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INCIDENCE OF HYPOTHYROIDISM IN PRE-ECLAMPSIA/ ECLAMPSIA AND NORMAL PREGNANT WOMEN AT TERM AND THEIR FETO-MATERNAL OUTCOME

Obstetrics & Gynaecology

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ABSTRACT

Objective: To assess the incidence of hypothyroidism in pre-eclampsia/ eclampsia and normal pregnant women at term and their fetomaternal outcome.

Method: This was a prospective case control study 50 each, carried out in Department of Obstetrics and Gynaecology, R.N.T. Medical College Udaipur from July 2017 to December 2017.

Results: The mean age of the study group was 24.82±4.27 years and 24.70±4.55 years among the controls respectively which was almost equivalent and hence, statistically insignificant (p>0.05). In the study, 9 (18%) were Pre-eclampsia, 21(42%) were severe eclampsia and 20(40%) were severe pre-eclampsia. Mean Thyroid Stimulating Hormone (TSH) in study group was 4.71+1.51µIU/ml and in control was 3.0+1.11µIU/ml(p value<0.001). Incidence of hypothyroidism was 36% in study group and 12% in controls (p<0.05).

Conclusion : Serum TSH >4.5 mIU/ml (overall 24%) which means 1 in every 5 women was found to be hypothyroid showing a high prevalence of hypothyroidism in the region.

KEYWORDS

Hypothyroidism, TSH, Pre-eclampsia, Eclampsia.

INTRODUCTION

Maternal mortality still remains very high in developing countries including India. Maternal Mortality Ratio (MMR) in India is 174 per 1 lakh live births (2013)[1]. The incidence of preeclampsia in hospital practice varies widely from 5 to 15%. The hospital incidence of eclampsia in India ranges from 0.2 to 3.3%. After hemorrhage (38%), Anemia (19%), Sepsis (11%), Abortion (8%), Hypertension (5%) is the leading cause of maternal mortality (SRS survey 2001-2003)[2]. Besides maternal morbidity and mortality, it is also responsible for various fetal and maternal complications.

Pregnancy is a physiological state associated with many alterations in metabolic, biochemical, hematological and immunologic processes. Pregnancy can induce hypertension in previously normotensive women and aggravate hypertension in those who were hypertensive before pregnancy. Hypertensive disorders of pregnancy represent a group of conditions associated with high blood pressure during pregnancy proteinuria and in some cases convulsions. The National High Blood Pressure Education Program Working Group has classified hypertensive disorders during pregnancy into 4 categories,: 1) chronic hypertension, 2) preeclampsia-eclampsia, 3) preeclampsia superimposed on chronic hypertension, and 4) gestational hypertension (transient hypertension of pregnancy or chronic hypertension identified in the latter half of pregnancy). The most serious consequences for the mother and baby are result of pre-eclampsia and eclampsia[3].

Preeclampsia

The standard definition of pre-eclampsia being hypertension, proteinuria ± oedema occurring after 20 weeks gestation is universally accepted. The international society for the study of hypertension in pregnancy (ISSHP) defined pre-eclampsia as being:

Hypertension = Systolic Blood Pressure (SBP) >140mmHg and / or a Diastolic Blood Pressure (DBP) of > 90mmHg on two consecutive readings 6 hours apart.

Proteinuria = ≥300mg/l/24 hrs or a protein: creatinine ratio of >30mg/mmol, and where this test is not available, a 1+ proteinuria on a urine dipstix, with both occurring after 20 weeks and returning to normal postnatally[4].

Severe pre-eclampsia

The National Institute for Health and Care Excellence (NICE) define severe pre-eclampsia as being pre-eclampsia with severe hypertension and/or with symptoms, and/or biochemical and/or haematological impairment with a sub definition for severe hypertension as being a systolic BP ≥160mmHg and/or a diastolic blood pressure ≥ 110mmHg[5].

The American College of Obstetrics and Gynaecology (ACOG) define pre- eclampsia as "Blood pressure of 140 millimeters of mercury (mmHg) systolic or higher or 90 mmHg diastolic or higher that occurs after 20 weeks of gestation in a woman with previously normal blood pressure and proteinuria defined as urinary excretion of 0.3 grams (g) protein or higher in a 24-hour urine specimen". To be classified as severe they suggest one or more of the following features in a patient of pre eclampsia:

- Blood pressure of 160 mm Hg systolic or higher or 110 mm Hg diastolic or higher on two occasions at least 6 hours apart while the patient is on bed rest
- Proteinuria of 5g or higher in a 24-hour urine specimen or 3+ or greater on two random urine samples collected at least 4 hours apart
- Oliguria of less than 500 millilitres (mL) in 24 hours
- Cerebral or visual disturbances
- Pulmonary edema or cyanosis
- Epigastric or right upper-quadrant pain
- Impaired liver function
- Thrombocytopenia
- Fetal growth restriction

The ISSHP have defined early onset pre-eclampsia as pre-eclampsia occurring less than 34 weeks of gestation, and late onset occurring after 34 weeks of gestation.

