ORIGINAL RESEARCH PAPER

Obstetrics and Gynecology

GESTATIONAL DIABETES MELLITUS: MATERNAL AND PERINATAL OUTCOMES IN A MEDICAL COLLEGE AND HOSPITAL

KEY WORDS: Gestational Diabetes.Mellitus, neonatal complications, morbidity,mortality, macrosomia,

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ABSTRACT

This study was conducted to evaluate the effects of gestational diabetes mellitus on the fetus with special emphasis on perinatal complications. 100 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. 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%).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.

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 , respirator y di stress syndrome, n eonatal polycythemia, hyperbilirubinemia, neonatal hypocalcaemia and stillbirth .This study was undertaken to evaluate the perinatal outcome in women with gestational diabetes mellitus.

Gestational diabetes mellitus (GDM) is defined as glucose intolerance diagnosed for the first time during pregnancy and usually disappears during the puerperium. The prevalence of GDM in some ethnic groups ranges from 1 to 14% depending on different screening methods, diagnostic criteria and the population screened (1,2).Most women who have GDM give birth to healthy neonates, especially when their blood glucose levels are well controlled with a diabetic diet, exercise and an appropriate body weight. In some cases, GDM can negatively affect the pregnancy and result in adverse perinatal outcome like macrosomia, birth trauma, shoulder dystocia and higher rates of cesarean section (CS) (3,4).

The management of GDM has altered markedly in recent years.3 It is based on universal screening of blood sugar and to establish a tight control of serum glucose levels round the clock in these patients through serial measurements of blood glucose by home monitoring and glycosylated hemoglobin. Adequate control of blood sugar has been associated with improved perinatal outcome. More than three-quarters of the patients with GDM respond to diet therapy alone and the remaining patients require the addition of insulin with diet.

MATERIAL AND METHODS:-

The Study type: Hospital- based, cross-sectional observational study Study size: 50 Study period and study duration : 1 and half year.All pregnant women attending the antenatal OPD of a tertiary care Medical College in South India,Pondicherry were subjected to 75 gram OGCT (DIPSI) test and 100 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. Tese 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 Statistical analysis were done in SPSS version-11.5,P value <0.05 significant.

RESULTS:

We had 100 patients with gestational diabetes mellitus –out of which most were more than 25 years of age(70.00%) , multiparous (75.00%), had family history of diabetes-(60.00%), had past history of gestational diabetes mellitus(65%), previous history of stillbirth or intrauterine fetal death-(25%) 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	28	28.00
	> 25	72	72.00
Gestational age for diagnosis of GDM (in weeks)	24-32	80	80.00
	> 32 weeks	20	20.00
Parity	Primipara	24	24.00
	Multipara	76	76.00
Family history of DM	Yes	60	60.00
	No	40	40.00
History of GDM in previous pregnancy	Yes	68	68.00
	No	32	32.00
Past history of still birth/IUFD	Yes	20	20.00
	No	80	80.00

Table 2: Perinatal Complications Observed

Complications	Number of Cases	Percentage (%)
Hypoglycemia	25	25
Hyperbilirubinemia	30	30
Birth asphyxia	15	15
Respiratory distress syndrome	10	10
Macrosomia	15	15
SGA Babies	03	03
Neonatal Polycythemia	02	02
Hypocalcaemia	10	10
Neonatal seizures	10	10
NICU admissions	40	40

DISCUSSION :-

In our study we observed that in pregnancies complicated by GDM,there was an increased incidence of perinatal complications namely hyperglycemia (25%), hyper bilirubinemia (30%), macrosomia (15%),respiratory distress syndrome(10%).The findings of the present study conform to those of other studies reported in the literature, that GDM patients are liable to have adverse pregnancy outcomes.(3). As expected, women with GDM in the present study were found to have a higher proportion of obstetric complications including pre-eclampsia, preterm labor and CS, as well as mean birth weight, LGA and macrosomic babies than the controls.

The common indications for induction in this study were pre-eclampsia; undelivered at 40 weeks gestation controlled on diet alone, with no complication;patients who required insulin intervention; premature rupture of membranes; and maternal-related causes. Many studies have found high cesarean delivery rates in GDM patients despite good maternal blood glucose control during pregnancy (3-11).The significantly higher rate of CS in the GDM patients compared to the controls, reflect the findings of this study. The main indications for CS in this study were maternal hypertension, macrosomia,non-reassuring fetal heart tracing, failure to progress and previous history of cesarean sections. We also noted a higher incidence of Caesarean Section as compared to vaginal deliveries (12-19) , as also higher instrumental births due to macrosomia.Similar results were stated by various other studies (19) in Saudi Arabia, other studies are in western Rajasthan, India(18), in Russia(15), and other studies were found.(12).

The significantly higher CS rates in the GDM patients than the controls conform to this study. The CS rate of 24.1% in this series correlates with 19-30% reported in previous studies,(16-18) but lower than 32.9-41.4% found in some reports.(20-24) The higher labor induction rate in the GDM patients may have had a small contribution to the increased caesarean deliveries in this series; although the cesarean section rate is not unusually high compared with other reports in the literature.

The rate of pregnancy complications in the study was similar among the GDM patients treated with diet alone and those who received additional insulin alongside the diet, which correlated with the findings of some reports(24). Significantly higher rates of preterm delivery and admission of babies to the NICU have been reported in the GDM patients treated with insulin and diet compared with those on diet alone (25-27), which were contrary to the findings in this and other series.3,5 Many complications of pregnancy that are commonly associated with GDM such as polyhydramnios, oligohydramnios,SGA neonates, neonatal hypoglycemia and those requiring phototherapy were not significantly increased in the patient group of this study compared with the control.

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 feto maternal outcome in pregnancies complicated by G.D.M. Hence preventive measures need to be implemented at community level. Public awareness regarding Pre pregnancy haemoglobin status and importance of antenatal check up, should be initiated. The routine iron-folic acid supplementation should be given during pregnancy and post partum. Iron supplementation may improve lymphocytic stimulation & thus decrease the risk of intra partum & postpartum infection.

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