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IMPACT OF HYPOTHYROIDISM IN PREGNANCY OUTCOME - A PROSPECTIVE OBSERVATIONAL STUDY

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ABSTRACT

Introduction: Thyroid disorders form one of the commonest endocrine dysfunction in women of reproductive age group, second to diabetes in pregnancy. They play a crucial role in foetal growth and neurodevelopment. **Aim And Objectives:** To find out the prevalence and maternal and fetal outcomes of hypothyroidism in antenatal women attending obstetrics and gynecology, OPD in SUT Academy of Medical Sciences. **Material And Methods:** A prospective observational study conducted in Obstetrics and Gynecology Department of SUT Academy of Medical Sciences Trivandrum, from october2022 to July 2023. 407 consecutive antenatal women were enrolled in study and these women followed up to delivery. Patients are classified as euthyroid and hypothyroid based on their TSH levels. Those with thyroid swelling are referred to surgeon and endocrinologist for further evaluation and management. The outcome of pregnancy is noted and neonatal thyroid function is evaluated at 72 hours after delivery by TSH and free T4. **Findings:** Among 406 antenatal women screened, 119 were detected to have hypothyroidism which accounted to about 29.3%. The maternal and fetal complications in both groups were compared more incidence of complications were noted in the hypothyroid group which were of statistically significant. In those hypothyroid mothers, prevalence of hypothyroidism in babies were around 3.4% whereas in euthyroid mothers the prevalence of hypothyroidism in babies was around 1%. **Conclusions:** Early diagnosis and adequate treatment of maternal hypothyroidism in pregnancy is essential in decreasing the incidence of complications.

KEYWORDS :

INTRODUCTION

Thyroid disorders form one of the commonest endocrine dysfunction in women of reproductive age group, second to diabetes in pregnancy. They play a crucial role in fetal growth and neuro development. Fetal thyroid becomes autonomous only by around 12 weeks. So the source of thyroid hormone is from maternal circulation.

Indian Thyroid Society and FOGSI recommend TSH to be kept below 2.5 mIU/ml in first trimester and 3 mIU /ml in second and third trimester for better maternal and fetal outcomes.

ATA recommends all pregnant women with TSH >2.5 mIU/L and normal T4 in first trimester should be treated as "gestational hypothyroidism"

The prevalence of thyroid diseases in a form of subclinical hypothyroidism during pregnancy is estimated to be 1.5-4%. While the physiology and pathology of the thyroid gland has been well studied, results of thyroid function tests in laboratories varied considerably during pregnancy. [1,2,3,4,5,6,7,8]

Pregnancy was described as a state of significant hormonal changes that could result in elevated thyroid stimulating hormone (TSH) and suppressed thyroxin (T4) [2]

Thus, maintaining balance between these changes in iodine replete areas was found to be the key factor for normal progress of pregnancy and resulted in a better outcome . [9,10]

It is agreed that goitre and hypothyroidism are most common in iodine deficient areas. [11, 12, 13, 14, 15] However, clinicians only consider testing for thyroid dysfunction in pregnancy if one or more of the following situations occur; symptoms exist that suggest the condition; there is a family history of the disease; or there is the presence of an associated medical condition. [16,17] Nearly a third of women were overlooked when applying a case-finding approach rather than routine screening . [18]

Geyter et al. demonstrated that TSH increases and peaks at 6 weeks of gestation and then reduces parallel to hCG which peaks at 9-12 weeks and then remains stable levels. [19]

Haddow et al. studied and came up with reference ranges of TSH in each trimester. They also reported the neurocognitive outcome in offspring of hypothyroid mothers. They also found out when SCH was seen in pregnant women, it progressed to clinical diagnosis of hypothyroidism in next 5 years. [20]

Recently Shields et al showed that majority of cases of SCH in pregnancy are transient and those with Anti TPO antibody positive were likely to have persistently elevated TSH or receive thyroxine supplementation after pregnancy. [21]

Overt hypothyroidism was found to complicate up to 3 of 1,000 pregnancies and that hypothyroidism, especially subclinical, is common in North Indian women during first trimester according to Dhanwal DK et al and they advocated further countrywide studies. [22]

Previous studies done in our institution reported prevalence of thyroid autoantibodies in 29% of pregnant patients and hypothyroidism in 5.4% of patients with positive antibodies. [23]

A previous study by Negro et al reveals that, untreated thyroid dysfunction in pregnancy results in an increased adverse events particularly gestational hypertension and preterm birth. Postpartum haemorrhage complicated 12.8% of hypothyroid pregnancies and 3.8% of the controls. [24] The postpartum haemorrhage in hypothyroidism is produced both through the uterine hypo tony and coagulation problems and plaque adhesiveness.

