



THE STUDY OF ASSOCIATION OF HYPERTENSION WITH HYPOTHYROIDISM

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ABSTRACT

Introduction: The role of thyroid gland in pregnancy and the impact of thyroid disorders on the course of pregnancy and development of offsprings have drawn a considerable interest in the recent years. Hypothyroidism has been listed as one of the causes of high blood pressure. Pre-eclampsia is more frequently associated with elevated TSH.

Methods: A total of 100 singleton pregnant women were enrolled, Out of which 50 hypertensive women as test and 50 normotensive women as control.

Result: The mean value of TSH was significantly higher in hypertensive women as compared to normotensive women. In this study no significant difference was found between FT3 and FT4 in control and test group.

Conclusion: We observed that gestational hypertension is associated with decreased activity of thyroid hormones. And there is significant positive correlation between SBP & TSH and between DBP & TSH.

KEYWORDS : Thyroid disorders, Pregnant women, gestational hypertension, preeclampsia

INTRODUCTION

The role of thyroid gland in pregnancy and the impact of thyroid disorders on the course of pregnancy and development of offsprings have drawn a considerable interest in the recent years.¹ It seems the prevalence of hypothyroidism is more in Asian countries compared to west.² It is associated with significantly higher frequency of obstetric complications such as preeclampsia, premature labor, low birth weight, fetal and perinatal loss.³

Gestational hypertension is the new onset hypertension after 20 weeks of gestation with or without proteinuria.⁴ This affect upto 5-10% of pregnancies and important factor of maternal and fetal morbidity and mortality. Hypothyroidism has been listed as one of the causes of high blood pressure.⁵ Preeclampsia is more frequently associated with elevated TSH.⁶ The pathogenesis of hypothyroidism causing PIH may be due to altered nitric oxide release which results in endothelial cell dysfunction. Reduced nitric oxide causes vasoconstriction and arterial stiffness.⁷ Hypothyroidism gives rise to diastolic hypertension, increased peripheral vascular hypertension, hence decreased tissue perfusion due to vasoconstriction in systemic and renal vessels.⁸ The aim of this study was to find out the association between hypertension and hypothyroidism.

MATERIAL & METHODS

A total of 100 participants were randomly selected for this study. The participants were made up of 50 hypertensive pregnant women as tests and 50 age matched normotensive pregnant women as control. This is a hospital based random observational study conducted in Obs & Gynae deptt of S.P. Medical College, Bikaner.

Inclusion criteria:

- Subjects with hypertension diagnosed after 20 weeks of gestation without any previous history of thyroid disorders in third trimester labeled as test.
- The equal number of matched healthy normotensive pregnant women in third trimester labeled as control.

Exclusion criteria:

- History of chronic hypertension.
 - K/C/O Thyroid disorders.
 - K/C/O Metabolic or Renal disorders.
- After taking written informed consent, a detail history and

thorough physical examination was done. Baseline investigations like Hb, BT, CT, RBS, ABO Rh, Urine C/E and serum TSH was done. The reference range used in the study was based on guidelines of American Thyroid Association for the diagnosis and management of thyroid disease during pregnancy and postpartum.

To collect required information from eligible patients, a pre-structured pre-tested proforma was used. For data analysis, statistical software SPSS was used and data were analyzed with the help of figures, tendency and appropriate statistical test.

RESULT

Total 100 women were included. Out of which, 50 normal pregnant women in control group and 50 hypertensive women in test group were enrolled.

The mean age of test group was 24.04 ± 3.76 years and the mean age of control group was 24.23 ± 4.09 years. ($p > 0.05$).

The value of systolic BP & diastolic BP in test group (158 ± 10.2) and (94.2 ± 8.9) were significantly higher ($p < 0.05$) when compared with control group (114.2 ± 9.1) and (66.4 ± 2.5).

The mean value of TSH in test group was 5.12 ± 1.67 as compared to 2.68 ± 1.88 in control group. The value of FT3 & FT4 in test group was 2.14 ± 0.62 & 1.24 ± 0.34 as compared to 1.89 ± 0.50 & 1.06 ± 0.32 in control group.

