Section: OB-GY

Original Research Article

ASSESSMENT OF FOETO-MATERNAL OUTCOME OF HYPOTHYROIDISM IN ANTENATAL MOTHERS

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Abstract

Background: To assess foeto-maternal outcome of hypothyroidism in antenatal mothers. **Materials and Methods:** Sixty- four pregnant women who first attended antenatal clinic within 12 weeks of gestation were enrolled. Serum TSH & free T4 were done. Based on TSH level, patients were divided into 2 groups. Group I was euthyroid group (TSH- < 3.4 µIU/ml) and group II were hypothyroid patients (TSH- > 3.4 µIU/ml). A thorough obstetrical examination was done. Mode of delivery, birth weight etc. were recorded. **Result:** Group I comprised of 52 (81.2%) and group II 12 (18.75%) patients. The difference was significant (P< 0.05). Age group 18-20 years had 11 (21.1%) patients in group I and 1 (8.3%) in group II, 21-25 years had 33 (63.4%) in group I and 7 (58.4%) in group II, 26-30 years had 6 (11.5%) in group I and 3 (25%) in group II and >30 years had 2 (3.84%) in group I and 1 (8.3%) in group II. The difference was non- significant (P> 0.05). There were 14 (27%) LSCS patients in group I and 7 (58.3%) in group II. Spontaneous vaginal delivery was seen in 38 (73%) in group I and 5 (41.6%) in group II. The difference was significant (P< 0.05). Gestational age <37 weeks was seen in 5 (9.6%) in group I and 2 (16.6%) in group II, 37-40 weeks in 41 (78.8%) in group I and 9 (75%) in group II and >40 weeks in 6 (11.5%) in group I and 1 (8.3%) in group II. The difference was non-significant (P>0.05). Foetal outcome was live birth seen in 45 (86.5%) in group I and 9 (75%) in group II, pre- term birth 5 (9.6%) in group I and 1 (8.3%) in group II, abortion 1 (1.92%) in group I and 1 (8.3%) in group II and still birth 1 (1.92%) in group I and 1 (8.3%) in group II. The difference was significant (P< 0.05). Maternal complications in group I and group II were anemia in 14% and 25%, abruption in 12% and 20%, pre-eclampsia in 15% and 13%, PPH in 10% and 5% and GDM in 4% and 6% respectively. The difference was significant (P< 0.05). **Conclusion:** This study supports universal screening of pregnant women for thyroid dysfunction by serum TSH and freeT4 values in early weeks of gestation to diagnose hypothyroid mothers. Maternal complications in hypothyroid women were anemia and abruption.

INTRODUCTION

Thyroid disorders constitute one of the most common endocrine disorders in pregnancy. Pregnancy is associated with profound modifications in the regulation of thyroid function. These changes are the result of various factors like an increase of thyroxine-binding globulin (TBG) due to elevated estrogen and human chorionic gonadotropin (hCG), increased renal losses of iodine due to increased glomerular filtration rate, modifications in the peripheral metabolism of maternal thyroid hormones, and modification in iodine transfer to the placenta.[1-5]

Maternal hypothyroidism is the most common disorder of thyroid function in pregnancy. Endemic iodine deficiency accounts for most hypothyroidism in pregnant women worldwide whereas chronic autoimmune thyroiditis is the most common cause of hypothyroidism in iodine sufficient parts of the world. Symptoms of heat intolerance, sluggishness, fatigue, and constipation and examination findings of tachycardia, edema, and wide pulse pressure are common to pregnancy and thyroid disease much in same way. The prevalence of overt hyperthyroidism complicating pregnancy has been reported to range between 0.4 and 1.7% and an estimated 2–3% of women are hypothyroid during pregnancy. Overt

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hyperthyroidism occurs in 0.4–1.7% of pregnant women. Overt hypothyroidism is associated with maternal complications such as miscarriages, anaemia in pregnancy, preeclampsia, abruptio placentae, postpartum haemorrhage and the baby of these mothers also have frequent complications like premature birth, low birth weight, increased neonatal respiratory distress, more admissions to the neonatal intensive care unit and reduced intellectual function. Considering this, we performed this study to assess foeto-maternal outcome of hypothyroidism in antenatal mothers.[6-10]

MATERIALS AND METHODS

After considering the utility of the study and obtaining approval from ethical review committee, we selected sixty- four pregnant women who first attended antenatal clinic within 12 weeks of gestation. Patients' consent was obtained before starting the study.