Postpartum haemorrhage and gestational hypertension are the major contributors of maternal mortality in Kerala. Those with hypothyroidism had 3.6 times the risk of developing threatened abortion. Several studies reveal that impaired thyroid function may predispose to miscarriage and fetal death. [25,26]

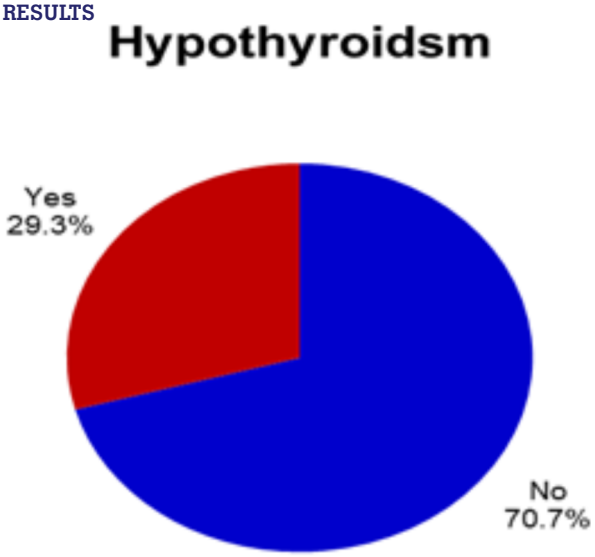
PROCEDURE

All pregnant women are screened by serum TSH levels at the first visit to the OPD. Patients are classified as euthyroid and hypothyroid based on their TSH levels. Those with deranged TSH levels undergo a complete thyroid function test and they are further divided in to subclinical and overt hypothyroidism according to National Guidelines.

EUTHYROID- < 2.5
SUBCLINICAL HYPOTHYROID - 2.5- 10
OVERT HYPOTHYROID - > 10

Those with thyroid swelling are referred to surgeon and endocrinologist for further evaluation and management and followed up by repeated TSH and FT4 estimations till the completion of their pregnancy. TSH tests are repeated in 3-4 weeks until normalization and then at 6-8 weeks' intervals. The outcome of pregnancy is noted and neonatal thyroid function is evaluated at 72 hours after delivery.

RESULTS



The above figure shows prevalence of hypothyroidism in study population.

Screening TSH	Frequency	Percent
<2.5 mIU/ml	296	72.9
2.5-10.0 mIU/ml	110	27.1
Total	406	100

The above table shows screening TSH in study population. 72.9% are Euthyroid and 27.1 % are hypothyroid.

Complications	Hypothyroidism				Total	
	No		Yes			
	N	%	N	%	N	%
Maternal Anaemia	13	72.2	5	27.8	18	100
Gestational Diabetes Mellitus	17	43.6	22	56.4	39	100
Oligohydramnios	2	50.0	2	50.0	4	100
PPH	5	83.3	1	16.7	6	100
Preeclampsia	13	59.1	9	40.9	22	100
Preterm Labour	13	61.9	8	38.1	21	100
Spontaneous Miscarriage	1	33.3	2	66.7	3	100
IUGR	1	50.0	1	50.0	2	100
Low Apgar	6	46.2	7	53.8	13	100
Low Birth weight	1	100.0	0	0.0	1	100
MSAF	11	55.0	9	45.0	20	100
No Complications	204	79.4	53	20.6	257	100
Total	287	70.7	119	29.3	406	100

The maternal and fetal complications in euthyroid and hypothyroid were compared more incidence of complications were noted in the hypothyroid group [p value of <0.001]

For example, 18.5% of the hypothyroid women had GDM while the incidence in the control group was only 5.9%.

Rate of preeclampsia was also more in the hypothyroid group accounting to about 7.6% but in the euthyroid group rate was 4.5%.

Incidence of PPH was less compared to the euthyroid group which was about 1.7% whereas in hypothyroid women it was 0.8%. even the prevalence of anaemia was comparable in both groups.

Fetal complications like IUGR and low APGAR were 0.8% and 5.9% and in the euthyroid group it was 0.3% and 2.1% respectively.

Preterm labour and spontaneous miscarriages were also increased in the hypothyroid group.

MSAF was also high in the hypothyroid group 7.6% but the incidence of MSAF was almost half in the control.

The maternal and fetal complications in both groups were compared more incidence of complications were noted in the hypothyroid group which were of statistical significance showing a p value of <0.001.

CONCLUSION

Thyroid hormone is essential for early placental development in pregnancy. Hence early diagnosis and adequate treatment of maternal hypothyroidism in pregnancy is essential in decreasing the incidence of complications like abortion, pre-eclampsia, IUGR, placental abruption, oligohydramnios and low birth weight which are associated with hypothyroidism.

