Diabetes and Pregnancy: About 19 Cases

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ABSTRACT

The association diabetes and pregnancy is a common gestational situation that constitutes a real public health in Morocco. The gestational diabetes is defined by the World Health Organization (WHO) as glycemic tolerance disorder that begins or is diagnosed for the for the first time during pregnancy and may cause maternal and/or fetal complications. Our work's goal is to analyse the epidemiological profile of the diabetic women studied, to follow the course of pregnancy and childbirth and to assess the maternal and fetal morbidity. We present a descriptive retrospective study conducted at the obstetrical gynecology department of high-risk pregnancy within the hospital of maternity SOUISSI in RABAT, MOROCCO, involving 19 pregnant and diabetics women over 326 women consulted. The study lasted 12 months, from January 2019 to December 2019. Data was collected by using medical records. In our series, the prevalence of gestational diabetes is 5,8 %. 8 women have pre-existing diabetes (42,2%) and only 3 have scheduled their pregnancy (15,7%). 11 women have gestational diabetes (57,9%). All our patients were followed and had a controlled glycemic index. This study revealed a large number of maternal complications dominated by urinary tract infections, which represents 31 %, followed by hypoglycemia with a 10,5%, preeclampsia and cetoacidosis in 5% each. For fetal complications, we had 53% cases of macrosomia, 23% of respiratory distress, 18.6% of prematurity, 2,32% of congenital complications. Our results are consistent with most of the series in the literature. These pregnancies remain with more risks than under normal glucose tolerance. Nevertheless, the prognosis of these pregnancies can be improved by early and multidisciplinary management to achieve a glycemic balance avoiding maternal-fetal complications.

I. Introduction

The association of diabetes and pregnancy is a common gestational situation that constitutes a real public health problem in Morocco.

Gestational diabetes (GD) is defined by the World Health Organization (WHO) as a glycemic tolerance disorder that begins or is diagnosed for the first time during pregnancy.

It results in varying severity of hyperglycemia and may cause maternal and/or fetal complications.

The main risk factors are overweight, family history of diabetes, personal history of gestational diabetes or macrosomic child.

It is a very high-risk pregnancy because of the inherent maternal and fetal complications, which can affect the maternal-fetal prognosis, both functional and vital.

The presence of diabetes during pregnancy may be either pre-pregnancy diabetes or gestational diabetes diagnosed during pregnancy.

Close management and rigorous multidisciplinary follow-up involving the diabetologist and the obstetrician are therefore essential to limit complications, hence the importance of early management of pre-gestational diabetes and early detection of gestational diabetes.

II. Material and Methods

This is a descriptive retrospective study conducted at the obstetrical gynaecology department of high-risk pregnancy within the hospital of maternity SOUISSI in RABAT, MOROCCO, involving 19 pregnant and diabetic women over 326 women consulted.

The study lasted 12 months, from January 2019 to December 2019.

We included previously known diabetic patients regardless of type of diabetes and patients with diagnosed diabetes discovered during pregnancy, regardless of gestational age at diagnosis and screening mode.

Are excluded from this study the lost of sight and patients whose follow-up and delivery were not performed in our department.

Each of these patients received rigorous and methodical follow-up with multidisciplinary endocrine-obstetric follow-up.

The glycemic objective was achieved by a strict diet or insulin therapy adapted for each patient.

III. Results

A total of 19 patients have been studied.

8 patients (42,2%) had a pre-existing diabetes and only 3 (15,7%) had a desire for pregnancy.

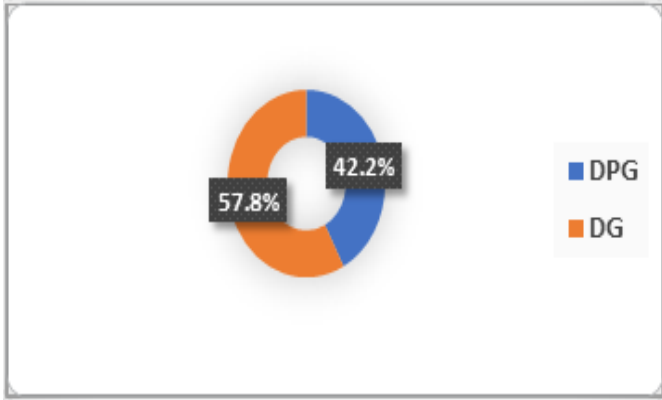Gestational diabetes is present in 11 women (57,8%).

