**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 24-hour specimen) after 20 weeks of gestation in previously normotensive non-proteinuric pregnant women [1],[2]. Between 5% and 15% of pregnant women experience thyroid abnormalities, a fact which justifies screening by means of clinical laboratory testing [3]. There is a high incidence of thyroid dysfunction during pregnancy resulting in adverse maternal (miscarriages, anaemia in pregnancy, pre-eclampsia, abruptio placenta and post-partum haemorrhage) and fetal effects (premature birth, low birth weight, increased neonatal respiratory distress) which may justify screening for thyroid function during pregnancy [4]. Mothers who had early-onset pre-eclampsia, were of significantly lower birth weight [5]. 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 [6],[7]. There are limited numbers of studies on the levels of thyroid hormones in pre-eclampsia and has been suggested that there may be an existence of mutual influences between pre-eclampsia and thyroid function [8].

Therefore, this study was undertaken to evaluate the influence of pre-eclampsia on thyroid profile. Also, this study intended to correlate the birth weight with thyroid profile parameters.

**MATERIAL AND METHODS**

The study was undertaken by the department of Obstetrics and Gynaecology (OBG), Sri Siddartha Medical College, Tumkur, after the approval of the research and ethical committee. This study included 50 subjects. Out of which twenty five (25) pregnant women who developed hypertension and proteinuria during their antenatal period were taken as pre-eclampsia cases. An equal number of age matched, parity matched and gestation age matched normal pregnant women were taken for the study. Blood samples collected were estimated for T3, T4 and TSH which was measured using CLIA system Results: 64% offspring of the pre-eclampsia subjects had birth weight <2.5kg and the values were highly significant. T3 and T4 levels were within the normal limits and there was significant increase in TSH levels in pre eclampsia subjects.

**Conclusion:** In the present study the pre-eclampsia showed elevated TSH levels with a risk of low birth weight babies. Increase TSH levels could be used as a predictor of Pre-eclampsia.

**ABSTRACT**

Background: Pre-Eclampsia is characterized by hypertension and proteinuria. There is a high incidence of thyroid dysfunction during pregnancy resulting in adverse maternal and fetal effects. Therefore, we intended to evaluate the influence of pre-eclampsia on thyroid hormone levels.

**Methods:** Twenty five (25) pregnant women who developed pre-eclampsia and an equal number of age matched, parity matched and gestation age matched normal pregnant women were taken of pre-eclampsia on thyroid profile. Also, this study intended to correlate the birth weight with thyroid profile parameters. Pearson's correlation was used to correlate the birth weight with thyroid profile parameters.

**RESULTS**

This case-control study for thyroid profile included 25 patients with pre-eclampsia and 25 normal pregnant women. The mean age was 24.32±2.76 years and 24.08±3.88 years for normal and pre-eclampsia subjects respectively. 76 % of the normal and 64 % of pre-eclampsia subjects were primigravida and 88% of the normal group and 60% pre-eclampsia patients were at term. The results obtained were tabulated. In this study we have observed that 16 (64%) offspring of the pre-eclampsia subjects had birth weight <2.5kg and the difference between the mean values of the
birth weight born to normal and pre-eclamptic subjects were highly significant [Table/Fig 1]. Thyroid profile values (T3 and T4) in normal and pre-eclampsia groups were within the normal limits.

Patients with pre-eclampsia showed significantly increased TSH levels (p< 0.0042) compared to normal. [Table/Fig 2] shows the Pearson’s correlation between birth weight and thyroid profile in pre-eclampsia subjects. It is shown that there is no significant correlation between the birth weight and thyroid profile parameters.

$$\begin{array}{|c|c|c|}
\hline
\text{Variables} & \text{Controls} & \text{Pre-eclampsia} & \text{P-value} \\
\hline
\text{Birth weight (kg)} & 2.95 \pm 0.38 & 2.25 \pm 0.59 & 0.001^{**} \\
\text{T3 (nmol/L)} & 1.28 \pm 0.35 & 1.15 \pm 0.17 & 0.107 \\
\text{T4 (nmol/L)} & 9.93 \pm 1.39 & 10.46 \pm 1.63 & 0.224 \\
\text{TSH (uIU/ml)} & 2.44 \pm 1.08 & 8.42 \pm 14.31 & 0.042^* \\
\hline
\end{array}$$

**Table/Fig-1**: Comparison of variables in controls and pre-eclampsia groups

**NS – Not significant (p>0.05)**

**S – Significant (p<0.05)**

**HS – Highly significant (p<0.001)**

**DISCUSSION**

Though the effects of pre-eclampsia and thyroid dysfunction in pregnancy are very well studied, the relationship between the two is poorly established. Therefore this study was undertaken to know the influence of pre-eclampsia on thyroid profile parameters in euthyroid pregnant women. In this cross sectional study 64% of the pre-eclamptic women were primigravidas, implying the role of parity as a risk factor for pre-eclampsia. Out of 25 pregnant women with pre-eclampsia tested for thyroid function, 60% were of parity as a risk factor for pre-eclampsia. Out of 25 pregnant in euthyroid pregnant women. In this cross sectional study 64%

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 [10]. They conclude that the thyroid function is not altered in severe pre-clampsia, therefore it does not reflect the severity of pre-eclampsia. Still, the dynamic state of thyroid gland due to the pre-eclamptic condition cannot be ruled out and a study on larger sample size is warranted. Babies of the pre-eclamptic women had lesser birth weight. Kumar et al [11] observed the similar findings in pre-eclamptic and eclamptic women with high TSH levels and low thyroid hormones. In pregnant women with hyperthyroidism and pre-eclampsia it was established that they had the risk for low birth weight infants [8]. In conclusion, these findings suggest pre-eclampsia has the effect on the TSH levels exposing the pre-eclamptic patients to the risk for low birth weight babies. In the present study TSH levels were elevated in pre-eclamptic patients compared to normal pregnant women, which could indicate the possible etiology for pre-eclampsia. Elevated TSH levels could be used as predictor of pre-eclampsia. However, more detailed study with larger sample size needs to be carried out.

**REFERENCES**


