

ORIGINAL RESEARCH

OBSTETRIC & PERINATAL OUTCOMES OF PREGNANCIES WITH HYPOTHYROIDISM

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ABSTRACT

Background: Hypothyroidism is widely prevalent in pregnant women, since hypothyroidism is easily treated, timely detection and treatment of the disorder could reduce the burden of adverse fetal and maternal outcomes, which are very commonly encountered. Present study was aimed to study obstetric & neonatal outcomes in pregnancies with hypothyroidism.

Material and Methods: Present study was single-center, prospective, observational study, conducted in pregnant women with more than 28 weeks pregnancy, diagnosed as hypothyroid (TSH > 3.0 mIU/L after 12 weeks of gestation), delivered at our hospital.

Results: Out of 58 patients, majority patients were of 26-30 years age group (39.66 %), 62.07 % were nulliparous, delivered at term (> 37 weeks) (68.97 %), had Spontaneous Onset of labour (67.24 %) & vaginal route was most common Mode of delivery (70.69 %). Common maternal complications observed were haemoglobin < 9 gm% (32.76 %), preterm delivery (31.03 %), hypertensive disorders of pregnancy (22.41 %), oligohydramnios (15.52 %), PPROM (10.34 %), gestational diabetes mellites (6.90 %) & post-partum hemorrhage (6.90 %). No maternal mortality was noted. Birth weight was 2.5-4 kg in majority neonates (58.62 %), while APGAR ≤ 7 at 1 min (12.07 %) & APGAR ≤ 7 at 5 min (5.17 %) noted in few cases. Other characteristics such as meconium aspiration (15.52 %), Required neonatal resuscitation (18.97 %), Neonatal jaundice (22.41 %), Admission to NICU (37.93 %) & neonatal death (1.72 %) were noted.

Conclusion: Hypothyroidism during pregnancy had an impact on maternal as well as perinatal outcome. Routine screening of thyroid dysfunction is recommended to prevent adverse fetal and maternal outcome. Supplementation of thyroid hormone had obvious benefits of treatment to reduce potential adverse outcomes associated with maternal thyroid disorders.

Keywords: Obstetric outcome, perinatal outcomes, hypothyroidism, TSH

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INTRODUCTION

Hypothyroidism is widely prevalent in pregnant women and the rate of detection, especially in a developing country like India, has not kept pace with the magnitude of the problem.¹ The production of thyroid hormone and iodine requirement increases by 50% during pregnancy. During pregnancy, the thyroid gland increases in size by 10% in iodine sufficient countries and to greater extent in iodine deficient countries.

Pregnancy is a stress test for thyroid gland, resulting in hypothyroidism in women with limited thyroidal reserve or iodine deficiency.² The prevalence of hypothyroidism in

pregnancy is around 2.5% according to the Western literature.³ There are a few reports of prevalence of hypothyroidism during pregnancy from India with prevalence rates ranging from 4.8% to 11%.^{4,5} Women with hypothyroidism have decreased fertility; even if they conceive, risk of abortion is increased, and risk of gestational hypertension, anemia, abruptio placenta and postpartum hemorrhage is increased.⁶

Since hypothyroidism is easily treated, timely detection and treatment of the disorder could reduce the burden of adverse fetal and maternal outcomes, which are very commonly encountered. Present study was aimed to study obstetric & neonatal outcomes in pregnancies with hypothyroidism.

MATERIAL AND METHODS

Present study was single-center, prospective, observational study, conducted in Department of Obstetrics & Gynecology, at District hospital, Udhampur J&k, India. Study was conducted for a period of 6 months (July 2021 to December 2021). Study approval was obtained from institutional ethical committee.

Inclusion criteria

- Pregnant women with more than 28 weeks pregnancy, diagnosed as hypothyroid (TSH > 3.0 mIU/L after 12 weeks of gestation), delivered at our hospital, willing to participate in present study.

Exclusion criteria

- Diagnosed as hypothyroid before 12 weeks of gestation, already receiving thyroid supplementation
- Known fetal anomaly, multiple gestations
- Women delivered outside
- Not willing to participate, follow up

Study was explained to patients in local language & written consent was taken for participation & study. We included cases after 28 weeks pregnancy, to measure neonatal outcome as well. Demographic details & history (symptoms, obstetric, medical, surgical, duration of hypothyroidism and treatment) was noted. A thorough general physical examination and obstetric examination were carried out. Routine laboratory investigations (CBC, TFTs, if available LFTs, KFTs, PT/INR), USG findings were noted. Thyroid function tests were repeated every 6 weeks, if abnormal report is noted then with consultation of physician thyroxine dose was adjusted & TFT's repeated at 3 weeks.