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Diagram 1. Patient Distribution in our Population by Type of Diabetes

About patients characteristics, our study has shown an average age of 33 years with a rate of 79% of women with an age superior to 30 years.
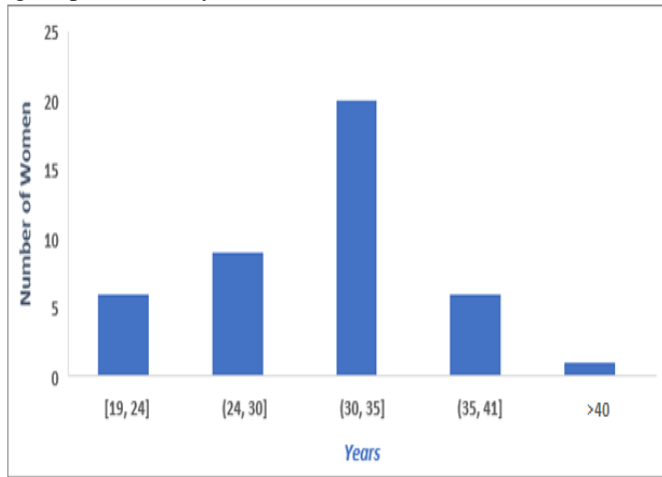

Diagram 2. Age distribution of our study population

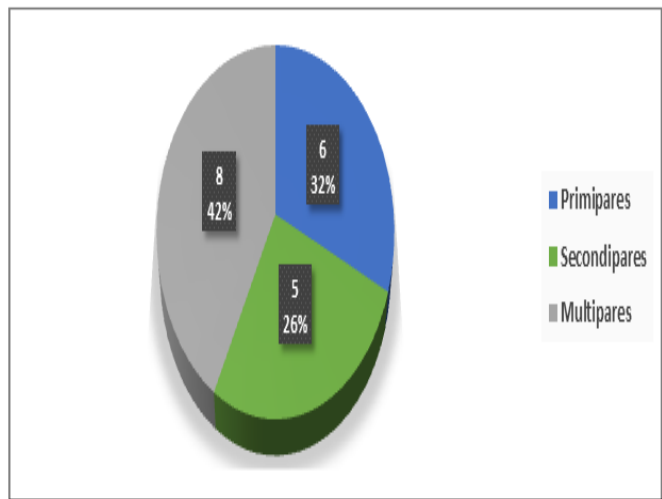Concerning the parity, we've found that 6 were primiparous, 5 secondiparous and 8 multiparous.

Diagram 3: Women Parity

Regarding to the weight, 7 women had a body mass index (BMI) superior to 25 Kg /m2 (36%) and the average BMI was 26,7 Kg/m2.

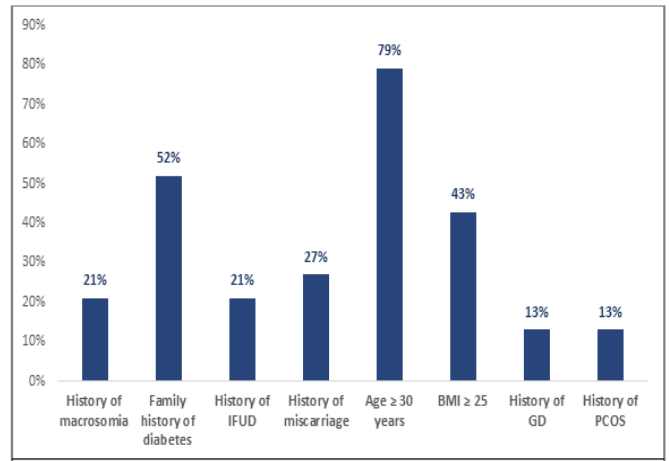We've noticed in 26% multiple risk factors of diabetes as shown on the diagram 4.

