Fetal Outcome in Diabetic Pregnancy

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Background: Diabetes is the second commonest medical disorder (after hypertension) complicating pregnancy with an incidence of about 01%. The aim of this study is to see the fetal outcome in diabetic pregnancy.

Material and Methods: A prospective study was conducted in the Department of Obstetrics & Gynaecology of Services Hospital, Lahore during a period of July 2005 to July 2006, on 100 consecutive diabetic patients to see a fetal outcome.

Results: The study includes all the patients who presented with impaired glucose tolerance test gestational diabetes. The patients were booked and had proper antenatal care, however (12%) had no antenatal care and were admitted directly into the labour room. The results revealed that the number of babies delivered alive were 96% and perinatal mortality was 4%. The major postnatal complication observed in our study was hypoglycemia seen in 34% of babies. Other complications were macrosomia in 32%, hyperbilirubinemia 28%, congenital anomalies in 4%, respiratory distress syndrome in 2% of babies.

Conclusion: Elective screening programme should be introduced universally to improve pick up rate of diabetic patients and provide early booking along with meticulous control of blood sugar levels throughout pregnancy to reduce the morbidity and mortality both in the mother and the baby. A regular audit of outcome should be carried out to determine the perinatal mortality, still birth and late fetal loss rates and to identify organizational and health care factors that effect outcome in diabetic pregnancy.

Key words: Diabetes mellitus, good glycaemic control, fetal complications

Introduction

The term "gestational diabetes" is used to refer to hyperglycemia occurring for the first time during pregnancy in individuals who have an inherited predisposition to develop diabetes. The hyperglycemia may or may not settle following delivery. On the other hand patients who have diabetes before pregnancy are known as pre-gestational diabetics. These patients almost in variably have Type-I diabetes.

The major change during pregnancy, which has adverse effect on diabetes, is the decreased sensitivity to insulin with increaseing gestation due to factors antagonizing the action of insulin such as cortisole, estrogen, progesterone and human placental lactogen. Diabetes has adverse effects both on mother and fetus. The adoption of selected protocol appears to be a scientific approach in the management of pregnancy with diabetes to minimize the risk to the mother and providing maximum benefits to the fetus with remarkable reduction in the postnatal complications.

The study was designed to determine the fetal outcome in admitted diabetic patients with a good control as well as those who come in emergency in a tertiary care hospital, Lahore.

Patients and Methods

This prospective study was conducted on 100 consecutive patients who were admitted through antenatal clinic and emergency ward of Department obstetrics & Gynaecology of Services Hospital, Lahore during July 2005 to July 2006.

Most of the patients were initially admitted to the antenatal ward (88%) for evaluation of maternal and fetal well being. A detailed history of each patient was taken; a complete general physical examination was carried out and data was recorded on "specific proforma.

The patients who have got impaired glucose tolerance were managed on diet alone while those with diabetes were managed on diet and insulin therapy. Efficiency of control was checked by the estimating blood glucose level 4 times a day i.e., fasting, pre lunch, per dinner and post dinner by glucometer and cross checked by laboratory blood glucose level once a week. All these investigations were not possible in patients who come in emergency in labour (12%).

Fetal well being was monitored by serial measurements of symphysio-fundal height, fetal kick

count chart and serial ultrasonography. Once good control of diabetes was achieved patients were sent home with weekly regular antenatal visits after 28 weeks. Time and mode of delivery was individualized depending upon the patient. After delivery, babies were sent to nursery for management of any complications like hyperglycaemia, hypocalcaemia, hyperbilirubinaemia, congenital anomalies, respiratory distress syndrome and tachypnia.

Results

Majority (88%) of the patients included in this study were booked and had proper antenatal care, complete investigations and assessment prior to term. However, 12% had no antenatal are and were admitted directly into the labour room for the first time during there pregnancy.

Total numbers of patients included in the study were 100. Most of the patients (70%) were having gestational diabetes and only (30%) were those who have diabetes before pregnancy and their diabetes was controlled higher on diet or insulin. But during pregnancy we shifted them on insulin to achieve better results.