Data such as name, age etc. was recorded. Parameters such as duration of pregnancy, history of miscarriage, any history of infertility and its treatment, past or family history of thyroid disorders, previous pregnancy complications and signs & symptoms attributed to hypothyroidism during this pregnancy etc. was recorded. Serum TSH & free T4 were done. Based on TSH level, patients were divided into 2 groups. Group I was euthyroid group (TSH- < 3.4 µIU/ml) and group II were hypothyroid patients (TSH- > 3.4 µIU/ml). A thorough obstetrical examination was done. Mode of delivery, birth weight etc. were recorded. All patients underwent trans abdominal sonography (TAS). Assessment of haemoglobin, fasting & postprandial sugar, urea, creatinine, HbsAg, VDRL, HIV, ABO & Rh grouping, thalassemia screening, urine examination-routine (protein, sugar) & microscopic were done. The results were compiled and subjected for statistical analysis using Mann Whitney U test. P value less than 0.05 was set significant.

RESULTS

Group I comprised of 52 (81.25%) and group II 12 (18.75%) patients. The difference was significant (P< 0.05) [Table 1].

Table 1: Patients distribution

Groups	Number	P value
Group I	52 (81.2%)	0.01
Group II	12 (18.75%)	

Table 2: Age wise distribution of cases

Age group (years)	Group I (52)	Group II (12)	P value
18-20	11 (21.1%)	1 (8.3%)	0.17
21-25	33 (63.4%)	7 (58.4%)	0.26
26-30	6 (11.5%)	3 (25%)	0.34
>30	2 (3.84%)	1 (8.3%)	0.92

Age group 18-20 years had 11 (21.1%) patients in group I and 1 (8.3%) in group II, 21-25 years had 33 (63.4%) in group I and 7 (58.4%) in group II, 26-30 years had 6 (11.5%) in group I and 3 (25%) in group II and >30 years had 2 (3.84%) in group I and 1 (8.3%) in group II. The difference was non- significant (P> 0.05) [Table 2].

Table 3: Mode of delivery

Delivery	Group I	Group II	P value
LSCS	14 (27%)	7 (58.3%)	0.01
Spontaneous vaginal delivery	38 (73%)	5 (41.6%)	0.03

There were 14 (27%) LSCS patients in group I and 7 (58.3%) in group II. Spontaneous vaginal delivery was seen in 38 (73%) in group I and 5 (41.6%) in group II. The difference was significant (P< 0.05) [Table 3].

Table 4: Assessment of gestational age

Gestational age	Group I	Group II	P value
<37 weeks	5 (9.6%)	2 (16.6%)	0.21
37-40 weeks	41 (78.8%)	9 (75%)	0.92
>40 weeks	6 (11.5%)	1 (8.3%)	0.81

Gestational age <37 weeks was seen in 5 (9.6%) in group I and 2 (16.6%) in group II, 37-40 weeks in 41 (78.8%) in group I and 9 (75%) in group II and >40 weeks in 6 (11.5%) in group I and 1 (8.3%) in group II. The difference was non- significant (P>0.05) [Table 4].

Table 5: Assessment of foetal outcome

Foetal outcome	Group I	Group II	P value
Live birth	45 (86.5%)	9 (75%)	0.75
Pre-term birth	5 (9.6%)	1 (8.3%)	0.94
Abortion	1 (1.92%)	1 (8.3%)	0.02
Still birth	1 (1.92%)	1 (8.3%)	0.02

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Foetal outcome was live birth seen in 45 (86.5%) in group I and 9 (75%) in group II, pre- term birth 5 (9.6%) in group I and 1 (8.3%) in group II, abortion 1 (1.92%) in group I and 1 (8.3%) in group II and still birth 1 (1.92%) in group I and 1 (8.3%) in group II. The difference was significant (P< 0.05) [Table 5].

