

Hypothyroidism in pregnancy

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Abstract

Background: Thyroid physiology is perceptibly modified during normal pregnancy. These alterations take place throughout gestation, help to prepare the maternal thyroid gland to cope with the metabolic demands of pregnancy, are reversible post-partum and the interpretation of these changes can pose a challenge to the treating physician. **Aims and Objectives:** To determine the current prevalence of thyroid dysfunction in normal pregnancy to study the impact of thyroid dysfunction on maternal and fetal outcome. **Materials and Methods:** After approval from institutional ethical committee this Prospective study was carried out in the Department of OBGY during 3 months (December 2016 to February 2017) period. All Antenatal cases from December 2016 to February 2017 were studied and undergone TFT; Thyroid profile is being done for all pregnant women as a routine antenatal test in our hospital. The statistical analysis done by SPSS 19 version software and calculated by Chi-square test. **Result :** Out of the 284 total pregnant women were screened by thyroid disease there was prevalence of sub-clinical hypothyroidism 10% and overt hypothyroidism 4% and overall thyroid dysfunction was 13.60%. The complications like Anemia, Preeclampsia, Abruption, PPH, Mode of Delivery by Caesar was significantly higher in Sub-clinical and Overt hypothyroid patients ($p < 0.05$) as compared to normal patients. The *F et al* Complications like Preterm birth, IUGR, LBW, Abortions, Still births were significantly ($p < 0.05$); Neonatal Complications like Respiratory distress syndrome*, Hypoglycemia* Hypothermia* were significantly higher ($p < 0.05$) in the babies of woman with sub-clinical or overt hypothyroidism. **Conclusion:** It can be concluded from our study that The complications like Anemia, Preeclampsia, Abruption, PPH, Mode of Delivery by Caesar was significantly higher in Sub-clinical and Overt hypothyroid patients as compared to normal patients and also the fetal Complications like Preterm birth, IUGR, LBW, Abortions, Still births and Neonatal Complications like Respiratory distress syndrome, Hypoglycemia, Hypothermia were significantly higher in the babies of woman with sub-clinical or overt hypothyroidism.

Key Words: Hypothyroidism in Pregnancy, Anemia, Preeclampsia, Abruption, IUGR, LBW, Hypoglycemia, Hypothermia

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INTRODUCTION

Thyroid physiology is perceptibly modified during normal pregnancy. These alterations take place throughout gestation, help to prepare the maternal thyroid gland to cope with the metabolic demands of pregnancy, are reversible post-partum and the interpretation of these

changes can pose a challenge to the treating physician. The most notable change is the increase in thyroxine-binding globulin (TBG). This begins early in the first trimester, plateaus during midgestation, and persists until shortly after delivery. This is due to stimulation of TBG synthesis by elevated maternal estrogen levels, and more importantly, due to a reduced hepatic clearance of TBG because of estrogen-induced sialylation.¹ This increased TBG concentration leads to an expansion of the extra-thyroidal pool and results in elevated total T3 and T4 levels due to an increase in maternal thyroid hormone synthesis. Maternal thyroid hormone synthesis is also increased due to an accelerated renal clearance of iodide resulting from the increased maternal glomerular filtration rate. A number of pioneering studies by Man *et al.*,⁴ Haddow *et al.*,⁵ and newer studies by Rovet *et al.*⁶ and Pop *et al.*,⁷ have conclusively proved that children

born to mothers with hypothyroidism had a significantly increased risk of impairment in IQ scores, neuropsychological developmental indices and learning abilities. Children born to untreated hypothyroid women had an IQ score that was 7 points below the mean IQ of children born to healthy women and women given thyroxine supplements. This risk applies to children born not only of untreated women, but also women with suboptimal supplementation. A study by Rovet *et al.*,⁶ found that such children had mild defects in global intelligence, but visual-spatial ability, language, fine motor performance, and preschool ability were unaffected. This study emphasizes the need to follow-up women adequately after initiating treatment. Children born to mothers with iodine deficiency fared even worse, with a greater than 10-point average deficit in global IQ and quite a few also had attention deficit hyperactivity disorder.⁸ So we studied to determine the current prevalence of thyroid dysfunction in normal pregnancy to study the impact of thyroid dysfunction on maternal and fetal outcome.

RESULT

Table 1: Distribution of the patients as per the maternal complications

Maternal Complications	Normal (n=250)		Subclinical hypothyroidism (n=25)		Overt hypothyroidism(n=9)	
	No.	Percentage	No.	Percentage	No.	Percentage
Anemia*	32	12.80	13	52.00	3	33.33
Preeclampsia*	17	6.80	11	44.00	5	55.56
Abruption*	9	3.60	13	52.00	7	77.78
PPH*	19	7.60	9	36.00	2	22.22
Mode of Delivery by* Caesar	28	11.20	10	40.00	2	22.22

(For the comparison Subclinical and Overt hypothyroidism columns merged together) (*Significant-p<0.05)