Diagram 4. Distribution of Diabetes' risks factors in our study population

The detection of gestational diabetes has been performed by a fasting blood glucose in 60% of the patients and by an oral glucose tolerance (75g) in the other cases.
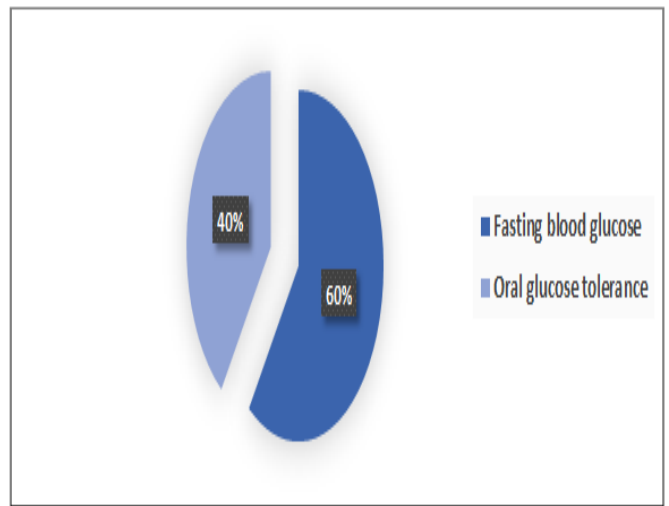

Diagram 5. Distribution of screening methods used in women with a gestational diabetes

This testing was conducted between the 12th and 29th week of amenorrhea which represents an average of 26,5 week of amenorrhea.

Concerning the treatment, 12 were on insulin (63%), 5 on strict diet only (26%) and 2 were not receiving any kind of treatment (10%).

The oral agents were stopped around the 8th week of amenorrhea in women with type 2 diabetes, and the insulin was introduced around the 13th week of amenorrhea.

The patients having a gestational diabetes, began to receive insulin around the 25th week of amenorrhea.

In our study, the glycemic control was obtained in 15 women (79%).

The assessment of the impact of the diabetes was studied by ECG's, blood tests, determinations of microalbuminuria and proteinuria and an eye examination (back of the eye) for all the patients.

5 women had a microalbuminuria, 7 an important proteinuria, ECG were all normal and 2 cases of diabetic retinopathy were found.

Delivery was performed in 36.8% (7 women) of cases by a caesarean section.

Caesarean section indications are dominated by macrosomia in 71.4% of cases.

During pregnancy, urinary tract infections made up 31% of our study population, pre-eclampsia was marked in only one woman, severe hypoglycemia in two women, and ketoacidosis in one case.

The average term of childbirth is 36.9 weeks of amenorrhea.

Prematurity was noted in 3 women (15.7%).

Macrosomia was present in 57.8% and 4 cases of fetal malformations were reported, or 21%.

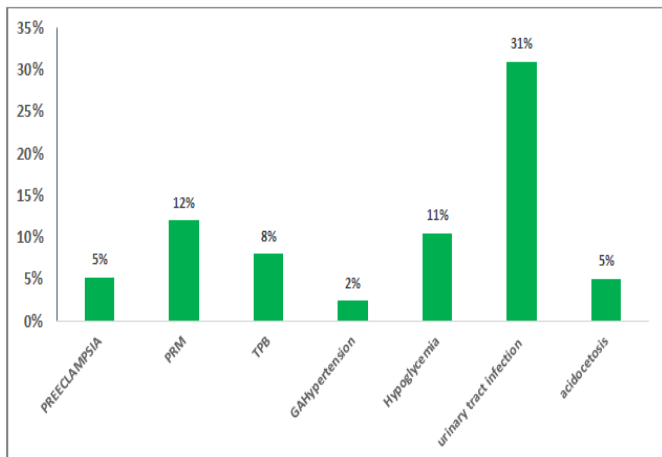Fetal and maternal complications are shown in diagramme 6 and 7

