
Clinical Experience with Diabetic Pregnancy Incidence and Complication Analysis of 100 Cases

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Abstract:

Background: Diabetes is the second most common medical disorder after hypertension complicating pregnancy. Maternal & neonatal outcome has improved a lot by a proper dealing with diabetic pregnant patient.

Objective: The main aim of the study is to detect incidence of maternal and perinatal outcome of pregnant diabetic patient.

Materials and method: Retrospective analysis of vital records. A detailed history of information includes mode of delivery, birth wt and outcome of pregnancy. This study was conducted in Sebha Medical Center from 1st January 2009 to the 31st October 2009 and it included 100 pregnant diabetic patients and were selected randomly. The delivery of a diabetic mother was conducted by obstetrician & attended by pediatrician.

Results: During this study, the diabetic pregnant patient formed about 2.0% of the total number of deliveries at this center. The most common maternal complications were about 15%. Patients had developed preeclampsia; premature uterine contraction was seen in 13% patients, while neonatal complications were hypoglycemia 68%, congenital anomalies 10%, and macrosomia 80%. The 68% of cases in diabetic pregnant were delivered by caesarean section.

Conclusion: The diabetic pregnant patients have a high complications including pre-eclampsia, preterm labor, macrosomia; intrauterine fetal and neonatal death.

Keyword: Pregnant diabetic patient, maternal & neonatal outcome, mode of delivery.

Introduction:

Dramatic improvement has been achieved in maternal & perinatal morbidity & mortality among pregnant diabetic women and this has been synonymous with maternal education, early and strict control of blood glucose level, and obstetrician surveillance.¹ The finding on pregnancy complicated by diabetes have been mainly reported from other countries. We report complications in our clinical experience at Sebha Medical Center, concerning 100 cases.

Diabetes mellitus is defined as clinical syndrome characterized by hyperglycemia due to absolute or relative insulin deficiency in pregnancy. It is associated with increased maternal and fetal morbidity and mortality.² The incidence of diabetes mellitus is 2%-3% while gestational diabetes is 12% for all pregnancies.³

A Pregnancy complicated by diabetes and it has significant risk for many complications. Maternal outcome was improved by a proper dealing with diabetic pregnant patient.⁴

Effects of diabetes on fetal and neonate:

Congenital malformation: The incidence of major malformation in diabetic mother has ranged from 5-10%⁵ and accounts for 40% of perinatal mortality.⁶

The abnormalities are mainly cardiac defects, skeleton, central nervous and renal anomalies.

Macrosomia:

Delivery of an infant weighting greater than 4000gm occurs ten times more often in diabetic women in non-diabetic control population.⁷ Fetal macrosomia occurs in up to 40% of diabetic pregnancies⁸ and may predispose the infant to shoulder dystocia, traumatic birth injury and asphyxia.⁹

Unexplained intrauterine fetal death which is the other major contributor to perinatal mortality. It may occur secondary to multiple factors, including chronic hypoxia, ketoacidosis, polycythemia and lactic acidemia.^{10,11}

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Intrauterine growth retardation occurs in 20% of diabetic pregnancy, particularly in association with preclampsia and the perinatal mortality rate is 2-4 times that of the normal population.^{12,13}

Respiratory distress syndrome (RDS):

Both hyperinsulinemia and hyperglycemia are involved in delayed pulmonary maturation.¹⁴ The risk of (RDS) is about nearly six times with diabetic mother.¹⁵

Other complication: Neonatal hypoglycemia is blood glucose below 40 mg% during 1st 12 hour of life.¹⁶ It occurs more when maternal blood glucose level is greater than 90% during labour.¹⁷ Hyperbilirubinemia (Jaundice) may result from polycythemia. Jaundice is a cause more likely to occur in premature babies and those who have had RDS.

Maternal complication in diabetic pregnancy

Preclampsia occurs 15% and it may result from high plasma rennin and aldosterone concentration. Plasma angiotensin also showed strong inverse relationship to serum sodium and was directly proportional to blood glucose concentration. This may contribute to raise incidence of hypertension in diabetic pregnancy.^{18,19}

Polyhydramnios complicates 25% of pregnancies in established diabetics.²⁰

Preterm labor 13% may associate with urinary tract infection or often with polyhydramnios.²¹

The pregnant diabetic woman is at a significant risk of developing an infection about 80% compared to non -diabetic woman where the incidence is only 26%, most commonly monilial vaginitis.^{22,23}

Aim of the study

To detect the incidence of a pregnant diabetic patient and to detect maternal and perinatal outcome of the pregnant diabetic patient in Sebha Medical Center.

Materials and method

All patients were followed up at the obstetric department in Sebha Medical Center , which is the university referral hospital. Retrospective analysis of vital records of diabetic women over a period of 10 months, from 1st January 2009 to the 31st October 2009 was done.