REFERENCES

1. Allan W, Haddow J, Palomaki G, Williams J, Mitchell M, Hermos R Et al. Maternal thyroid deficiency and pregnancy complications: implications for population screening. Journal of Medical Screening. 2000;7(3):127-130.
2. Casey B, Dashe J, Wells C, McIntire D, Byrd W, Leveno K Et al. Subclinical Hypothyroidism and Pregnancy Outcomes. Obstetrics & Gynecology. 2005;105(2):239-245.
3. Negro R, Mestman J. Thyroid disease in pregnancy. Best Practice & Research Clinical Endocrinology & Metabolism. 2011;25(6):927-943.
4. Burrow G. Thyroid Status in Normal Pregnancy. The Journal of Clinical Endocrinology & Metabolism. 1990;71(2):274-275.
5. Glinoer D. What Happens to the Normal Thyroid During Pregnancy? Thyroid. 1999;9(7):631-635.
6. Casey B, Leveno K. Thyroid Disease in Pregnancy. Obstetrics & Gynecology. 2006;108(5):1283-1292.
7. Gärtner R. Thyroid diseases in pregnancy. Current Opinion in Obstetrics & Gynecology. 2009;21(6):501-507.
8. Hall J. Guyton and Hall Textbook of Medical Physiology: Enhanced E-book, Elsevier Health Sciences; 2010.
9. McLean E, Cogswell M, Egli I, Wojdyla D, de Benoist B. Worldwide prevalence of anaemia, WHO Vitamin and Mineral Nutrition Information System, 1993–2005. Public Health Nutrition. 2008;12(04):444.
10. Glinoer D. regulation of thyroid function during normal pregnancy: importance of the iodine nutrition status. Best Practice & Research Clinical Endocrinology & Metabolism. 2004;18(2):133-152.12.
11. Glinoer D. Regulation of Thyroid Function in Pregnancy: Pathways of Endocrine Adaptation from Physiology to Pathology. Endocrine Reviews. 1997;18(3):404-433.
12. Lazarus J, Kokandi A. Thyroid disease in relation to pregnancy: A decade of change. Clinical Endocrinology. 2000;53(3):265-278.from Physiology to Pathology. Endocrine Reviews. 1997;18(3):404-433.
13. Glinoer D. The regulation of thyroid function during normal pregnancy: importance of the iodine nutrition status. Best Practice & Research Clinical Endocrinology & Metabolism. 2004;18(2):133-152.
14. Gibson H. Schmidt v 28 Myola Street Pty Ltd and Another. Victorian Reports. 2006;14 VR:447-460.tabolism. 2004;18(2):133-152.
15. Vanderpump M. The epidemiology of thyroid disease. British Medical Bulletin. 2011;99(1):39-51.
16. Abalovich, M., Gutierrez, S., Alcaraz, G., Maccallini, G., Garcia, A. and Levalle, O., 2002. Overt and Subclinical Hypothyroidism Complicating Pregnancy. Thyroid, 12(1), pp.63-68.
17. Reid, S., Middleton, P., Cossich, M., Crowther, C. and Bain, E., 2013. Interventions for clinical and subclinical hypothyroidism pre-pregnancy and during pregnancy. Cochrane Database of Systematic Reviews.
18. Vaidya, B., Anthony, S., Bilous, M., Shields, B., Drury, J., Hutchison, S. and Bilous, R., 2007. Detection of Thyroid Dysfunction in Early Pregnancy: Universal Screening or Targeted High-Risk Case Finding. The Journal of Clinical Endocrinology & Metabolism, 92(1), pp.203-207.
19. De Geyter C, Steimann S, Müller B, Kränzlin M, Meier C. Pattern of Thyroid Function During Early Pregnancy in Women Diagnosed with Subclinical Hypothyroidism and Treated with l-Thyroxine Is Similar to That in Euthyroid Controls. Thyroid. 2009;19(1):53-59.
20. Haddow J, Palomaki G, Allan W, Williams J, Knight G, Gagnon J Et al. Maternal Thyroid Deficiency during Pregnancy and Subsequent Neuropsychological Development of the Child. New England Journal of Medicine. 1999;341(8):549-555.
21. Shields B, Knight B, Hill A, Hattersley A, Vaidya B. Five-Year Follow-Up for Women with Subclinical Hypothyroidism in Pregnancy. The Journal of Clinical Endocrinology & Metabolism. 2013;98(12): E1941-E1945.
22. Dhanwal D, Prasad S, Agarwal A, Dixit V, Banerjee A. High prevalence of subclinical hypothyroidism during first trimester of pregnancy in North India. Indian Journal of Endocrinology and Metabolism. 2013;17(2):281.
23. Vijayan S, Poulose J, Anitha V. Thyroid autoantibodies in pregnancy and its implications. Kerala Med J 2007; 5:205-7
24 Negro R, Schwartz A, Gismondi R, Tinelli A, Mangieri T, Stagnaro-Green A. Thyroid Antibody Positivity in the First Trimester of Pregnancy Is Associated with Negative Pregnancy Outcomes. The Journal of Clinical Endocrinology &

Metabolism. 2011;96(6): E920-E924.
25 Ashoor G, Maiz N, Rotas M, Jawdat F, Nicolaides K. Maternal Thyroid Function at 11 to 13 Weeks of Gestation and Subsequent Fetal Death. Thyroid. 2010;20(9):989-993.
26 Nambiar V, Jagtap V, Sarathi V, Lila A, Kamalanathan S, Bandgar T Et al. Prevalence and Impact of Thyroid Disorders on Maternal Outcome in Asian-Indian Pregnant Women. Journal of Thyroid Research. 2011; 2011:1-6.