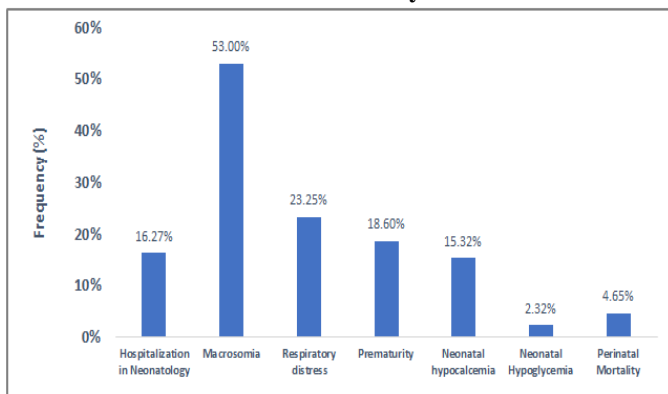**Diagram 6. Distribution of maternal complications recorded in our study series**

Diagram 7. Distribution of neonatal complications in our series

IV. Discussion
1. The prevalence

The prevalence of gestational diabetes has been increasing significantly in recent years, particularly in relation to the inclusion of new criteria proposed by IADPSG, CNGOF and ALFEDIAM [1].

With the new criteria, Sacks et al. had a GD prevalence of 17.8%, but again with significant variations between centers ranging from 9.3% to 25.5% [2].

In Australia, Yue et al. report a prevalence of 7% from a database hospital facilities, but important differences according to ethnicity: 3% in cases of Caucasian origin, 7% in the case of Arab origin, 10% in the case of Vietnamese origin, 15% in case of Chinese origin and17% in cases of Indian origin. In Switzerland, the frequency of gestational diabetes is 10.2%. It is 1.2% in Sweden and 2% in Denmark [3], [4].

In our study we find a prevalence of 5.8%. This figure is lower than the literature, but it does not really reflect the prevalence of diabetes due to the fact that several pregnant women are lost sight after their first consultation.
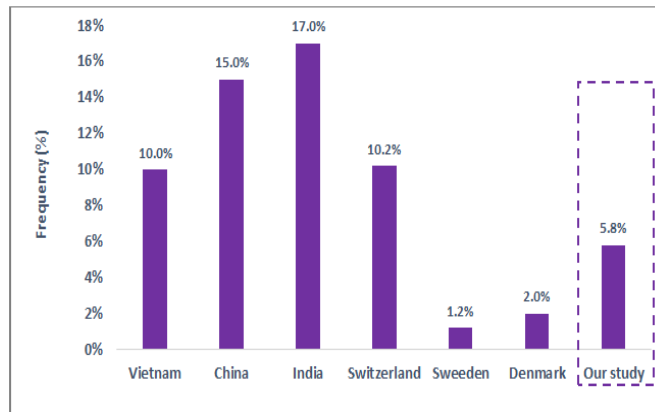

Diagram 8. Frequency of gestational diabetes in different countries

2. Patients Characteristics

The age of our patients ranges from 22 to 44 years, with a predominance of women over the age of 30 (79%).

The average age is 33, this is in line with studies by Nebti N et al, Bensbaa S and al and Lamich-Lorenzini F and al with an average age of 35, 34.5 and 34.4 years respectively. [5, 6, 7].
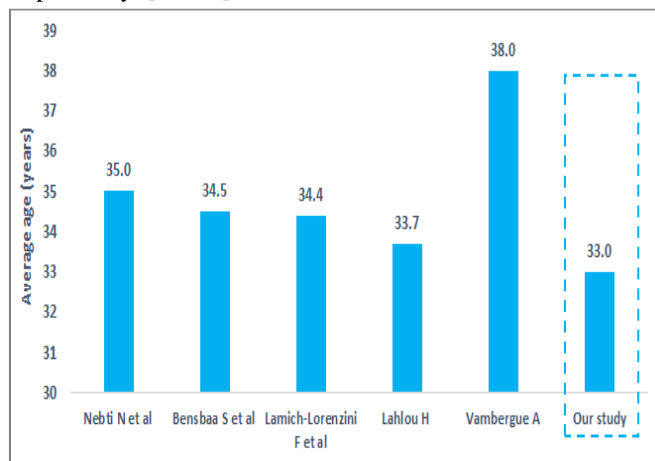

Diagram 9. Distribution of average age by series

Some authors consider multiparity greater than or equal to 3 as a risk factor for the DG [30]. In our study, 42% of the patients are multiparous, which is consistent with the results of Sqalli houssaini [8] who carried out a retrospective study on 45 patients, 35% of whom were multiparous.