One hundred diabetic patients were randomly selected. A detailed history includes mode of

delivery, types of C/S, birth wt and outcome of pregnancy was revised. In addition, the number of complications which occur throughout pregnancy including HTN, polyhydramnios was taken into account.

The delivery of diabetic mother was conducted by obstetrician & attended by pediatrician. Neonatal complication was studied after birth; the baby was transferred to neonatology unit, where careful assessment was made on the basis of Apgar score. Good physical examination for major congenital anomalies, macrosomia was done and specimen of blood was obtained for glucose.

All the data were recorded and statistically analyzed using p-value to investigate the association between the variables results.

Results:

Diabetes is the second most common medical disorder after hypertension and complicates pregnancy. During this study, the diabetic pregnant patient formed about 2.0% of the total number of deliveries at this hospital.

Maternal complications:

About 15% of patients had developed preeclampsia. Premature uterine contraction was seen in 13% patients, while 10 patients had polyhydramnios.

Uterine complication which had been identified in this study was the postpartum hemorrhage. The causes of postpartum hemorrhage that have been seen included retained placental tissue in 4% of patients. Uterine atony has occurred in 2% of the cases. No cases of uterine rupture has been recorded in this study.

Vaginal traumas included:

Extended episiotomy needed to repair under general anesthesia and it formed around 6% of all the cases.

Deep vaginal and cervical tears, perineal tears (which affect the anal sphincter) have been observed in 5% of the cases.

Postoperative complications occurred like wound infection and deep venous thrombosis.

Wound infection that occurred in 6% of patients from the total number of patients had been delivered by C/S.

Deep venous thrombosis (DVT) occurred in two patients.

Postoperative wound infection 6 DVT 2

Table 1: Maternal Complications.

Maternal Complications	Nr	%
Preeclampsia	15	15%
Premature uterine contraction	13	13%
Polyhydrominous	10	10%
Postpartum hemorrhage	6	6%
Vaginal trauma : extended episiotomy	6	6%
Perineal tears	6	6%
Postoperative wound infection	6	6%
DVT	2	

Fetal complications that occurred during or after the process of delivery of diabetic mother were multiple like shoulder dystocia, Erb's palsy, soft tissue trauma and bone fracture. Shoulder dystocia is significant complication in the infant because of macrosomia. Shoulders dystocia 4% Erb's palsy 3 soft tissue trauma 0 bone (clavicle) fracture 1

Table 2: Birth complication.

Birth complication	Nr	%
Shoulder dystocia	4	4%
Erb's palsy	3	3%
Bone fracture (clavicle)	1	1%
Soft tissue trauma	0	

The most common neonatal complications are neonatal hypoglycemia and macrosomia.

Hypoglycemia 68% R.D.S 6 Neonatal jaundice 13% Preterm infant 22% Congenital anomalies 10% Macrosomia 80%

Admission to neonatology unit

Number of newborn babies who had transferred and admitted in neonatology unit.

Around 70% of newborn babies had been admitted in neonatology unit and about 28% spent just one day.

Table 3: Neonatal complication.

Neonatal complication	Nr	%
Hypoglycemia	68	68%
Macrosomia > 4Kg	80	80%
Neonatal jaundice	13	13%
Preterm infant	22	22%
Congenital anomalies	10	10%
R.D.S	6	6%
Admission to neonatology unit	70	70%

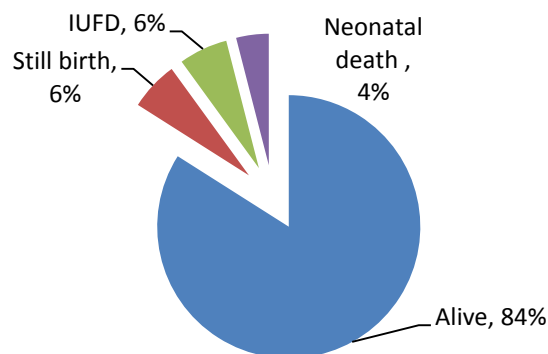
Outcome of pregnancy

The majority outcome of pregnancy were: alive 84%, still birth 6%, IUFD 6% and early neonatal death 4%.

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Table 4: Outcome of pregnancy.

Outcome of pregnancy	Nr	%
Alive	84	84%
Still birth	6	6%
IUFD	6	6%
Neonatal death	4	4%
Total	100	100%

**Fig 1: Outcome of pregnancy**

Mode of delivery:

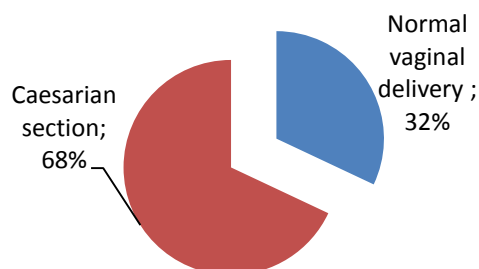
Normal vaginal delivery either spontaneously or by labor induction; the total percentage of this group was around 32%. The second group showed that the patient who delivered operatively by means of caesarian section either elective operation or an urgent was so high, up to 68%.