At 40 weeks of gestation admission was advised if not delivered till that time. Depending on obstetric factors management (induction, mode of delivery) was decided by senior obstetrician. Labour was monitored. All deliveries were attended by neonatologist & newborn were assessed immediately after delivery. Follow up was kept for 7 days postpartum.

Maternal outcomes studied were preterm delivery, gestational hypertension, gestational diabetes, mode of delivery and postpartum haemorrhage. Fetal parameters such as prematurity, low birth weight, need for neonatal resuscitation, NICU admission were studied. Data was collected and compiled using Microsoft Excel, analysed using SPSS 23.0 version. Statistical analysis was done using descriptive statistics.

RESULTS

During study period total 58 patients, satisfying study criteria were studied. In present study, majority patients were of 26-30 years age group (39.66 %) & 21-25 years age group (27.59 %), while 62.07 % were nulliparous as compared to 25.86 % primipara females, Common

high risk factors observed were previous abortions (29.31 %), use of artificial reproduction techniques (25.86 %), BMI > 25 kg/m² (18.97 %), hypertension (15.52 %), age > 35 years (10.34 %) & diabetes mellites (8.62 %).

Table 1: General characteristics

Characteristic	No. of patients (n=58)	Percentage
Age (in years)		
< 20	2	3.45%
21-25	16	27.59%
26-30	23	39.66%
31-35	11	18.97%
>35	6	10.34%
Parity		
0	36	62.07%
1	15	25.86%
2 or more	7	12.07%
High risk factors		
None	28	48.28%
Previous abortions	17	29.31%
Use of artificial reproduction techniques	15	25.86%
BMI > 25 kg/m ²	11	18.97%
Hypertension	9	15.52%
Age > 35 years	6	10.34%
Diabetes mellites	5	8.62%

In present study, majority patients delivered at term (> 37 weeks) (68.97 %), while 18.97% patients delivered at 35-37 weeks & 12.07 % patients delivered at 28-34 weeks. Majority had Spontaneous Onset of labour (67.24 %) & Elective LSCS was required in 13.79 % patients. Vaginal route was most common Mode of delivery (70.69 %) as compared to LSCS (25.86 %) & instrumental delivery (3.45 %).

Table 2: Pregnancy termination related parameters

Parameters	No. of patients (n=58)	Percentage
Gestational age at delivery (weeks)		
28-34	7	12.07%
35-37	11	18.97%
> 37	40	68.97%
Onset of labour		
Spontaneous	39	67.24%
Induced	11	18.97%
Elective LSCS	8	13.79%
Mode of delivery		
Vaginal	41	70.69%
LSCS	15	25.86%
Instrumental	2	3.45%

In present study, common maternal complications observed were haemoglobin < 9 gm% (32.76 %), preterm delivery (31.03 %), hypertensive disorders of pregnancy (22.41 %),

oligohydramnios (15.52 %), PPROM (10.34 %), gestational diabetes mellites (6.90 %) & post-partum hemorrhage (6.90 %). No maternal mortality was noted.

Table 3: Maternal Complications

Complications	No. of patients	Percentage
Haemoglobin < 9 gm%	19	32.76%
Preterm delivery	18	31.03%
Hypertensive disorders of pregnancy	13	22.41%
Oligohydramnios	9	15.52%
PPROM	6	10.34%
Gestational diabetes mellites	4	6.90%
Post-partum hemorrhage	4	6.90%

Birth weight was 2.5-4 kg in majority neonates (58.62 %), while APGAR ≤ 7 at 1 min (12.07 %) & APGAR ≤ 7 at 5 min (5.17 %) noted in few cases. Other characteristics such as meconium aspiration (15.52 %), Required neonatal resuscitation (18.97 %), Neonatal jaundice (22.41 %), Admission to NICU (37.93 %) & neonatal death (1.72 %) were noted.