Effect of pre-eclampsia on fetus

The fetal risk is related to the severity of preeclampsia, duration of the disease and degree of proteinuria. The following hazards may occur:

1. Prematurity: either due to spontaneous onset of labor or due to preterm induction
2. Intrauterine growth restriction: due to chronic placental insufficiency
3. Asphyxia
4. Intrauterine death: due to spasm of uteroplacental circulation leading to accidental hemorrhage.

AIMS AND OBJECTIVES

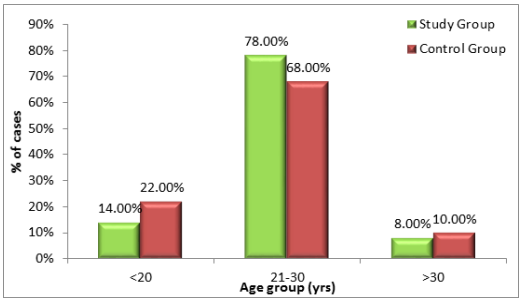
1. To assess the incidence of hypothyroidism in pre-eclampsia/ eclampsia and normal pregnant women at term and their fetomaternal outcome.

RESULT AND DISCUSSION

Age Distribution of patients

Table no. 1 shows the age distribution of the patients. In our study, 78% of the study group and 68% of the controls were in the age group of 21-30 years.

Also, the mean age of Study and group was 24.82±4.27 years and 24.70±4.55 years among the controls respectively which was almost equivalent and hence, statistically insignificant (p>0.05).



Graph 1: Age Distribution of patients

Out of the 50 patients in the study group, 9 (18%) were Pre-eclampsia, 21(42%) were severe eclampsia and 20(40%) were severe pre-eclampsia.

Table 1: Distribution of both the groups According to TSH levels

TSH	Study Group		Control Group		Total	
	No.	%	No.	%	No.	%
<4.5	32	64.00%	44	88.00%	76	76.00%
>4.5	18	36.00%	6	12.00%	24	24.00%
Total	**50**	**100%**	**50**	**100%**	**100**	**100%**

p<0.05 (S)

Table 1 shows the distribution of both the groups according to their serum TSH Levels. In the study group, 36% patients were hypothyroid with TSH >4.5 mIU/ml in comparison to 12% in the Controls. This difference was statistically significant (p<0.05).

These findings supported the report that pre-eclamptic woman had higher incidence of biochemical hypothyroidism compared with normotensive pregnant woman (Kumar et al 2005 40% v/s 12.2%).[6] These findings are in concordance with Kumar et al, Lao et al,[7] Tehrani et al,[8] Larijani et al.[9] On the other hand Khadim et al,[3] Qublan et al[5] observed insignificant TSH value.

Mean Thyroid Stimulating Hormone (TSH) in study group was 4.71+1.51µIU/ml and in control was 3.0+1.11µIU/ml (p value<0.001). Incidence of hypothyroidism was 36% in study group and 12% in controls. (p<0.05).

Table 2: Maternal Complications

Maternal Complications	Study Group		Control Group		Total	
	No.	%	No.	%	No.	%
Abruptio placentae	4	8%	1	2%	5	5%
ARF	2	4%	0	0%	2	2%
Pulmonary Edema	1	2%	0	0%	1	1%
HELLP Syndrome	1	2%	0	0%	1	1%
Primary PPH	6	12%	2	4%	8	8%
Wound Sepsis	1	2%	0	0%	1	1%

Table 2 shows the maternal intrapartum and post partum complications in both the groups. In the Study group 30% of the patients had complications in comparison to only 6% of the patients in the control group.8% of the patients in the study group developed abruptio placentae whereas this number was only 2% in the controls. In the study group, ARF occurred in 4% of the patients, pulmonary edema occurred in 2% of the patients, HELLP Syndrome occurred in 2% of the patients and wound sepsis occurred in 2% of the patients. In comparison to the study group, in the controls none of the patients had these complications. Primary PPH occurred in 12% of the patients in the study population in comparison to 4% of the patients in the controls. This data can be interpreted as higher maternal complications being present in the study group as compared to the control group. No maternal death occurred in any of the groups.

CONCLUSION:

36% women in the study group and 12% in the control group had serum TSH ≥4.5 mIU/ml (overall 24%) which means 1 in every 5 women was found to be hypothyroid showing a high prevalence of hypothyroidism in the region.

In the study group, Caesarean Section rate was 26% while it was 14% in normotensive mothers. The study group patients had a mean hospital stay of 5.56 days while in the control group it was 3.54 days. This was due to higher rate of maternal intrapartum and postpartum complications in the study group**.**

The present study can serve as a starting point for larger randomized controlled studies with more number of patients so as to validate the results obtained so far.

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