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Fetomaternal Outcome in Pregnant Women with Co - Existing Gestational Diabetes Mellitus and Pregnancy Induced Hypertension

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Abstract: ***Background: Pregnancy - induced hypertension and Gestational Diabetes are one of the commonest maternal diseases that have the most detrimental effects on the maternal, fetal and the neonatal well - being. This study assessed the fetomaternal outcome in co - existing GDM and PIH. Methods: This study was a prospective observational study of pregnant women attending the obstetrical department for a period of one year and three months. Pregnant women with PIH and GDM were enrolled in the study. (GDM was diagnosed with 75gm OGTT test). Proper history, examination, and clinical and laboratory findings were noted. All the women were followed up till delivery and the complications were recorded. Result: Eighty women were followed up till delivery. The average age was 25 - 39 years. Sixty - six percent were Primigravida. The mean gestational age was 28 - 40 weeks. Sixty –three percent were delivered by cesarean section, twenty - two percent delivered normally. Preeclampsia was the most common complication in fifty - two percent patients. There was no maternal complication in nineteen percent of patients. The average weight of the neonates was 1.8 - 4.2 kg. The most common fetal complication was preterm delivery in twenty percent neonates. Thirty - seven percent neonates required neonatal admission. Conclusion: Pregnancy - induced hypertension and Gestational Diabetes are one of the commonest maternal diseases that have the most detrimental effects on the maternal, foetal and the neonatal well - being. A careful history and examination and simple laboratory test are needed so that a serious condition that may require specific and urgent management is not missed. Proper monitoring of the blood pressure and the blood sugars and the optimal control resulted in lower maternal and foetal complications.***

Keywords: Gestational diabetes mellitus, Pregnancy induced hypertension, fetal outcome, maternal outcome

1. Introduction

Pregnancy induced hypertension and Gestational Diabetes are one of the commonest maternal diseases that have the most detrimental effects on the maternal, fetal and the neonatal well - being. Hypertensive disorders of pregnancy complicate 5–10 percent of all pregnancies and can result in a variety of maternal andfetal complications.1 Gestational Hypertension is the new onset hypertension developing after 20 weeks of gestation, during labor or in the first 24 hours postpartum, without proteinuria, or any other systemic features of preeclampsia, in a previously normotensive non proteinuric woman and the blood pressure resolves within 3 months postpartum. Gestational diabetes mellitus (GDM) is defined as any degree of glucose intolerance with onset or first recognition during pregnancy.2 Like pregnancy - induced hypertension, gestational diabetes mellitus is also relatively common and affects 3–5 percent of pregnancies, resulting in a variety of complications that primarily affect the fetus, including macrosomia, stillbirth, jaundice, and respiratory distress syndrome.3 Women with GDM are at an increased risk of development of Gestational Hypertension or Preeclampsia.4

Gestational diabetes mellitus (GDM) and pregnancy induced hypertension (PIH) pose a great risk to mother and child. This risk is largely related to uncontrolled high blood glucose levels and high blood pressure and its consequences. The benefit of blood glucose and blood pressure control during pregnancy has primarily been noted in the reduction of certain maternal and neonatal complications such as pre - eclampsia, IUGR, macrosomia, pre - term births. Our hospital serves underprivileged patients and all the high risk patients referred from the peripheral hospitals and challenges to treatment exist here. This study was undertaken to study the burden of co - morbidities and the outcome of GDM and PIH.

2. Methodology

This study was a prospective observational study of pregnant women attending the obstetrical department for a period of one year and three months after obtaining clearance from the institutional ethical committee and written informed consent from the patient. The study was an open study conducted in women fulfilling the inclusion criteria. Pregnant women with PIH and GDM were enrolled in the study. (GDM was diagnosed with 75gm OGTT test). Demographic data involving maternal age, parity, gestational age, menstrual history, any medication history, past and present, medical and surgical history, family history were noted. Gestational age at which GTT was done and the medication taken for PIH and GDM were noted. Clinical and laboratory findings were recorded which included complete hemogram, blood group and Rh type, Coagulogram, Urine analysis, VDRL, HbsAg /HIV/HCV serology, LFT, KFT, TSH, serum uric acid, LDH, GTT, HbA1C, Ophthalmoscopy were carried out in all subjects and patients were managed as high risk as per hospital protocol.

