we have 34 of all the cases with premature partum, 18 of them were in tocolytic therapy and the delivery was at the 37th week. 5 cases of them had premature partum at the 35- 37 week of pregnancy. Only one patient had a missed abortion in the 8th week cause of the hypertension(values 150/100 mm/Hg), 10 cases had incomplete abortion. The patients with GD, who had a preterm labor, are 10% to cases hospitalized for premature partum in our hospital.
- 5) Fetal macrosomia. All babies born from hyperglycemia moms have double odds for trauma during the partum. Odds for section cesarean are triple comparing with healthy pregnant women. Babies born from hyperglycemia moms also are risked to recover in the Neonatal Reanimation Department for neonatal problems. That's why itis necessary to prevent neonatal problems by monitoring the fetal weight. In our study 217 newborns weighted over 4000 grams.
- 6) During the time of study feto- morto in utero from gestational diabetes resulted zero.

The complications that come from GD during the third trimester of pregnancy are 11% (in total)

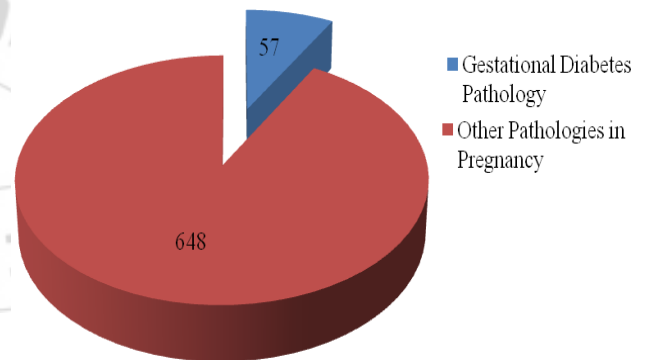


Figure 1: Present the cases with diabetes and the proportions of pregnancy hospitalized in the pathology department

Other pathology - 648 cases; GD pathology – 57 cases

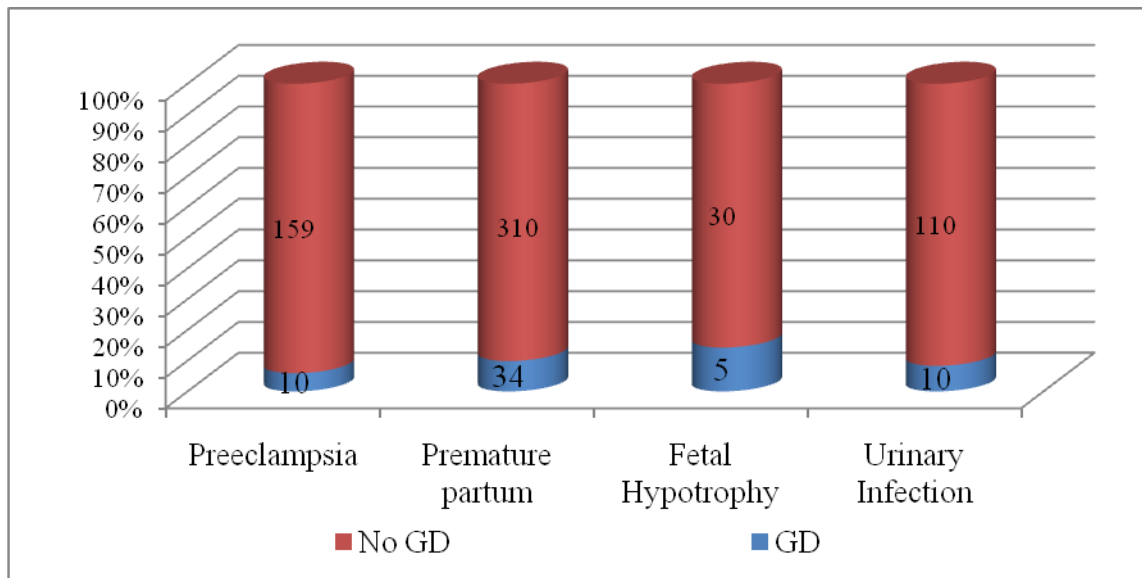


Figure 2: Differences between complications in the third trimester in gestational diabetes patients comparing with non gestational diabetes patients

4. Discussion

According to our data and referring to recent studies we conclude:

- Preeclampsia is associated with gestational diabetes in 12 %, but in our study we conclude that the rate is lower to 6, 2%. This rate difference may be depending by geographic position and demographic characteristics, the exact time of examination and diagnose, and the interpretation of OGTT and clinical signs.
- Other reason we can mention may be the lack of information for the diabetes examinations during the pregnancy. In relation with gestational diabetes and premature partum we don't have correct data because same premature partum are associated also with the fetus weight. This is more common in macrosomia babies or in woman that has irregular menstrual cycle. In results 27 % to our study that is not included. As a result we can say , a good monitored pregnancy infect directly in the outcome.
- The evaluation of placenta calcification by ultrasound, usually is not accompanied with glicemia test and this way the correct diagnose is a bit difficult. For this reason the results for deseases to amniotic fluid and placenta are not signed corretly in this study.
- The results of this study are relatives because not all the patients made their visit and laboratory examination correctly the age of pregnancy.(only 12% of them).

5. Conclusion

- It's important to mention that in our country GD as pathology isn't very common. The same is also for its complications in pregnancy. That's why we should have GD in focus. The information is very important not only in the risk group but also in the population. This way we can prevent the gestational diabetes complications.
- Is necessary a specific protocol for measure the fasting glycemia and OGTT (75gr of sugar) in 22th– 26th week of the pregnancy.

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