Gestational diabetes mellitus and perinatal complications - A clinical study

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Abstract

Aim: This study was conducted to evaluate the effects of Gestational Diabetes Mellitus on the fetus with special emphasis on perinatal complications.

Method and Methodology: 50 antenatal women diagnosed as Gestational Diabetes Mellitus recruited in this study and were followed up to record their labour and delivery events with note of all fetal and neonatal outcomes.

Results: From our study we observed various neonatal complications in these patients of Gestational Diabetes Mellitus namely fetal macrosomia-(14%), neonatal hyperglycemia- (24%), respiratory distress syndrome-(12%), neonatal polycythemia-(4.0%), hyperbilirubinemia -(36%), hypocalcemia- (14%), small for gestational age fetuses- (6%), IUFD/Stillbirths - (4%), neonatal deaths-(6%).

Conclusion: Universal screening and regular antenatal checkups to diagnose Gestational Diabetes Mellitus early will lead to timely and proper management of the condition there were decreasing the neonatal morbidity and mortality significantly.

Keywords: Gestational Diabetes Mellitus, Neonatal complications, Morbidity, Mortality, Macrosomia

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Introduction

Gestational Diabetes Mellitus has been classically defined as a glucose tolerance disorder that appears or is recognized or diagnosed for the first time during pregnancy.(2) Pregnancy itself being a diabetogenic state, can mask at risk or future patients with diabetic potentials. Gestational carbohydrate intolerance is associated with various obstetrics complications and perinatal morbidities including fetal macrosomia, congenital malformations, birth trauma due to difficult and instrumental deliveries, neonatal hypoglycemia, respiratory distress syndrome, neonatal polycythemia, hyperbilirubinemia, neonatal hypocalcaemia and stillbirth. This study was undertaken to evaluate the perinatal outcome in women with gestational diabetes mellitus.

Materials and Methods

- **Study type:** Hospital- based, cross-sectional observational study
- **Study size:** 50
- **Study period and study duration:** 1 and half year (Jan 2015 - June 2016).

All pregnant women attending the antenatal OPD of a tertiary care Medical College in North India were subjected to 75 gram OGCT (DIPSI) test and 50 patients diagnosed with gestational diabetes mellitus were enrolled in the study after written informed consent. They were treated with dietary modifications and/or insulin depending on individual patient profile. A predesigned questionnaire including relevant information example Age, parity, height, weight, BMI (body mass index), family history of diabetes mellitus, obstetric history were filled for each patient. After a detailed history and thorough clinical examination, they were subjected to necessary investigations - blood, urine and ultrasonography. Each patient was taught about self-monitoring of glucose and recording the results, urine analysis by dipsticks, proteins and Ketone bodies, daily Blood Pressure record and weekly report to our antenatal clinic with the records there of. These patients were subjected to NST (non-stress test) twice a week and weekly obstetrical ultrasonography for fetal biophysical profile and fundoscopy were done. Each patient was followed in their labour and delivery and following that, the newborn was assessed for macrosomia using the Ballard's modification of Dubowitz Scoring for gestational age(7) and were classified as:-

- Macrosomia
- (Large for gestational age) -(LGA)
- (Small for gestational age) -(SGA)
- Appropriate for gestational age- (AGA)

Neonatal hyperglycemia (Blood glucose <40mg/dL) was diagnosed by blood glucose monitoring done at 0, 1, 2, 3 and 6 hours for 2 days after birth.

Polycythemia was diagnosed when PCV > 65%.

Hypocalcemia was labelled when serum calcium < 7mg/dL.

Respiratory distress syndrome (RDS) was diagnosed in the neonates by using downs score (8).

Hyperbilirubinemia (serum bilirubin>12mg/dL) was diagnosed by Kramer's Rule (9).

All the data thus collected were compiled & tabulated and statistically analyzed.

Result

We had 50 patients with gestational diabetes mellitus -out of which most were more than 25 years of age(72.00%), multiparous-(76.00%), had family history of diabetes-(60.00%), had past history of gestational diabetes mellitus(68%), previous history of stillbirth or intrauterine fetal death-(20.0%) and were diagnosed at 24-32 weeks-(80.00%) as represented in Table 1.

Table 1: Socio- demographic profile of GDM patients

Risk Factors		Number of patients with GDM	
		Number	Percentage (%)
Age (years)	< 25	14	28.00
	>25	36	72.00
Gestational age for diagnosis of GDM (in weeks)	24-32	40	80.00
	>32 weeks	10	20.00
Parity	Primipara	12	24.00
	Multipara	38	76.00
Family history of DM	Yes	30	60.00
	No	20	40.00
History of GDM in previous pregnancy	Yes	34	68.00
	No	16	32.00
Past history of stillbirth/ IUFD	Yes	10	20.00
	No	40	80.00

All the perinatal complications are represented in Table 2.

Table 2: Perinatal complications

Complications	Number of cases	Percentage (%)
Hypoglycemia	12	24.00
Hyperbilirubinemia	18	36.00
Birth asphyxia	9	18.00
Respiratory distress syndrome	6	12.00
Macrosomia	7	14.00
S.G.A babies	3	6.00
Neonatal polycythemia	2	4.00
Hypocalcaemia	7	14.00
Neonatal seizures	6	12.00
NICU admissions	23	46.00
Intrauterine fetal deaths/stillbirths	2	4.00
Neonatal deaths	3	6.00

Discussion

In our study we observed that in pregnancies complicated by GDM, there was an increased incidence of perinatal complications namely hyperglycemia (24%), hyperbilirubinemia (36%), macrosomia (14%), respiratory distress syndrome(12%), birth asphyxia(18%)- results which were similar to those reported by Vaishali M.P et al[(1)] and Abdulbari B et al in Qatar.[(11)] We also noted a higher incidence of Caesarean Section as compared to vaginal deliveries, as also higher instrumental births due to macrosomia .Similar results were stated by various other studies done by Gasim T et al[(19)] in Saudi Arabia, Kachhwaha C.P.et al in western Rajasthan, India,[(18)] Milasinovic et al in Russia,[(15)] Mohammad Beigi et al.[(12)]

Conclusion

As is evident from the present study, pregnancies complicated by gestational diabetes mellitus are associated with increased adverse perinatal outcomes. Universal screening, regular antenatal check, good glycemic control, targeting delivery early at term, improved health awareness leading to better patient compliance, improved neonatal care and early screening for any congenital malformations in the foetus are all the measures which are required to be strictly followed so as to improve the fetomaternal outcome in pregnancies complicated by G.D.M.

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