Patient's glucose and blood pressure values were recorded at diagnosis and before delivery. GDM was considered to be

optimally controlled if the fasting glucose (FBS) was 95 mg/dl and 2nd h postprandial glucose (PPBS) was <120 mg/dl as defined.

All the women were followed up till delivery.

Maternal complications during pregnancy and during delivery were recorded. The neonatal complications were recorded. Data was entered in a Microsoft Excel spreadsheet. Categorical data was expressed in percentages and continuous data was summarized as Mean (standard deviation).

3. Results

A total of 80 women with co - existing GDM and PIH were recruited in the study and followed up till delivery and the maternal and the foetal outcomes were recorded. **Clinical characteristics:** The women enrolled in the study were from Kashmir. The average age was 25 - 39 years. The average duration of pregnancy was 28 - 40 weeks. The average gravidity was one. Fifty - three women (66.3%) were primigravidea. Fourteen (17.5%) had subclinical hypothyroidism. Sixty women (75%) had well controlled sugars and blood pressure on treatment.

Table 1: Age distribution of study patients

Age (Years)	No. of Patients	Percentage
25 - 29	32	40
30 - 34	41	51.3
35 - 39	7	8.8
Total	80	100
Mean±SD (Range) =30.2±3.06 (25 - 39)		

Table 2: Gestational age of study patients

Gestational age (Weeks)	No. of Patients	Percentage
≤ 30 Weeks	6	7.5
31 - 35 Weeks	16	20
36 - 40 Weeks	58	72.5
Total	80	100
Mean±SD (Range) =36.4±2.81 (28 - 40)		

Maternal Outcome

The mean gestational age at delivery was 38 weeks. Majority of the patients delivered by LSCS 51 (63.8%), 18 (22.5%) patients delivered normally, 4 (5.0%) patients had preterm normal vaginal delivery. Preeclampsia was the most common complication (52.5%) followed by oligohydramnios (18.8%) and polyhydamnios (7.5%). There was no maternal complication in 15 (18.8%) patients. There was one case of maternal mortality.

Table 3: Distribution of study patients as per mode of delivery

Mode of delivery	No. of Patients	Percentage
LSCS	51	63.8
NVD	18	22.5
Preterm NVD	4	5
IUD (NVD)	7	8.8
Total	80	100

Table 4: Distribution of study patients as per mode of delivery

Mode of delivery	No. of Patients	Percentage
LSCS	51	63.8
NVD	18	22.5
Preterm NVD	4	5
IUD (NVD)	7	8.8
Total	80	100

Neonatal Outcome: Majority (64.4%) of the neonates were 2.5 - 3.5 kg. The mean weight of the study neonates was 1.8 - 4.2 kg. In our study, 16 (20%) had preterm delivery, 8 (10.0%) had meconium stained liquor, 7 (8.8%) had intrauterine death.2 (2.5%) had color Doppler changes, 1 (1.3%) had hypoglycemia. There was no fetal complication in 46 (57.5%) 37.0% neonates were admitted in NICU whereas 63.0% did not require any NICU admission.

Table 5: Fetal complications of study patients

Fetal complications	No. of Patients	Percentage
Preterm delivery	16	20
Meconium stained liquor	8	10
Intrauterine death	7	8.8
Brain sparing on colour Doppler	2	2.5
Hypoglycemia	1	1.3
No complication	46	57.5
Total	80	100

Table 6: NICU admission among study neonates

NICU Admission	No. of Patients	Percentage
Yes	27	37
No	46	63
Total	73	100

4. Discussion

Pregnancy induced hypertension and Gestational diabetes mellitus are the common disorders that occur in pregnancy. They can be detected by a simple, easy and affordable investigation. The varying causes of PIH and GDM in pregnancy makes it necessary to diagnose the underlying aetiology for early management and treatment. PIH and GDM have detrimental effects on both mother as well as fetus.