Table 4: Perinatal outcome

Perinatal Outcome	No. of patients	Percentage
Birth weight		
1.5-2.4kg	19	32.76%
2.5-4kg	34	58.62%
> 4 kg	5	8.62%
APGAR score		
APGAR ≤ 7 at 1 min	7	12.07%
APGAR ≤ 7 at 5 min	3	5.17%
Other		
Meconium aspiration	9	15.52%
Required neonatal resuscitation	11	18.97%
Neonatal jaundice	13	22.41%
Admission to NICU	22	37.93%
Neonatal death	1	1.72%

DISCUSSION

Thyroid disorders during early pregnancy has been associated with adverse obstetric and fetal outcome. The main obstetric complications are abortion, pre-eclampsia, abruptio placenta, preterm labour and the fetal complications are prematurity, low birth weight, still birth and perinatal death.^{7,8} Hypothyroidism in early pregnancy may exert irreversible effects on fetus and placenta which impair the tolerability of stress and causes fetal distress in labor, which in turn impair the neurophysiologic development of fetus.⁹

In study by Pahwa S et al.,¹⁰ prevalence of thyroid dysfunction among 100 ANC patients was high in first trimester pregnant women, with subclinical hypothyroidism in 6%, overt hypothyroidism in 2% & subclinical hyperthyroidism 2 %. In study by Rupali M et al.¹¹ prevalence of subclinical hypothyroidism was 4.38%. Adverse maternal outcome in subclinical hypothyroidism was associated with preeclampsia (17.14 vs. 1.90%), placental abruption (8.57 vs. 0.95%) as compared to euthyroid pregnant women. Adverse fetal outcome in subclinical hypothyroidism includes LBW (33.33 vs. 26.67%), IUGR (14.29 vs. 0.95), still born (14.29 vs. 0.00%), jaundice (13.33 vs. 1.90%), and RDS (10.00 vs. 0.95%) as opposed

to euthyroid women. Subclinical hypothyroidism associated with pregnancy can result in poor obstetric outcome and neonatal complications occur more frequently.

Shripad H et al.,¹² the prevalence rate of 3 % for subclinical hypothyroidism during pregnancy. The obstetric complications observed were gestational hypertension 3.8%, gestational diabetes 6.3%, placenta praevia 1.3% and preterm delivery 7.6%. The perinatal complications included Intrauterine growth restriction (IUGR) 1.3%, Low Birth Weight (LBW) 3.8%, perinatal asphyxia 2.5% and neonatal hypothyroidism 1.3%. Only preterm delivery appeared to be significantly associated with subclinical hypothyroidism.

Norman J B¹³ studied, 1025 patients of whom 382 (37.5%) were nulliparous. 10.1% had a TSH level > 2.5mIU/L and 18.2% had at least one raised thyroid antibody level. No differences in adverse outcomes of pregnancy were evident in women treated for SCH or overt hypothyroidism compared to the euthyroid group. There was also no association between raised thyroid antibodies and adverse pregnancy outcomes in either group.

Kalyani Mahajan¹⁴ noted that the occurrence of subclinical hypothyroidism was 9.54%, overt hypothyroidism was 2.34% and hyperthyroidism was 0.58%. When compared to subjects with euthyroidism, miscarriage, IUD/stillbirth, LBW and intrauterine growth restriction were significant fetal complications observed in subjects with hypothyroidism, with $p < 0.0001$, $p = 0.002$, 0.025 and 0.009. respectively. NICU admissions were 2.58 times more in subjects with thyroid disorders as compared to euthyroid subjects. This study shows high occurrence of thyroid disorders, especially subclinical and overt hypothyroidism, in pregnant women and their association with adverse fetal outcomes. Timely diagnosis and management of thyroid dysfunction is the key to avoid adverse fetal outcomes.

In study by Sinha S et al.,¹⁵ prevalence of hypothyroidism was 28.87%. The incidence of adverse outcome was statistically significant in hypothyroidism for maternal anaemia [p value 0.0096], low birth weight [p value <0.05] and a Low APGAR score [p value <0.05] of baby. Conclusion: Feto-maternal outcome was found to be adverse in women with hypothyroidism. Ante partum & post-partum haemorrhage was found to be more in hypothyroid mothers. Low birth weight & low APGAR score were observed more in cases of babies born to mothers with hypothyroidism.

The predominantly vegetarian diets of Indian pregnant women, which contain little dairy or seafood, mean that in areas of India where the iodine content of soil is low this additional iodine must come from iodized salt or iodine containing supplements. Thus, it is not surprising that IDD has been reported in rural Indian pregnant women in these areas.^{16,17} Thyroid screening should be done in pregnancy as universal screening instead of high-risk cases. Documentation and interdepartmental coordination are very much essential in thyroid disorders for further decision by the physician for necessity of continuation of treatment and thyroid function test in the post-partum period for the mothers and its long-term consequences.¹⁸

CONCLUSION

Hypothyroidism during pregnancy had an impact on maternal as well as perinatal outcome. Routine screening of thyroid dysfunction is recommended to prevent adverse fetal and maternal outcome. Supplementation of thyroid hormone had obvious benefits of treatment to reduce potential adverse outcomes associated with maternal thyroid disorders.

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