Mode of delivery:

Normal vaginal deliveries were 32, induction of labor were 20, spontaneous deliveries were 12, caesarian section were 68, elective were 44 and emergency were 24.

Table 5: Mode of delivery.

Mode of delivery	Nr	Nr	%
Normal vaginal delivery	32		32%
Induction of labour		20	20%
Spontaneous delivery		12	12%
Caesarian section	68		68%
Elective		44	44%
Emergency		24	24%
Total	100	100	100%

**Fig 2: Mode of delivery**

Discussion:

The findings in the present study clearly support the great evidence in the literature of improved results from diabetic pregnancies.

In Sebha Medical Center, the total delivery cases in 2009s were 7150, out of which 144 were diabetic, 100 diabetic pregnant patients were randomly selected.

During this study the diabetic pregnant patient constituted about 2.0% of the total number of deliveries at hospital which is higher than another study, which was 1%²³ and less than in the study of university of Utah Health Sciences Centre, which was 3%.²⁴ The results in our study were low because it covered small part of population.

About 15% of diabetic pregnant patients had been complicated by pre-eclampsia. This is almost equal to the diabetic pregnancy survey done in UK, where the overall incidence of pre-eclampsia in established diabetic pregnancy was 14.4%.¹⁸ But this is not correlated with another study which was 8.8%.²⁵

There was a significant association between polyhydramnios and diabetic pregnancy compared to non diabetic ($p=0.009$). In UK diabetic pregnancy survey, polyhydramnios complicated 25% of the pregnancies in established diabetes,²⁰ while in this study only 10% of the patients had developed polyhydramnios ($p=0.009$). This reflects the degree of control DM in pregnancy.

Preterm labour seen in this study was 13% of the diabetic patient, compared with another study which was reported to be about 12-15% of preterm labour.^{3,21,23}

There was a significant association between post partum hemorrhage and diabetes complicated Pregnancy. In non diabetic pregnant the incidence of post partum hemorrhage was about 5%,²⁶ while in this study the percentage was 6%, which is statistically significant ($P=0.0088$).

A significant association was also present between intrauterine fetal death and diabetes complicated pregnancy ($P=0.0090$). About 6% of the pregnant diabetics in our study were bearing a demised fetus, while in general population the figure is 1.2 %.²⁵

Macrosomic infant occurred 80%. In this study there was a strong association to diabetes observed compared to non-diabetics ($P=0.00156$). Compared to another study, which reported 40%.²⁶

Shoulder dystocia was recognized in 4% of the study group as compare to non-diabetic pregnancies which was 0.4% properly because of macrosomia ($P=0.009$).

The common neonatal complication in this study was hypoglycemia 68%. RDS was 6%. Neonatal jaundice occurred in 13%, preterm baby occurred in 22%, congenital abnormality of newborn infant was 10%, which has increased the incidence of perinatal mortality, so pre-pregnancy counseling, to control blood glucose and decrease complication is needed.

In this study, early neonatal death were 4%, the results were different from a study in Bahrain, which reported that the early neonatal death were 0.8%. This may be due to the cases in Bahrain were well controlled, using OGTT as routine regimen in the investigation.²⁷

According to the mode of delivery, 68% of patients had delivered by caesarean section while 32% of them had delivered normally. In this study, the increase incidence of caesarean section when compared with the study of diabetes in Bahrain who reported that the spontaneous delivery was about (52.6%) of cases and (47.4%) was caesarean section. The great difference, may reflect good antenatal care of diabetic pregnancy and less complication in Bahrain.²⁷ So the incidence of caesarean section among the diabetic pregnant is higher and statistically significant ($P=0.004$). This may be due to other causes of C/S as previous C/S or B.O.H.

Conclusions:

The diabetic pregnant patients have a higher chance to develop a series of complication including pre-eclampsia, preterm labor, polyhydramnios and post partum hemorrhages.

The infant of a diabetic mother also has a higher chance of developing complications like macrosomia; intrauterine fetal death & neonatal death are significant finding.

The majority of cases in a diabetic pregnant is delivered by caesarean section.

In Sebha, there is no systematic program for screening of diabetes in pregnancy. Testing of blood sugar is performed when indicated. So early screening of pregnant, using of OGTT and close monitoring to reduce complication and a satisfactory outcome for an infant of normal weight, low incidence of perinatal losses and normal at-term delivery is recommended.

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