The present study was conducted in the department of Obstetrics and Gynaecology Lalla Ded hospital, an associated hospital of Govt. Medical College, Srinagar. In this study, 80 patients were studied and effects of PIH and GDM on mother as well as fetus were studied in this study. Majority of patients were in their 2nd and 3rd decade of their life in the study group. The mean age in our study was 25 - 39 years. In our study, number of primi patients was 53 (66.3%), 15 (18.8%) were para 1, 9 (11.3%) were para 2 and 3 (3.8%) were para 3. The number of study patients who underwent LSCS was 51 (63.8%), 18 (22.5%) patients delivered normally, 4 (5.0%) patients had preterm normal vaginal delivery.7 (8.8%) patients had intrauterine deaths and delivered vaginally. These results were similar to those of Prakash GT et al (2017) [5] where 44% women required cesarean section. Similarly, in study conducted by Yucesoy G et al (2005) [6] cesarean section was done in 58.8% cases with fetal distress being the most common indication (46%). However, in study conducted by Sreelakshmi PR et al

(2017) [7]mode of delivery was caesarean section for 19 (32.8%) patients which was lower than in our study. In our study of 80 patients, 18 (22.5%) patients delivered normally. In the studies conducted by Ahmed M &Daver RG (2014) [8] and Yucesoy G et al (2005) [6] 61.2% cases and 41.2% cases respectively were delivered vaginally which was much higher than in our study. The reason for higher ceaserean sections than normal vaginal deliveries could be the referral of high risk cases to our hospital from periphery as this is the sole tertiary care centre in the area.

In our study, 42 (52.5%) patients had pre - eclamspia, 2 (2.5%) patients had eclampsia which was similar to the study conducted by Majhi K et al. (2000) who reported the incidence of eclampsia being 2.79% in their study group. The caesarean rate was 10.5% and maternal mortality rate was 11.28% while as the maternal mortality rate in our study was 1.3% with the cesearean rate of 63.8% which is significantly higher than their study group. The lower maternal mortality rate in our set up is attributed to the availability of all the emergency services in our tertiary care hospital for the management of all the high risk and referral cases from the peripheral hospitals and a well functional and equipped ICU care facility.

In our study, out of 80 patients, 27 (37.0%) neonates were admitted in NICU whereas 46 (63.0%) did not require any NICU admission. In a prospective study conducted by Prakash GT et al (2017) [5] 20% neonates required admission to NICU which was lower than our study. In a retrospective study conducted by Sreelakshmi PR et al (2017) [7]. NICU admission was warranted for neonates of seven (12.1%) patients which was lower than our study. In a study conducted by Ahmed M and Daver RG (2014) [8], total 69 babies needed NICU admissions i. e.27.6%. The most common reason for admission was preterm with low birth weight (52%) with the most common indication being fetal distress. The high NICU admission rate in our study could be due to referral of high risk cases to our hospital from periphery as this is the sole tertiary care centre in the area with a NICU facility.

5. Conclusion

Pregnancy - induced hypertension and Gestational Diabetes are one of the commonest maternal diseases that have the most detrimental effects on the maternal, fetal and the neonatal wellbeing. Management of PIH and GDM in pregnancy includes early detection in antenatal period and proper evaluation and treatment in peripartum period with all baseline investigations and the specific investigations for PIH and GDM and proper patient counselling and regular antenatal Check - ups and follow ups. The patients are to be followed up in the postpartum period and counselled properly to monitor the blood pressure and blood sugar levels. Diet restriction, proper counselling and monitoring of blood pressure and blood sugars and antihypertensive drugs and oral hypoglycemic drugs or insulin depending upon the control of blood sugars and monitoring of the fetal parameters play an important role in prevention and control of severe disease and reduction of maternal and perinatal morbidity and mortality.

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