Out of the 284 total pregnant women were screened by thyroid disease there was prevalence of sub-clinical hypothyroidism 10% and overt hypothyroidism 4% and overall thyroid dysfunction was 13.60%. The

MATERIALS AND METHODS

After approval from institutional ethical committee this Prospective study was carried out in the Department of OBGY during 3 months (December 2016 to February 2017) period. All Antenatal cases from December 2016 to February 2017 were studied and undergone TFT; Thyroid profile is being done for all pregnant women as a routine antenatal test in our hospital. We collected the results of thyroid function tests of women who attended the antenatal OPD during this period. The tests included in our antenatal profile are: Complete blood picture, Complete urine examination, Blood grouping and Rh typing, RBS, Blood urea, S. Creatinine, HIV, HbsAg and T3, T4 and TSH., those patients which were diagnosed as hypothyroid were included into the study, with any other medical illness like hypertension, diabetes mellitus, asthma, renal or liver diseases were excluded from the study. The statistical analysis done by SPSS 19 version software and calculated by Chi-square test.

complications like Anemia, Preeclampsia, Abruption, PPH, Mode of Delivery by Caesar was significantly higher in Sub-clinical and Overt hypothyroid patients (p<0.05) as compared to normal patients.

Table 2: Distribution of the patients as per the Fetal and Neonatal outcome

Outcome	Normal (n=250)		Subclinical hypothyroidism (n=25)		Overt hyperthyroidism (n=9)	
	No.	Percentage (%)	No.	Percentage (%)	No.	Percentage (%)
Fetal Complications						
Preterm birth*	11	4.40	13	52.00	2	22.22
IUGR*	10	4.00	6	24.00	4	44.44
LBW*	32	12.80	12	48.00	2	22.22
Abortions*	10	4.00	15	60.00	7	77.78
Still births*	5	2.00	7	28.00	-	-
Neonatal Complications						
Respiratory distress syndrome*	3	1.20	7	28.00	2	22.22
Sepsis	3	1.20	5	20.00	1	11.11
Hypoglycemia*	2	0.80	4	16.00	1	11.11
Hypothermia*	2	0.80	3	12.00	1	11.11
Intracranial bleed	2	0.80	2	8.00	-	-

From above table it is clear that the Fetal Complications like Preterm birth, IUGR, LBW, Abortions, Still births were significantly ($p < 0.05$); Neonatal Complications like Respiratory distress syndrome*, Hypoglycemia* Hypothermia* were significantly higher ($p < 0.05$) in the babies of woman with sub-clinical or overt hypothyroidism.

DISCUSSION

Thyroid disease is common in women of reproductive age, and it is most common endocrine disorder after diabetes. Subclinical hypothyroidism is the most common. Maternal thyroid deficiency even subclinical has been associated with adverse pregnancy outcome and may be improved by T4 replacement.⁹ Fluctuations occur in T4 metabolism during pregnancy make it difficult to maintain meticulous normal thyroid hormone values during gestation in hypothyroid mothers.¹⁰ Pregnancy cause increased thyroid gland vascularity, increased renal iodide clearance and iodide losses to the fetus.¹¹ Fluctuation in thyroxine metabolism that occurs during pregnancy may further impair maternal-fetal transfer of thyroxine despite apparently optimal thyroid status.¹² In our study we have seen Out of the 284 total pregnant women were screened by thyroid disease there was prevalence of sub-clinical hypothyroidism 10% and overt hypothyroidism 4% and overall thyroid dysfunction was 13.60%. this was similar to Joysee Pokhanna^{9,13} they found Prevalence of hypothyroidism was 13%, out of which in 3% had overt hypothyroidism and 10% had subclinical hypothyroidism. The complications like Anemia, Preeclampsia, Abruption, PPH, Mode of Delivery by Caesar was significantly higher in Sub-clinical and Overt hypothyroid patients ($p < 0.05$) as compared to normal patients. Fetal Complications like Preterm birth, IUGR, LBW, Abortions, Still births were significantly ($p < 0.05$); Neonatal Complications like Respiratory distress syndrome*, Hypoglycemia* Hypothermia* were significantly higher ($p < 0.05$) in the babies of woman with sub-clinical or overt hypothyroidism. This is similar to Sreelatha S *et al* they found Subclinical hypothyroidism in pregnancy are associated with abortions (2.1%), Anaemia (4.20%), PIH (14.7%), GDM (4.2%), Preterm labour (3.1%), oligohydromnios (16.67%), Lscs (22.9%), PPH (6.3%), LBW (21.9%), Hyperbilirubinemia (9.4%), NICU admission (14.6%).

CONCLUSION

It can be concluded from our study that The complications like Anemia, Preeclampsia, Abruption, PPH, Mode of Delivery by Caesar was significantly higher in Sub-clinical and Overt hypothyroid patients as

compared to normal patients and also the fetal Complications like Preterm birth, IUGR, LBW, Abortions, Still births and Neonatal Complications like Respiratory distress syndrome, Hypoglycemia, Hypothermia were significantly higher in the babies of woman with sub-clinical or overt hypothyroidism.

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