These results are consistent with the results of the descriptive study made by Traore A and al [9] which exploited 100 pregnant and diabetic women, 46% of whom were multiparous, contrary to the results reported by Lahlou H [10] where multiparity represents 69.3%.
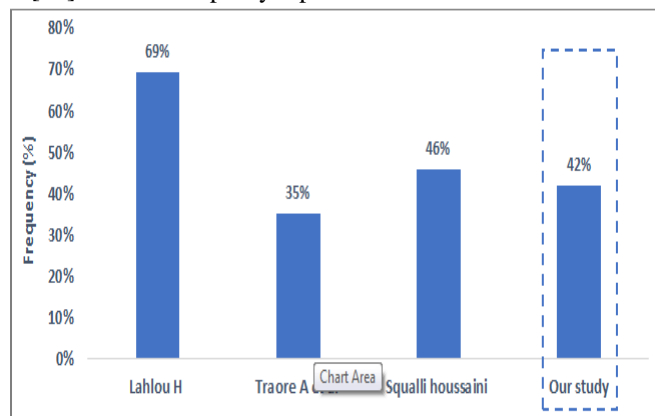

Diagram 10. Frequency of multiparous patients by series

3. Obesity and Risk factors of GD

The role of obesity as a factor affecting the metabolism of carbohydrates has been studied by Catalano et al [11].

In this prospective study comparing glucose metabolism in obese women who may or may not develop gestational diabetes, note that women with GD have a type of response to the insulin test similar to the results obtained in type 2 diabetics. In fact, these women are indeed at risk of later developing type 2 diabetes [12], [13].

BMI above 25kg/m2 is therefore considered as a risk factor for gestational diabetes in the literature [2].

The studies of Bensbaa S [26] et al and Lahlou H [10] objected an average BMI value of 23,59 and 31,35 kg/m2 respectively.

In our series, we found that 37% had a BMI greater than 25 Kg/m2 and the mean value was 26.7 kg/m2 which is consistent with the results of Cosson E et al [14] which found in the exploited patient group an average BMI value of 27.8 Kg/m2.
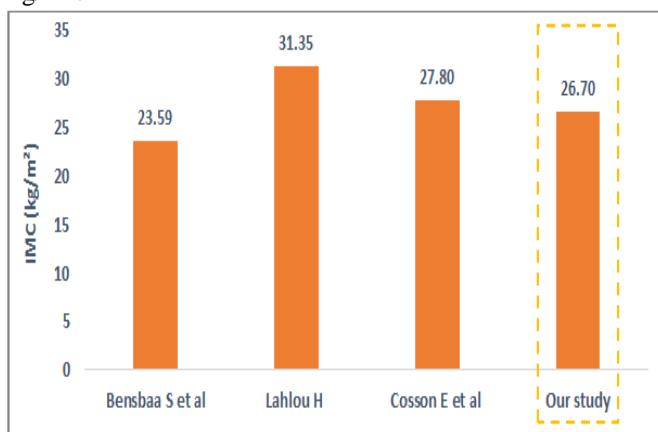

Diagram 11. Distribution of average body mass index (BMI) by authors

The factors usually taken into account are age above 30 years (25 years for some) [15], overweight and obesity with a body mass index (BMI) before pregnancy greater than 25 Kg/m2.

In a previous pregnancy, the most frequently mentioned risk factors include preeclampsia, hydramnios or glycosuria, as well as [16], Hispanic, African or Asian ethnicity, family history of diabetes, the history DG personnel, fetal or perinatal death or abortions, congenital malformations, macrosomia or preeclampsia, that excessive weight gain during the current pregnancy, this latter factor is currently being questioned by the CNGOF [17].

Polycystic ovarian syndrome through insulin resistance, would be a risk factor often unknown. Other factors were more rarely cited, such as multiparity greater than or equal to 3 and low socio-economic level [28], but in its last report, the CNGOF concluded that these characteristics do not appear to be risk factors independent of DG [17].

The study by Lahlou H [10] reported that 70.5% of women were older than 30 years, 81.8% had a BMI of 25 Kg/m2, 47.5% of women had a history of family diabetes, 3.7% had diabetes in their previous pregnancies, and 33.3% of women with antecedents had miscarriages and macrosomia and 24.1% had a history of IUFD.

