

Original Research Article

AN OBSERVATIONAL STUDY OF CLINICAL PROFILE OF NEWBORN OF DIABETIC MOTHER AND TO ASSESS THE OUTCOME IN PERINATAL PERIOD IN A TERTIARY CARE HOSPITAL

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ABSTRACT

Background –An observational study has been conducted in nicu department of Paediatrics IMRCRC INDORE, MADHYA PRADESH .The incidence of diabetes in pregnancy is steadily rising, likely in parallel with the rising incidence of obesity among women of reproductive age. Women with diabetes are at increased risk for fetal complications (such as congenital malformations, fetal growth abnormalities, and stillbirth) and perinatal/neonatal complications (such as prematurity, respiratory distress, and metabolic abnormalities including hypoglycemia and electrolyte derangements).

Materials and methods –23 infants born to diabetic mothers are included in the study. Screening of gestational diabetes done by-,history, oral glucose tolerance test, HbA1C.

Outcome - Poor early glycemic control of mother during antenatal period correlates with adverse maternal and neonatal outcomes including preeclampsia, macrosomia, fetal congenital anomalies, prematurity, and perinatal mortality

Result –23 infants were studied. Hypoglycemia(40%) being the most common complication followed by hyperbilirubinemia(28%), polycythemia(12%), respiratory distress (26%), macrosomia (28%), cardiac anomalies {septal hypertrophy (21%), PDA (17%), VSD(8%)} ; cleft palate (4%), undescended testis (8%).

Conclusion -In this study, we found that metabolic and structural complications were more in the infants of diabetic mother with uncontrolled hyperglycemia . Monitoring glucose control and glycosylated hemoglobin (HbA1C) levels is very important to improve maternal and neonatal outcomes. The risk of neonatal morbidity is directly proportional to the

hyperglycemia. Strict glucose monitoring is essential to detect asymptomatic hypoglycemia of neonate.

Keywords: newborn, diabetic & perinatal.

Study Design: Observational Study.

1. INTRODUCTION

The majority of infants of diabetic mothers are born to women with gestational diabetes, with pregestational type 2 diabetes rates exceeding type 1. Pregestational diabetes has a strong association with congenital abnormalities, perinatal mortality, and prematurity with rates linked to periconception glycemic control[1]. Frequent neonatal morbidities associated with diabetes in pregnancy include macrosomia, postnatal hypoglycemia, prematurity, metabolic complications including obesity, impaired glucose metabolism, and potential decrements in neurodevelopmental outcomes later in life[2].

Pregnancy itself is characterized by increased insulin resistance as gestation progresses with peak insulin resistance during the third trimester[3]. A state of relative insulin resistance occurs during pregnancy as a result of the actions of various placental hormones including human placental lactogen, progesterone, prolactin, placental growth hormone, and cortisol[4]. Whereas hormones of pregnancy allow an environment for normal development of the fetus, the pregnant state leaves a narrower margin of error in which women's propensity for carbohydrate intolerance can become apparent[5].

Aims and objectives

Aim- 1) To study clinical profile of infant of diabetic mother.

2) to assess the outcome in the perinatal period

2. MATERIAL & METHOD

All infant of diabetic mothers are included in this study data of the diabetic status of the mother assessed from past records.

The glycemic status assessed by estimation of FBS & postprandial blood glucose level . Normal level should be (fasting glucose ≤ 95 mg/dL, 1-hour postprandial glucose ≤ 140 mg/dL, and 2-hour postprandial glucose ≤ 120).

Mothers antenatal history to included – socioeconomic status, family history of diabetes, previous history of macrosomic infants , usg findings. Mothers hba1c levels should be checked at 1st trimester for pregestational diabetes or at diagnosis of gestational diabetes This is an observational study of 23 neonates born to diabetic mothers.

<u>INCLUSION CRITERIA</u>	<u>EXCLUSION CRITERIA</u>
All infants born to diabetic mothers at IMCHRC were included in study	Diabetic mothers with other known diseases like hypertension, asthma, TB.

3. RESULTS

Table No. 1: Demographic Profile

S. No.	Gender	Percentage
1	Male	56%
2	Female	44%
	Urban-Rural Distribution	
1	Urban	28%
2	Rural	72%

23 infants were followed up. Since this study is being carried out in rural area majority of cases belong to rural sector (72%), urban women were 28%. Sex distribution : male -56% ,female – 43% .

Table No. 2: Demographic Profile

S. No.	Birth Weight	Percentage
1	Small for gestational age were	16%
2	Large for gestation age	28%
3	Appropriate for gestation age	56%

Mothers with poor glycemic control with hba1c >7 – were 16 corresponding to 64%. On the basis of birth weight – small for gestational age were 4(16%), appropriate for gestation age were 14(56%), large for gestation age -7(28%).

Table No. 3: METABOLIC COMPLICATION

S. No.	METABOLIC COMPLICATION	Percentage
1	Hypoglycemia	40%
2	Hyperbilirubinemia	28%
3	Hypocalcemia	12%

4	Polycythemia	12%
5	Respiratory distress	26%
6	IUD	04%
7	Cleft palate	04%
8	Undescended testis	08%
9	Cardiac defects	
	Septal hypertrophy	21%
a	PDA	17%
b	VSD	08%
C	ASD	04%

METABOLIC COMPLICATION ARE AS FOLLOWS –

HYPOGLYCEMIA in 10 infants (40%) out of which 6 were in LGA, Hyperbilirubinemia in 7 infants (28%), HYPOCALCEMIA observed in 3 infants(12%), Polycythemia in 3(12%), Respiratory distress was observed in 6(26%), Cardiac defects –septal hypertrophy in 5(21%),PDA in 4 (17%),VSD in 2 (8%), ASD in 1((4%), IUD -1(4%), Cleft palate – in 1(4%), Undescended testis in 2 (8%)

4. DISCUSSION

Hyperglycemia during organogenesis (weeks 5 to 8 of gestation) reflected by an increase in HbA1C levels correlates directly with frequency of anomalies. Poor early glycemic control correlates with adverse maternal and neonatal outcomes including preeclampsia, macrosomia, fetal congenital anomalies, prematurity, and perinatal mortality[6]. Maternal hyperglycemia in the second and third trimesters will result in a diabetic fetopathy characterized by fetal hyperglycemia, hyperinsulinemia, and macrosomia. Chronic fetal hyperinsulinemia causes increased metabolic rates in the fetus that lead to increased oxygen consumption[7]. The oxygen needs may not be met by the placenta flow leading to fetal hypoxemia. This contributes to metabolic acidosis, and increased erythropoiesis in the fetus. Increased

erythropoietin synthesis causes polycythemia and increased catecholamine production. Increased catecholamines contribute to fetal hypertension and cardiac hypertrophy. Also, polycythemia will cause redistribution of iron stores from developing organs to the red blood cell (RBC) mass which can affect cardiac and neurodevelopment[8].

5. CONCLUSION

40% of infants had hypoglycemia therefore strict glycemic control is required after birth of infant of diabetic mother. since the incidence of cardiac and structural defects is high in IDM they should be metabolic screening for hypocalcemia , polycythemia , hyperbilirubinemia , & 2d echo is advised to rule out cardiac defects.infants should be observed strictly for hypoglycemia and any respiratory distress.

6. REFERENCES

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