Table 6: Assessment of maternal complications

Maternal complications	Group I	Group II	P value
Anemia	14%	25%	0.05
Abruption	12%	20%	
Preeclampsia	15%	13%	
PPH	10%	5%	
GDM	4%	6%	

Maternal complications in group I and group II were anemia in 14% and 25%, abruption in 12% and 20%, pre-eclampsia in 15% and 13%, PPH in 10% and 5% and GDM in 4% and 6% respectively. The difference was significant (P< 0.05) [Table 6].

DISCUSSION

There are many studies in support of universal screening for thyroid dysfunction during pregnancy, specifically subclinical hypothyroidism. We performed this study to assess foeto-maternal outcome of hypothyroidism in antenatal mothers.[11] In our study group I comprised of 52 (81.2%) and group II 12 (18.75%) patients. Shah et al assessed cases of overt or subclinical hypothyroidism in antenatal mothers in early weeks of gestation. Hypothyroid cases (TSH >3.4 µIU/ml) constituted 6.3% of total cases. Euthyroid subjects (control TSH 0.6 – 3.4 µIU/ml) were 93.7% of the study population. Most of the mothers both in cases (72.2%) and controls (75.8%) delivered between 37-40 weeks. Spontaneous vaginal deliveries were more common in controls (75.3%) than cases (47.1%). Hypothyroid mothers had caesarean section significantly more (52.9%) than the euthyroid group (24.7%). Incidence of low- birth weight babies.[12,13] Our results showed that age group 18-20 years had 11 (21.1%) patients in group I and 1 (8.3%) in group II, 21-25 years had 33 (63.4%) in group I and 7 (58.4%) in group II, 26-30 years had 6 (11.5%) in group I and 3 (25%) in group II and >30 years had 2 (3.84%) in group I and 1 (8.3%) in group II. Glinoer et al found that most patients remained euthyroid during gestation, but in a few cases, TSH was elevated at delivery, suggesting diminished thyroidal reserve. Also, 40% of newborns from mothers with thyroid autoimmunity had elevated thyroid peroxidase antibody titers at birth, and there was a highly significant correlation between maternal and neonatal thyroid peroxidase antibody titers. Finally, thyroid autoimmunity was clearly associated with an increased risk of spontaneous abortion (13.3 us. 3.3%) Thyroid function in newborns from mothers with TA was normal and not different from that in controls; similarly, obstetrical features were similar in patients with TA and control subjects.[14,15] We observed that there were 23% LSCS patients in group I and 56% in group II. Spontaneous vaginal delivery was seen in 73% in group I and 44% in group II. Gestational age <37 weeks was seen in 5 (9.6%) in group I and 2 (16.6%) in group II, 37-40 weeks in 41 (78.8%) in group I and 9 (75%) in group II and >40 weeks in 6 (11.5%) in group I and 1 (8.3%) in group II. In our study, foetal outcome was live birth seen in 45 (86.5%) in group I and 9 (75%) in group II, pre- term birth 5 (9.6%) in group I and 1 (8.3%) in group II, abortion 1 (1.92%) in group I and 1 (8.3%) in group II and still birth 1 (1.92%) in group I and 1 (8.3%) in group II. Maternal complications in group I and group II were anemia in 14% and 25%, abruption in 12% and 20%, pre-eclampsia in 15% and 13%, PPH in 10% and 5% and GDM in 4% and 6% respectively. Ajmani et al determined prevalence of thyroid dysfunction in normal pregnant women and to study the impact of thyroid dysfunction on maternal and fetal outcome. 400 pregnant women between 13 and 26 weeks of gestation were included in the study. The prevalence of hypothyroidism and hyperthyroidism was 12% and 1.25 %, respectively. Adverse maternal effects in overt hypothyroidism included preeclampsia (16.6 vs. 7.8 %) and placental abruption (16.6 vs. 0.8 %). Subclinical hypothyroidism was associated with preeclampsia (22.3 vs. 7.8 %) as compared to the euthyroid patients. Adverse fetal outcomes in overt hypothyroidism included spontaneous abortion (16.6 vs. 2.39 %), preterm birth (33.3 vs. 5.8 %), low birth weight (50 vs. 12.11 %), intrauterine growth retardation (25 vs. 4.9 %), and fetal death (16.6 vs. 1.7 %) as compared to the euthyroid women. Adverse fetal outcomes in subclinical hypothyroidism included spontaneous abortion (5.5 vs. 2.39 %), preterm delivery (11.2 vs. 5.8 %), low birth weight (25 vs. 12.11 %), and intrauterine growth retardation (8.4 vs. 4.9 %) as compared to the euthyroid women.[16]

CONCLUSION

This study supports universal screening of pregnant women for thyroid dysfunction by serum TSH and freeT4 values in early weeks of gestation to diagnose hypothyroid mothers. Maternal complications in hypothyroid women were anemia and abruption.

