IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 16, Issue 6 Ver. II (June. 2017), PP 141-143
www.iosrjournals.org

Thyroid Status in Pre Eclampsia

Dineshkumar[1], RK Praneswari Devi[2], Zirsangliana Chhangte[3], M Rameswar Singh[4], A Usharani[5], Y Ajitkumar Singh[6], L Somenkumar Singh[7], L Ranjit Singh[8]

Regional Institute Of Medical Sciences Imphal, INDIA
Postgraduate Student [1,3],Associate Professor[2,4],Assistant Professor[5,6],Senior Resident[7],Professor[8]

Background: *Many studies regarding thyroid profile alteration havebeen conducted in preclamsia.*
Settings & Design*: A case-control study was conducted in the antenatal clinic of preeclampsia patients at obstetrics department.*
Method & Materials: *Thyroid hormones, namely triiodothyronine (Free T3), thyroxine (Free T4) and thyroid stimulating hormone (TSH) were evaluated at the time of diagnosis of preeclampsia in 80 pregnant women ,40 cases and 40 control group each.*
Statistical Analysis*: In the subjects serum concentrations of FT3, FT4 and TSH estimated using Immuno Enzymometric Assay The demographic data and hormone levels were analyzed using students' t test, and chi-square test. Pearson two-tailed analysis was used for correlation.*
Results: *free t3,free t4 and Mean TSH levels were not significant in both group..*
Conclusions: *free t3 ,free t4 and Mean serum TSH levels were not significantly altered in preeclampsia compared to normal pregnancy. Abnormal TSH titres might be supportive increased, higher side of normal range but it was not significant.*
Keywords: *preeclampsia, pregnancy, TSH*

I. Introduction

Pre-eclampsia is a leading cause of maternal and fetal/neonatal mortality and morbidity worldwide. Pre-eclampsia is a multi-system disorder of pregnancy, which is characterized by hypertension (Blood pressure > 140/90 mmHg) with proteinuria (urinary protein excretion of >300mg/l in 24hour specimen) after 20 weeks of gestation in previously normotensive non-proteinuric pregnant women The major cause of foetal compromise in preeclampsia is reduced utero-placental perfusion [3]. The serum concentration of T4 and T3 may different in preeclampsia than in normal pregnancy. Between 5% and 15% of pregnant women experience thyroid abnormalities, a fact which justifies screening by means of clinical laboratory testing . It has been suggested that reduced concentration of thyroid hormones in preeclampsia may be due to the loss of protein and protein-bound hormones in the urine [6]. A potent vasoconstrictor produced by vascular endothelium after a vascular injury[7]. Also faulty estrogen production due to placental dysfunction in preeclampsia accounts for the decreased levels of T3 and T4. Maternal thyroid dysfunction during pregnancy has been shown to be associated with a number of adverse outcomes. For example, elevated maternal thyroid-stimulating hormone (TSH) has been associated with an increased risk of pre-term birth, placental abruption, fetal death, and impaired neurological development in the child . Preeclampsia is associated with decreased circulating levels of VEGF and PIGF, which are angiogenic factors. This leads to an anti-angiogenic state and causes endothelial dysfunction [30]. TSH can act as a tissue specific angiogenesis in physiological and pathological conditions [11].

II. Materials And Methods

This was a descriptive cross sectional study Carried out from august 2015 to march 2016 in the Obstetrics and Gynecology Department of rims imphal In - patient admitted with preeclampsia,a total 80 pregnant women were included in this study. Among them 40 women with the diagnosis of preeclampsia selected as case and 40 were normal pregnant women as control. Preeclampsia as defined by the National High Blood Pressure Education Program Workin Group,was diagnosed in the hospital as a blood pressure of 140/90mmHg or more on two or more occasions ,6 hours apart,after 20 weeks of gestation and the presence of proteinuria (which was diagnosed when a reading of 1+ or more, on the uristix, was found in repeated clean catch midstream urine sample) and / or edema.[12]

All women of preeclampsia in the third trimester were included for the study. Women in both groups had singleton pregnancies,they were irrespective of their parity . Informed consent was taken from both cases and control group. The range of the age of the study group and control group were(26.64±5.44) and (27.4±4.63) years respectively. There was no statistically significant difference between the two groups (P>0.05).5 ml

venous blood sample s were taken from the cubital vein of preeclamptic women, after the diagnosis was done by consultant.
Sera was separated and stored at -20o C until assayed. Free triiodothyronine(FT3),free thyroxine and(FT4) and thyroid stimulating hormone(TSH)were measured using enzyme immunoassay say (by TOSOH instrument).Data was analyzed statistically by SPSS Software program.

The inclusion criteria were:
(a) all diagnosed cases of preeclampsia, (b) no previous history of thyroid disease The exclusion criteria for both the groups were: history of any metabolic disorder before or during the pregnancy, cardiac disease,diabetic disease,polyhydromnios, history of any thyroid surgery,medication or radiation therapy that might affect thyroid function, renal disease, and history of hypertension.