A retrospective study (Mimouni and S) [18] showed that 76.6% of women were older than 30 years, and the body mass index for 52.8% of cases was greater than 25 Kg/m2, the family history of diabetes was present in 58%, 17% of women had a history of IUFD and the history of macrosomia was noted in 32.7%.

In our series, 79% of women were older than 30 years, BMI was greater than 25kg/m2 in 42,7% , the family history of diabetes was present in 52%, 15% of the patients had a history of GD, and 21% had a history of IUFD or macrosomia. Our results are consistent with the results of the majority of the series.

4. Systematic Screening of GD

The World Health Organization (WHO), the French National College of Gynaecologists and Obstetricians (CNGOF), the French Language Association for the Study of Diabetes and Metabolic Diseases (ALFEDIAM) recommend systematic screening of gestational diabetes by conducting a glucose load test at 50 g (CNGOF and ALFEDIAM) or 75 g (WHO), in all women between the 24th and 28th week of pregnancy and for women at high risk of DG.

5. Pregnancy Programming

Pregnancy programming is an important step in the pre-conception management of pre-gestational diabetes and appears to decrease maternal, obstetrical and fetal complications [28, 29, 30].

Hiéronimus S et al [19] conducted a study of 56 women, 7% of whom planned their pregnancy.

In our study the pregnancy programming was present in 15.7% of women which is consistent with the result obtained by Lamich-lorenzini [7] which found a programming rate of 14.4%.

6. Maternal-fetal Complications

Among infectious maternal complications, there is a greater risk of urinary tract infections. These are frequently asymptomatic, hence the need for systematic screening. On the other hand, the risk of acute pyelonephritis is not increased if low urinary tract infections are detected and treated during pregnancy.

The prospective study of Errajraji A et al [20] including 85 women in consultation for diabetes and pregnancy found that 44% of patients had urinary tract infections during pregnancy, in our series the rate of urinary tract infections is 31%.

Diabetes increases the risk and frequency of gravide hypertension and pre-eclampsia.

The retrospective study of Lepercq J [11] found preeclampsia in 20% of the participants studied.

Our study found 5.2% pre-eclampsia.

All series report the occurrence of 12-20% severe hypoglycemia.

Hieronymus S and her colleagues [19] conducted a study of 56 diabetic participants, with a severe hypoglycemia rate of 8.7%.

Desparoir and Al and [21] objected to a percentage of severe hypoglycemia of 4.22%.

Our study finds 10.5% severe hypoglycemia, which coincides with the results found in the different series.

The incidence of ketoacidosis in pregnant women with diabetes ranges from 2% to 25% depending on the studies [7]. Bresson L et al [22] conducted a retrospective study in 2010 that objectified a 2% percentage of diabetic ketoacidosis in the exploited group.

Our study has returned 5% of acidocetosis which corresponds to the rates found in the other series.

The rate of congenital malformations was 10 times higher than in the general population (21% vs 2.2%) with a

preponderant share of heart malformations of 50%, which confirms the literature data [5, 23].

Hieronymus S et al [19] objected to a rate of birth defects of 13% and a percentage of 4% perinatal mortality. Traore A et al [9] showed that 2.32% of newborns have malformations, 67.5% of cases of macrosomia, 67,5% de prematurity and 18% of IUFD.

Desparoir A and al [21] noted a congenital malformation rate of 2.82%, a prematurity rate of 35%, 35% macrosomia. Our study finds consistent figures.

7. Mode of Delivery

The rate of caesarean section in diabetic women varies from 22% to 30% depending on the study, compared to a rate of 17% in the general population [17].

In our series the caesarean section rate is 36.8%. This percentage is slightly increased compared to the literature data.

V. Conclusion

The therapeutic advances achieved over the past 20 years have significantly improved the prognosis of pregnancies in diabetic patients and gestational diabetics. However, these pregnancies remain more risky than under normal glucose tolerance. Nevertheless, the prognosis of these pregnancies can be improved by early and multidisciplinary management to achieve a glycemic balance avoiding maternal-fetal complications.

It is now more than necessary in countries such as Morocco to raise awareness about the need for rigorous monitoring of pregnancies.

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