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Study to Compare the Clinical Outcomes in Gestational Diabetes Mellitus Women Having an Altered and Unaltered Lipid Profile

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ABSTRACT

INTRODUCTION: Gestational diabetes mellitus (GDM) is one among the most prevalent metabolic disorders in pregnancy (1). Women with GDM are at high risk of developing complications like hypertensive disorders of pregnancy, macrosomia, caesarean delivery along with neonatal complications (2,3).
Importance is being given to the association between GDM and serum lipid levels and thus their impact on clinical outcomes.
METHODOLOGY: This is an observational study conducted on 60 GDM women presenting to Gandhi hospital between 24-28 weeks of gestational age. Lipid profile is done in these women with informed consent. These patients with both altered and unaltered lipid profile are followed up to find out the clinical outcomes.
RESULTS: In this study, women with altered lipid profile had higher incidence of postpartum haemorrhage. Neonates born to women with altered lipid profile had higher birth length and weights when compared to those born to women with unaltered lipid profile.
CONCLUSION: This study enhances the knowledge of clinical outcomes in GDM women having an altered lipid profile and thus would help in formulating guidelines for effective management and therefore to improve clinical outcomes.

Keywords: GDM, LIPID PROFILE, PPH

INTRODUCTION

GDM is one among the most prevalent metabolic disorders in pregnancy with prevalence in India being varied from 3.8 to 21% (1,2,3). Women with gestational diabetes mellitus are at likelihood of developing hypertensive disorders of pregnancy, infections and future diabetes. Foetuses of GDM women are at a verge to develop neural tube defects, macrosomia, birth trauma, hypoglycaemia, hypocalcaemia, hyperbilirubinemia and eventually obesity.

Several physiological changes are anticipated in lipid profile of GDM women. The hike in maternal fat depots in early pregnancy is expedited by insulin, followed by adipose tissue breakdown, and later eventual hypertriglyceridemia is due to insulin resistance and oestrogen effects.
Importance is being given to the association between GDM and serum lipid levels and thus their impact on clinical outcomes. The present study tries to figure out the adverse clinical outcomes in patients of GDM with altered lipid profile

MATERIALS & METHODS

This is an Observational study conducted over duration of 18 months on 60 women with gestational diabetes mellitus (diagnosed by OGTT) presenting to Gandhi hospital

INCLUSION CRITERIA

- All women with gestational diabetes presenting to Gandhi hospital
- All women with gestational diabetes mellitus in age group between 18-35 years.

EXCLUSION CRITERIA

- Multiple pregnancy
- Known hypertensive
- Known case of type 1 or type 2 diabetes
- History cardiovascular disease
- Known cases of systemic diseases such as CLD, CKD and autoimmune diseases
- All women less than 18 years and women above 35 years were excluded

METHODOLOGY OF STUDY:

- About 60 pregnant women with GDM (diagnosed by OGTT) between 24-28 weeks attending to Gandhi hospital are taken for study.
- Lipid profile is done in these women with informed consent.
- These patients with both altered and unaltered lipid profile are delved in to find out the clinical outcomes.

STATISTICAL ANALYSIS

Data was entered into Microsoft Excel and analysis was done using the SPSS for Windows software (version 22.0; SPSS Inc, Chicago). Statistics like standard deviation (SD), mean, frequencies and percentages are. Unpaired t Test was used to compare clinical outcomes in women with GDM having an altered and unaltered lipid profile. Level of significance was set at 0.05

RESULT

TABLE 1- DISTRIBUTION OF STUDY SUBJECTS ACCORDING LIPID PROFILE, AGE, GESTATIONAL AGE AT SAMPLE COLLECTION, PRE-PREGNANCY BMI

PARAMETERS	ALTERED LIPID PROFILE	UNALTERED LIPID PROFILE
No. of subjects	21	39
Mean age	26	25.5
Mean gestational age at sample collection	26.5	26.3
MeanPre-pregnancy BMI	25.9	24.2

In this study of all 60 subjects,21 were with altered lipid profile and 39 were with unaltered lipid profile.

The mean gestation of women with altered lipid profile was 26 and that with unaltered lipid profile was 25.5. The difference in age between both the groups is not statistically significant at p=0.2

Mean gestational age of blood sample collection study subjects in altered lipid profile group and unaltered lipid profile group is 26.5 and 26.3 respectively. The difference in age between both the groups is not statistically significant at p=0.3

The mean BMI in study subjects with altered lipid profile is 25.9 and that in unaltered lipid profile is 24.2 and difference between both the groups is not statistically significant at p=0.3

TABLE -2: ANTENATAL MANAGEMENT OF GDM WOMEN WITH ALTERED AND UNALTERED LIPID PROFILE

MODE OF MANAGEMENT	ALTERED LIPID PROFILE (N=21)	UNALTERED LIPID PROFILE (N=39)
Medical nutritional therapy	**9**	**17**
Oral hypoglycaemic agents	**7**	**13**
Insulin	**5**	**9**

In this study, among the women with altered lipid profile,42.8% were managed on medical nutritional therapy ,34% with oral hypoglycaemic agents and 23.2% with insulin.

Among the women with unaltered lipid profile, 43.5% women were managed with medical nutritional therapy,33.3% with oral hypoglycaemic agents and 23.2% with insulin.

