

## Possible Causes and Complications of Gestational Diabetes, Field Study in the City of Nassiriyah

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### Abstract:

The research aims to diagnose and study the most likely causes of gestational diabetes (GD), the most important complications associated with affected pregnant women, and the methods used in treating this type of diabetes. The research was conducted in the city of Nassiriyah and the sample included a follow-up of 90 cases for a period of seven months. The study focused on studying the possible causes, where seven possible causes were identified including family history constitutes (33%), pregnancy at a later age (20%), obesity (12%), and polycystic ovarian syndrome (PCOS) (10%), while other causes came at low rates as risk factors for this type of diabetes. Urinary tract infection and high blood pressure, as well as high albumin in the urine, were among the most important associated complications, as their rates reached 78%, 70%, 67%, respectively.

**Key words:** Gestational Diabetes, Causes, Complications and Family history.

### 1. Introduction

Diabetes is one of the chronic diseases that affects women at any stage (before, during or after) pregnancy. Diabetes occurs when the body is unable to control and maintain blood sugar within the normal range, which is 70-100 mg/dl or 3.5- 5.9 mmole/L as a result of the lack of the hormone insulin or insulin resistance, which produced by certain cells in the pancreas gland called beta cells [1,2]. There are two cases of diabetes, the state of diabetes that appears for the first time in pregnancy and is called gestational diabetes and the second case is the state of pregnancy when the affected woman Diabetes (diabetes that existed prior to pregnancy) [3].

Gestational diabetes (GD) is a high level of glucose (sugar) in the blood during pregnancy in some pregnant women, affecting 1-10% of pregnant women and appearing in week 20-24 of pregnancy as a result of hormonal changes that occur during pregnancy period due to change in the body's ability to use insulin and maintain blood sugar level within the normal level, either because of low insulin production or insulin resistance [2,4]. However, a number of explanations were provided, similar to those found in diabetes Type 2 such as autoimmune, individual gene mutations or obesity [5].

Stational diabetes is divided into two types and these two types were subdivided according to their associated risks and management [3,6]. Type A1: When it is abnormal oral glucose tolerance test (OGTT), but normal blood glucose levels during fasting and two hours after meals; its treatment is based on diet and exercise only (non-insulin dependent) [6]. Type A2: When it is abnormal oral glucose tolerance test (OGTT), compounded by abnormal glucose levels during fasting and/or after meals; its treatment depends on insulin in addition to diet under the supervision of a specialist doctor [3].

Although gestational diabetes is a temporary disease that usually disappears after childbirth, 40-50% of later pregnant women are more likely to develop diabetes (type II). The high level of glucose in the blood during pregnancy may lead to a group of problems affecting the growth of the fetus and pain if not treated with precision and caution [1]. The large proportion of women who develop gestational diabetes despite having no risk factors [7].

There are several indications that some women are more likely to develop gestational diabetes than others, namely:

Pregnancy at a later age, a family history of type 2 diabetes, having gestational diabetes in a previous pregnancy, having polycystic ovarian syndrome(PCOS), obesity, multiple miscarriages or a previous death of a child shortly after birth for unknown reasons, persistent bacterial or fungal infections, especially in the urinary tract, birth of a disabled child Previous pregnancy [2].

Several symptoms appear when suffering from gestational diabetes, including thirst, frequent urination, early fatigue and rapid fatigue during the twenty-fourth week of pregnancy, weight loss, paresthesia and pain in the fingertips [8].

## **2. Patients and methods of work**

This study was conducted at the Maternity and Children's Hospital in Nassiriyah City for the period from December 2018 to July 2019, during which 90 cases of gestational diabetes were taken from the hospital's reviews, and the methods of diagnosis were used as follows:

1- The history of the disease, which is the diagnostic history of gestational diabetes, i.e. the study of the case from all sides and follow-up of the pregnant woman to the period of birth.

2- Full clinical examination of the pregnant woman (with the help of a doctor) and the stabilization of clinical signs of the disease.

3- Laboratory examination (blood sugar test in the cases of fasting and random)and ( Urinary glucose test) to determine the level of glucose, where the disease is diagnosed if the level of fasting sugar in blood (the duration of fasting between 8-10 hours) more than 126 mg/dl(7.0 mmol/l) or that the random sugar with blood more than 200mg/dl(11.1 mmol/l) after two hours of food, and re-examination once or twice to be tested positive so that the incidence of diabetes can be confirmed at the first reading [9,10]. Glucosuria is occur when glucose level more than 180 mg \100ml in blood [11].

## **3. Results and discussion**

The precise mechanisms underlying gestational diabetes remain unknown [12], which depend on the delicate balance between the body's ability to withstand physiological changes in the metabolism of carbohydrates that occur during pregnancy that tend to raise the level of glucose in blood and those that keep the body in an imbalance [4]. Where the body during pregnancy secretes many Pregnancy hormones that counter the action of the insulin hormone, causing insulin resistance, which reduces the sensitivity of insulin receptors, since insulin promotes the entry of glucose into most cells, insulin resistance prevents glucose from entering the cells properly. As a result, glucose remains in the bloodstream, where glucose levels rise. It explains the high level of glucose and the likelihood of developing diabetes in some pregnant women [12].

Through the Table 1, found that the proportion of a family history (33%), which played an important role in increasing the likelihood of got pregnant diabetes, making pregnant women more likely to develop diabetes type II.