REFERENCES

1. Sharmeen M, Shamsunnahar PA, Laita TR, Chowdhury SB. Overt and subclinical hypothyroidism among Bangladeshi pregnant women and its effect on fetomaternal outcome.

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Bangladesh Medical Research Council bulletin. 2014;40(2):52-7.
2. Saki F, Dabbaghmanesh MH, Ghaemi SZ, Forouhari S, Omrani GR, Bakhshayeshkaram M. Thyroid function in pregnancy and its influences on maternal and fetal outcomes. International journal of endocrinology and metabolism. 2014 Oct;12(4).
3. Saraladevi R, Nirmala Kumari T, Shreen B, Usha Rani V. Prevalence of thyroid disorder in pregnancy and pregnancy outcome. IAIM. 2016;3(3):1-1.
4. Sreelatha S, Nadagoudar S, Asha DL. The study of maternal and fetal outcome in pregnant women with thyroid disorders. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. 2017 Aug 1;6(8):3507-14.
5. Mahadik K, Choudhary P, Roy PK. Study of thyroid function in pregnancy, its feto-maternal outcome; a prospective observational study. BMC pregnancy and childbirth. 2020 Dec;20(1):1-7.
6. Nazarpour S, Tehrani FR, Simbar M, Azizi F. Thyroid dysfunction and pregnancy outcomes. Iranian journal of reproductive medicine. 2015 Jul;13(7):387.
7. Pahwa S, Mangat S. Prevalence of thyroid disorders in pregnancy. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. 2018 Sep 1;7(9):3493-7.
8. Wilson KL, Casey BM, McIntire DD, Halvorson LM, Cunningham FG. Subclinical thyroid disease and the incidence of hypertension in pregnancy. Obstetrics & Gynecology. 2012 Feb 1;119(2 Part 1):315-20.
9. Allan WC, Haddow JE, Palomaki GE, et al. Maternal thyroid deficiency and pregnancy complications: implications for population screening. J Med Screen. 2000;7:127–30.
10. Benhadi N, Wiersinga WM, Reitsma JB, et al. Higher maternal TSH levels in pregnancy are associated with increased risk for miscarriage, fetal or neonatal death. Eur J Endocrinol. 2009;160(6):985–91.
11. Abalovich M, Amino N, Barbour LA, et al. Management of thyroid dysfunction during pregnancy and postpartum: an endocrine society clinical practice guideline. J Clin Endocrinol Metab. 2007;92(8):1–47.
12. Negro R, Farmoso G, Mangieri T, et al. Levothyroxine treatment in euthyroid pregnant women with autoimmune thyroid disease: effects on obstetrical complications. J Clin Endocrinol Metab. 2006;91:2587–91.
13. Goel P, Radotra A, Devi K, et al. Maternal and perinatal outcome in pregnancy with hypothyroidism. Indian J Med Sci. 2005;59: 116–7.
14. Shah R, Jani SK, Patel BS, Shah AC, Patel AB. Foeto-maternal outcome of hypothyroidism in antenatal mothers. Indian Obstetrics and Gynaecology. 2022 Nov 20;12(3).
15. Glinoer D, Soto MF, Bourdoux P, Lejeune B, Delange F, Lemone M, Kinthaert J, Robijn C, GRUN JP, NAYER PD. Pregnancy in patients with mild thyroid abnormalities: maternal and neonatal repercussions. The Journal of Clinical Endocrinology & Metabolism. 1991 Aug 1;73(2):421-7.
16. Ajmani SN, Aggarwal D, Bhatia P, Sharma M, Sarabhai V, Paul M. Prevalence of overt and subclinical thyroid dysfunction among pregnant women and its effect on maternal and fetal outcome. the Journal of Obstetrics and Gynecology of India. 2014 Apr;64:105-10.

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