Indicating that there is no increased insulin requirement in women with altered lipid profile with p value being 0.65 which is not statistically significant**.**

TABLE- 3: GESTATIONAL WEEKS AT BIRTH

GA (IN WEEKS)	ALTERED LIPID PROFILE	UNALTERED LIPID PROFILE	GRAND TOTAL
36-37	**-**	**8**	**8**
37-38	**-**	**9**	**9**
38-39	**10**	**13**	**23**
39-41	**11**	**9**	**20**
Grand Total	**21**	**39**	**60**

In this study 52% women in altered lipid profile delivered at a gestational age between 39-41 weeks while 76% of women in unaltered lipid profile group delivered at a gestational age between 36-39 weeks. The p-value is < .00001. The result is significant at p < .05.

TABLE-4: CAESEREAN SECTION RATE AND POSTPARTUM HEMORRHAGE AMONG STUDY SUBJECTS

PARAMETERS	ALTERED LIPID PROFILE	UNALTERED LIPID PROFILE
Caesarean section rate	15(71%)	18(46%)
Mean postpartum haemorrhage (ml)	948.1	544.6

In this study 71% of women in altered lipid profile had an LSCS and 46% in unaltered lipid profile group had an LSCS with p-value being .060518 which is not statistically significant at p < .05.

In the present study the mean postpartum blood loss in altered lipid profile group is 1.7 times higher than that of unaltered lipid profile group with p value <0.00001 indicating statistically significance

TABLE -5 NEONATAL PARAMETERS

PARAMETERS	ALTERED LIPID PROFILE	UNALTERED LIPID PROFILE
MEAN BODY LENGTH(CMS)	**52.5**	**49.0**
MEAN BIRTH WEIGHT(GMS)	**3135.9**	**2344.4**

The mean body length of neonates in study subjects with altered lipid profile is 52.5cms and that in unaltered lipid profile is 49cms The t-value is -10.32129. The p-value is < .00001. The result is significant at p < .05.

In this study, the mean birth weight of neonates in study subjects with altered lipid profile is 3135.9gms and that in unaltered lipid profile is 2344.4 The t-value is -4.53843. The p-value is .000015. The result is significant at p < .05.

DISCUSSION

60 pregnant women with GDM (diagnosed by OGTT) between 24-28 weeks attending antenatal outpatient department at Gandhi hospital are taken for study. Lipid profile is done in these women with informed consent. These patients with both altered and unaltered lipid profile are delved in to find out the clinical outcomes.

In this study of 60 GDM women, 21 women were having an altered lipid profile and 39 women were having a normal lipid profile.

In this study, majority of the cases both with altered and unaltered lipid profile belong to age group of (20-24) with a mean age distribution of 25.7. The difference is not statistically significant at p=0.2 with regard to age between two groups.

In this study mean gestational age (in weeks) of blood sample collection study subjects in altered lipid profile group and unaltered lipid profile group is 26.5 and

26.3 respectively with the difference being not statistically significant at p=0.3

In this study, the mean BMI in study subjects with altered lipid profile is 25.9 and that in unaltered lipid profile is 24.2 and difference between both the groups is not statistically significant at p=0.3

Samuel Furse et al (2022) (4)- In their study found that women with GDM were of higher age and BMI compared to euglycemic women.

In this study comparing the insulin requirement in antenatal management of both groups there is no increased requirement t of insulin among GDM women with altered lipid profile with p value not statistically significant (p value - 0.65)

In this study GDM women with altered lipid profile delivered at a later gestational age when compared to those in unaltered lipid profile with the p-value being statistically significant (< .00001).

In this study 71% of women in altered lipid profile had an LSCS and 46% in unaltered lipid profile group had an LSCS with p-value being .060518 which is not statistically significant at p < .05.

In the present study the mean postpartum blood loss in altered lipid profile group is 1.7 times higher than that of unaltered lipid profile group with p value <0.00001 indicating statistically significance

Yuan Li. Et al (2021) (5) in their study noted there was higher postpartum hemorrhage (P = 0.012) and higher rate of caesarean section (23.4 vs. 36.5%, P < 0.001) in GDM group than that in control group.

Mean body length of neonates in study subjects with altered lipid profile is greater than that in unaltered lipid profile with significant p value of < .00001

In this study, the mean birth weight of neonates in study subjects with altered lipid profile is is 1.3 times greater than that in unaltered lipid profile with statistically significant p value of .000015

CONCLUSION

In this study GDM women with altered lipid profile delivered at a later gestational age when compared to those in unaltered lipid profile and the difference is statistically significant. However, the difference in C-section rate between two groups is not statistical difference noted among both groups.

Women in altered lipid profile group had more incidence of postpartum haemorrhage and it is statistically significant. Neonates of women with altered lipid profile had higher birth weights and body length when compared to those of unaltered lipid profile group and is found to be statistically significant.

Further studies would add value in establishing the standard values for hyperlipidaemia during pregnancy which may be affected by ethnicity. Hence it is pertinent that pregnant woman with altered blood lipids should be closely monitored during pregnancy to prevent complications and to enhance the positive clinical outcomes.

Declaration by Authors

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Conflict of Interest: The authors declare no conflict of interest.

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