Through the same table we found that the incidence of GD in Pregnancy at a later age (20%), risk factor increases as she gets older (especially for women over 35 years of age). One study found that a father's age over 55 years was associated with GD [13]. Gestational diabetes in a previous pregnancy (16%)Subsequent pregnancy may be accompanied by a possible future permanent diabetes, followed by obesity (12%),Polycystic ovarian syndrome(10%) is also a risk factor, besides multiple miscarriages or the birth of a stillborn child(6%) and birth of a disabled child Previous pregnancy (3%).

**Table 1.**Risk factors for Gestational diabetes

Risk factors	Number	Percentage
A family history of Diabetes	30	33%
A previous diagnosis of gestational diabetes	14	16%
Obesity	11	12%
Polycystic Ovary Syndrome	9	10%
Pregnancy at a later age	18	20%
Multiple miscarriages or the birth of a stillborn child	5	6%
Birth of a disabled child	3	3%
Previous pregnancy		
Total	90	100%

Table 2 shows clinical and laboratory tests of the level of sugar in my case (fasting, random and urinary glucose) for pregnant women with gestational diabetes where it is necessary to measure the level of sugar in both cases because there are some cases that do not give a definitive result of diabetes, especially in pregnant women who suffer from fasting diabetes (blood-fasting glucose level 126-200mg/d) [9]. Women with GD may have high glucose levels in their urine (glucosuria). Increased glomerular filtration rates during pregnancy contribute to some 50% of women having glucose in their urine at some point during their pregnancy. The sensitivity of glucosuria for GD in the first 2 trimesters is only around 10% and the positive predictive value is around 20% [14].

**Table 2.**Shows clinical and laboratory tests

Tests	Checkup	Number	Percentage
Clinical markers	Yes	81	90%
	No	9	10%
fasting blood sugar test	Yes	90	100%
	No	-	
Random blood sugar test (Two hours after the meal)	Yes	87	97%
	No	3	3%
urinary glucose test	Yes	69	77%
	No	21	23%
Total		90	100%

Gestational diabetes poses a risk to mother and child. This risk is largely related to uncontrolled blood glucose levels and its consequences [15]. Table (3) shows the most important complications associated to pregnant women with gestational diabetes, where found gestational diabetes with urinary tract infection (UTI) (78%), which is more common during pregnancy. Therefore, early screening of the administration is necessary to find out the presence of bacteria causing urinary tract infection, where studies found there is relation between the incidence of premature birth and urinary sewage inflammation [16]. High blood

pressure (70%), the inability to control it with medications, especially has a high amount of albumin in urine (67%), as well as occurs preeclampsia that can threaten the lives of both mother and baby [15]. It was also show that the rate of increase in the weight and size of the fetal (45%)

Neonates born from women with consistently high blood sugar levels are also at an increased risk of low blood glucose (hypoglycemia), through of same the Table found respiratory syndrome(60%) and untreated GD also interfere with maturation, causing dysmature babies prone to respiratory distress syndrome due to incomplete lung maturation and impaired surfactant synthesis [17], followed by caesarean section(60%). The two main risks GD imposes on the baby are growth abnormalities and increase fetal weight, labeling a woman as having GD may in itself increase the risk of having caesarean section[18,19].

**Table 3.**Complications associated with gestational diabetes

Complications	Checkup	Number	Percentage
High blood pressure	Yes	63	70%
	No	27	30%
Urinary tract infection	Yes	70	78%
	No	20	22%
Respiratory syndrome	Yes	54	60%
	No	26	40%
Albumin in urine	Yes	60	67%
	No	30	33%
Weight and size fetal	Yes	41	45%
	No	49	55%
Caesarean section	Yes	53	60%
	No	27	40%
Total		90	100%

Table 4 shows the most important methods used in the treatment of gestational diabetes.

Treatment of GD with diet and insulin reduces health problems mother and child [20].

Through this table, diet is the preferred method for women with gestational diabetes (90%), followed by taking doses of sugar treatment medications including insulin (59%). Where the right diet and proper exercise are the first step in treatment with repeated tests during pregnancy to measure blood sugar, or the pregnant woman may need to inject insulin regularly during pregnancy [2,8]. If a diabetic diet, exercise, and oral medication are inadequate to control glucose levels, insulin therapy may become necessary [21].

**Table 4.**Treatment Methods of gestational diabetes

Treatment methods	Checkup	Number	Percentage
Diet	Yes	81	90%
	No	9	10%
Exercise	Yes	22	24%
	No	68	76%
Medical treatment	Yes	53	59%
	No	37	41%
Total		90	100%

#### 4. Conclusion:

Through what has been mentioned in the research, both theoretical and practical, it can be said that gestational diabetes is one of the most important diseases facing the pregnant woman, which can leave great complications or turn into the second type of diabetes. A family history of diabetes is the most influential among the causes leading to this disease (33%) of the sample, pregnancy at a later age (20%), followed by obesity (12%), and polycystic ovarian syndrome (PCOS) (10%). Other causes came at low rates as risk factors for this type of diabetes and in light of these results, education should be made. With the symptoms and complications of this disease and an invitation to those with a family history or who are pregnant with a late age, in addition to obesity and other reasons mentioned, to frequent examination during pregnancy and to take the necessary precautions, especially a balanced diet that includes a diet to reduce the symptoms of gestational diabetes.

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