Table 1: Comparison of thyroid hormone in test and control group

	Test	Control	P value
TSH (μ IU/ml)	5.12 ± 1.67	2.68 ± 1.88	$P < 0.05$
FT3 (pg/ml)	2.14 ± 0.62	1.89 ± 0.50	$p > 0.05$
FT4 (ng/ml)	1.24 ± 0.34	1.06 ± 0.32	$p > 0.05$

Table 2: Perinatal outcome

	Test	Control
IUD/SB	5	1
IUGR	10	0
Neonatal death	5	2

DISCUSSION

The study was carried out on 100 pregnant women in S.P.Medical College, Bikaner. Thyroid disorders are the predisposing factors for development of gestational hypertension, preeclampsia & eclampsia. Eclampsia and preeclampsia are leading cause of maternal and fetal mortality and morbidity. The purpose of the study was to find out the association between hypertension with hypothyroidism.

Gestational hypertension being considered a transient condition is the most common form of hypertension in pregnancy. Most researchers have focused their efforts on preeclampsia because of its implications for maternal-fetal health, whereas information about the implications of a diagnosis of GH is much more limited. According to Klein et al, 30% of pregnant women diagnosed with GH present with preeclampsia and other hypertensive complications in pregnancy. As a result, thyroid dysfunction may be the underlying disorder in GH and other endothelial vascular diseases.

The mean age of both the groups were almost similar. The mean value of TSH was significantly higher in hypertensive pregnant women as compared to normotensive pregnant women. The mean value of FT3 and FT4 was not significantly higher in hypertensive women.

The serum level of TSH correlated significantly with SBP and DBP in hypertensive pregnant women. Serum levels of FT3 and FT4 showed no significant relationship with both SBP and DBP when correlated with each other.

More adverse perinatal outcome was noted in test group. Neonatal outcome in test group analysed, 10 out of 50 were IUGR and require NICU care and 5 were IUB/SB. This perinatal outcome can be explained as result of GH causes prematurity, LBW babies & IUGR babies.

CONCLUSION

We observed that GH is associated with decreased activity of thyroid hormones as shown by higher TSH level, significant positive associations between SBP and TSH, and DBP and TSH. Thus, estimation of TSH is a good predictor of the development of hypertension in pregnancy.

REFERENCES

1. Stagnaro Green A, Abalovich M, Alexander E, Azizi F, Mestman J, Negro R, et al. Guidelines of the American Thyroid Association for the Diagnosis and Management of Thyroid Disease During Pregnancy and Postpartum. *Thyroid* 2011; 21:1081-125.
2. Wang W, Teng W, Shan Z, Wang S, Li J, Zhu L, et al. The prevalence of thyroid disorders during early pregnancy in China: The benefits of universal screening in the first trimester of pregnancy. *Eur J Endocrinol* 2011; 164:263-8.
3. Casey BM, Dashe JS, Wells CE, McIntire DD, Leveno KJ, Cunningham FG. Subclinical hyperthyroidism and pregnancy outcomes. *Obstet Gynecol* 2006; 107:337-41.
4. Hutcheon JA, Lisonkova S, Joseph KS. Epidemiology of preeclampsia and the other hypertensive disorders of pregnancy. *Best Pract Res Clin Obstet Gynaecol*, 2011; 25:391-403.
5. Endo T, Komiyal, Tsukui T, Yamada T et al: Re-evaluation of possible high incidence of hypertension in hypothyroid patients; *Am Heart J*. 1979; 98:684-8.
6. Levine RJ, Vatten LJ, Horowitz GL, Qian C et al, Preeclampsia, soluble fms-like tyrosine kinase 1, and the risk of reduced thyroid function: nested case-control and population based study. *BMJ*. 2009; 339:b4336.
7. Kumar A, Ghosh BK, Murthy NS: Maternal thyroid hormonal status in preeclampsia. *Indian J Med Science* 2005; 59:57-63.
8. Negro R, Mestman JH: Thyroid disease in pregnancy. *Best Practice & Research: Clinical Endocrinology & Metabolism*, 2011; 25(6):927-43.