Almost half of the patients (52%) were between 30-40 years of age. Whereas (44%) were between 20-30 years of age only (4%) were of 40 years or above **(Table-1).**

Out of total 100 patients (86%) were delivered at term whereas (14%) of patients were delivered before 37 weeks of gestation. This includes both iatrogenic preterm delivery due to maternal or fetal complication and spontaneous deliveries. **(Table-2)**

Table 1: Age group

Age group	=n	%age
20-30 years	44	44
31-40 years	52	52
41 and above	04	04

Table 2: Timing of delivery (n=100)

Duration of	=n	%age pregnancy
Preterm	14	14
Term	86	85

In this study the number of babies delivered alive is 96. Caesarean Section was performed in 58% cases out of which 52% were elective and only 6% were emergency caesarean sections, which were performed on patients directly, admitted in labour room. Thirty eight patients (38%) were delivered by vaginal routine out of which (32%) were spontaneous and (6%) were assisted vaginal deliveries. Fetal outcome shows no significant difference in Apgar score between the vaginal delivery and caesarean section. A trend of higher 5 minutes Apgar score was positively seen in 100% infants. Perinatal mortality was (4%) out of which 2% were fresh stillbirths and 2% were macerated stillbirths **(Table-3)**

Table 1: Mode of Delivery and fetal outcome.

Fetal outcome	Elective C-Section	Emergency C-Section	Spontaneous Vaginal Delivery	Assisted	% age
Normal Live birth	52%	6%	32%	6%	96
Apgar score					
1 min up to 5	03	2	2	3	-
from 6-7	15	2	8	1	-
from 8-10	30	2	22	2	-
5 minutes up to 5					
from 6-7					
from 8-10	52	06	32	06	04
Perinatal mortality					
1- Fresh still birth	01	-	-	01	-
Macerated birth 1	-	-	-	02	-
Neonatal death	-	-	-	-	-

In the present study the major postnatal complication of the babies born of diabetic mothers includes hypoglycemia (34%), hyperbilirubinaemia 28%, and respiratory distress syndrome 2%. The incidence of macrosomia was (34%). Macrosomia has increased the risk of associated morbidity which includes birth trauma, neonatal hypoglycemia, childhood and adolescent obesity. **(Table-4)**

Table-4: Postnatal complication (n=100)

Postnatal Complications	=n	%age
Hypoglycemia	34	34
Macrosomia	32	32
Hyperbilirubinemia	28	28
Congenital anomalies	04	43
Respiratory distress	02	02
Syndrome		

Discussion

A review of fetal outcome in diabetic pregnancy on 100 consecutive cases showed a perinatal mortality of 4% which is much lower than our national figures of 9.5% (Perveen Mufti et al). These figures are probably a result of pregnancy counseling, early booking and good antenatal a\care which was provided to most of (88%) of our patients. Comparing the perinatal mortality of our study with a similar study carried out by Hawthoran et al, which shows the periatal mortality of about 9.2%, our figure is quite low i.e.4%.

The incidence of congenital anomalies in pregnancy with diabetes as shown by a study conducted by Aucott et al is 7.7%. A similar study was conducted by Verna et al, which shows the incidence to be 3.6%. In the present study the incidence of congenital anomalies is only 4%.2,4,7

Over the last 10-15 years after the reduction in incidence of respiratory distress syndrome in diabetic pregnancy, congenital malformation have emerged as the leading cause of perinatal mortality and 50% of perinatal mortality in our study was contributed by the congenital anomalies.5-11

In the present study the incidence of macrosomia was 32% whereas the study conducted by Aucott et al shows a higher incidence i.e., 41%. Comparing the incidence of other postnatal complications like hypoglycemia 34%, hyperbilirubinemia 28% RDS 2%, in the present study with that of study conducted by Aucott et al, which shows incidence of hypoglycemia 14% hyperbilirubinemia 46% ad RDS 12%. Except for hypoglycemia our results are better which is most probably a result of good antenatal care that majority of our patients received. Moreover the new born in this group studied received extra care thus preventing neonatal morbidity ad mortality.12-18 To reduce unexplained fetal death good control of diabetes along with antepartum monitoring of fetal well-being is required. In our study, we used fetal kick count, serial measurement of symphysio-fundal height, ultrasonography, cardiotocography and biophysical profile wherever indicated for fetal monitoring. It is recommended by Frak A Manning (1995) that biophysical profile should be done twice weekly after 28 weeks in type-I and once weekly after 28 for type-II good neonatal support is also important for providing better outcome simply depends upon preconception counseling, universal screening, and good control throughout pregnancy, good antepartum fetal monitoring and neonatal support.[19-21]

Conclusion

We agree with St. Vincent Declaration which suggests that significant improvement of the management of both pre-existing and gestational diabetes need to be made of pregnancy outcome is to be comparable to those without diabetes. At the same time there is need for introduction of regular audit aimed to determine perinatal mortality and other complications in babies and to identify organizational and health care factors that effect outcome in diabetic pregnancies.

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