III. Results

The studied groups had been matched for age and gender. Mean blood pressure (both systolic and diastolic) and urine protein were significantly raised in preeclamptic patients compare with normal pregnant women. Table1. The demographic characteristics of the study population

Parameter	Control (n=40)	Cases (n=40)	P value
TSH	2.42± 1.06	2.79± 1.32	0.171
F T3	1.6 ± 0.32	1.54±0.34	0.419
F T4	11.1± 1.42	10.89±1.5	0.552

Student t test
Significant figures
+ Suggestive significance (P value: 0.05<P<0.10)
* Moderately significant (P value:0.01<P ≤ 0.05)
** Strongly significant (P value : P≤0.01)

.Parameter (mean+/-sd)	Cases 40	Control 40	P value
BMI	26.06±1.74	25.92±0.86	NS
Age	26.64±5.44	27.40±4.63	NS
Systolic BP	168.50±14.03	118.22±7.46	Significant
Diastolic BP	106.82±7.52	77.50±4.26	Significant

The mean±SD of TSH of the study group and control group were (2.42±1.06) mIU/L and (2.79±1.32) mIU/L respectively and there was no significant difference between the two groups (p = 0.17). The mean of fT3 of the study group and control group were (1.6±0.32) pg/ml and (1.54±0.34) pg/ml respectively and there was no significant difference between the two groups (p =0.41). The mean of fT4 (11.1±1.42) ng/ml was in the study group and (10.89±1.5) ng/ml was in the control group. The difference between the two groups was no statistically significant (p = 0.55). Women with preeclampsia had normal concentration of FT3 and FT4 levels, and slightly high TSH when compared to normal pregnant women.

IV. Discussion

This study was undertaken to know the influence of pre-eclampsia on thyroid profile parameters in euthyroid pregnant women. The thyroid hormones levels were within the normal range and did not show any statistically difference between normal and women with pre-eclampsia. But TSH levels were also higher side of normal range in preeclampsia subjects which was not significant but it was suggestive significant. In this research work, the mean (±SD) age of the study group and control group were (26.64±5.44) and (27.4±4.63) years respectively and there was no statistically significant difference between the two groups (p>0.05) Lao TT et al studies the mean age 28.40± 5.20 and 27.50±5.10 years of study and control groups and there was no significant difference between the two groups [(13)]. The decrease in thyroid hormones with concomitant increase in TSH titers has been found to be correlated with the severity of preeclampsia.[6,8]The finding of normal T3 and T4 titers in our study may be due to the fact that the blood sample was taken just at the time of diagnosis of preeclampsia. It is possible that low titers of T3 and T4 along with high TSH titers would be observed at a later stage of preeclampsia (i.e. with severe disease and low plasma albumin levels). In our study we found that there is no significant difference of freeT3 and free T4 level in cases and control .But TSH was higher side of normal range which was not statstically significant.Our results were similar of Qublan et al. Qublan et al in their study observed no significant differences in the levels of FT4, FT3 and TSH between normal and pre-eclampsia

groups at various gestational ages [13] Contrary to our result Kaya E et al [6] and Lao et al [8] observed that preeclamptic pregnant women with high TSH levels and low thyroid hormones.

V. Conclusion

In the present study the pre-eclampsia showed not significant elevation of TSH levels . It may be due to less number of patient studied in present study.

References

[1]. Cunnigham FG, Leveno KL, Bloom SL Hauth JC, Gilstrap LC and Wenstrom KD,et al.Hypertensive disorders in pregnancy. In: Cunnigham FG, Leveno KL, Bloom SL, editors. Williams Obstetrics. 22nd ed. NewYork; McGraw-Hill; 2005: chap 34, 1237.

[2]. Sibai B, Dekker G, Kupferminc M. Pre-eclampsia. Lancet. 2005; 365:785–99.

[3]. Solomon, C.G and Seely, E.W.: Brief review: Hypertension in pregnangcy : A manifestation of the insulin resistance syndrome ? Hypertension, 37 ; 232-239, 2001.

[4]. Brent GA. Maternal thyroid function: interpretation of thyroid function tests in pregnancy. Clin Obstet Gynecology 1997; 40: 3-15.-Endo T, Komiya I, Tsukui T. Reevaluation of a possible high incidence of hypertensive in hypothyroid patients. Am Heart J 1979;98: 684-8

[5]. Glinoer D The Regulation of Thyroid Function in Pregnancy: Pathways of Endocrine adaptation from Physiology to Pathology. Endocrine Reviews 1997; 18:404-33.

[6]. Kaya E, Sahin Y, Ozkececi Z, Pasaoglu H. Relation between birth weight and thyroid function in preeclampsia –eclampsia. Gynecol Obstet Invest1994; 37:30-33

[7]. Basbug M, Aygen E, Tayyar M, Tutus A, Kaya E, Oktem O.Correlation between maternal thyroid function tests and endothelin in preeclampsia-eclampsia. Obstet Gynecol 1999;94;551-5.

[8]. Lao TT, Chin RKH, Swaminathan R, Lam YM. Maternal thyroid hormones and outcome of pre-eclamptic pregnancies. Br J Obstet Gynaecol 1990;97:71-4.

[9]. Casey BM, Dashe JS, Wells CE, McIntire DD, Byrd W, Leveno KJ et al. Subclinical hypothyroidism and pregnancy outcomes. Obstetrics and Gynecology 2005; 105: 239–45.

[10]. Allan WC, Haddow JE, Palomaki GE, Williams JR, Mitchell ML, Hermos RJ, et al. Maternal thyroid deficiency and pregnancy complications: implications for population screening. Journal of Medical Screening 2000; 7:127–30.

[11]. Tsatsaris VI, Goffin F, Munaut C, Brichant JF,Pignon MR, Noel A et al. Over expression of the soluble vascular endothelial growth factor receptor in preeclampticpatients:pathophysiological consequences. J Clin Endocrinol Metab 2003;88(11):5555-5563.

[12]. Report of the National High Blood Pressure Education Program Working Group on High Blood Pressure in Pregnancy. Am J Obstet Gynecol 2000;183:S1-S22.

[13]. Qublan HS, Al-Kaisi IJ, Hindawi IM, Hiasat MS, Awamleh I, Hamaideh AH et al. Severe pre- eclampsia and maternal thyroid function. J Obstet Gynaecol. 2003 May; 23(3):244-46