

Evaluation of Serum Thyrotropin and Urinary Protein Level among Pre-eclamptic Pregnancies

Nasrin Begum, Kabiruzzaman Shah, Parvez Ahmed

Institute of Nuclear Medicine and Allied Sciences, Rajshahi, Bangladesh

Correspondence Address : Dr. Nasrin Begum, Senior Medical Officer, Institute of Nuclear Medicine and Allied Sciences, Rajshahi, Bangladesh

ABSTRACT

Objective: This study was done to evaluate serum thyrotropin (thyroid stimulating hormone, TSH) and urinary protein level among preeclamptic pregnancies.

Patients and methods: This study was conducted at the Institute of Nuclear medicine and Allied Sciences, Rajshahi along with Department of Gynecology & Obstetrics, Rajshahi Medical College Hospital, Rajshahi during the period between 1st July, 2011 and 31st June, 2013. Total 66 preeclamptic pregnant patients who were referred for the assay of serum thyrotropin hormone level were included as sample under the basis of non-random purposive sampling technique. Their age, urinary protein level and level of serum thyrotropin hormone were recorded and analyzed.

Results: Among the total enrolled preeclamptic pregnant patients (n=66), Mean (\pm SD) age was 27 ± 3.88 years (range=19 to 35 years). Regarding urinary protein level, 26 (39.39 %) patients had 1+ urinary protein level and 40 (60.61%) patients had $\geq 2+$ urinary protein level. Serum thyrotropin level was 6.16 ± 0.85 (mean \pm SD) among total 66 patients. Among the preeclamptic pregnant patients having 1+ urinary protein level, thyrotropin level was 5.38 ± 0.70 (mean \pm SD) and 6.67 ± 0.49 (mean \pm SD) among the patients having $\geq 2+$ urinary protein level.

Conclusion: Thyrotropin level is higher in preeclamptic pregnant patients and reflects severity of preeclampsia.

Key words: Serum thyrotropin (thyroid stimulating hormone, TSH) level, Urinary protein level, Preeclamptic pregnancies.

INTRODUCTION

Preeclampsia is defined as hypertension associated with proteinuria (> 0.3 gram/liter in 24-hour urine collection or > 1 gram/liter in a random sample) during pregnancy (1). This pregnancy specific multisystem disorder is the third leading cause of maternal and perinatal morbidity and mortality (2).

Despite its ongoing extensive medical research, the underlying cause and mechanism of preeclampsia is yet to be defined (3). It is associated with increased maternal and fetal risk, occurring around 6%-8% pregnancies that are complicated by hypertension (4). Its incidence in UK is about 1%-2% while in Bangladesh, it is about 8.22% (5, 6). In developing countries, its prevalence ranges from 1.8% to 16.7% (7). Usually, normal pregnancy is associated with mild hyperthyroxinemia whereas preeclamptic pregnancies have high incidence of hypothyroidism that correlate with the severity of preeclampsia (8).

MATERIALS AND METHODS

This study was conducted at the Institute of Nuclear medicine and Allied Sciences, Rajshahi with the help of Department of Gynecology & Obstetrics, Rajshahi Medical College Hospital, Rajshahi, Bangladesh during the period between 1st July, 2011 and 31st June, 2013. The preeclamptic pregnant patients were referred to the Institute by the gynecologists/obstetricians for the assay of serum thyrotropin hormone level. Under the basis of non-random purposive sampling technique, 66 patients were included as sample. Their age, urinary protein level and level of serum thyrotropin hormone were recorded and analyzed with statistical software IBM SPSS v. 16.

RESULTS

Among the total enrolled preeclamptic pregnant patients (n=66), Mean (\pm SD) age was 27 ± 3.88 years (range=19 to 35 years) (Figure 1).

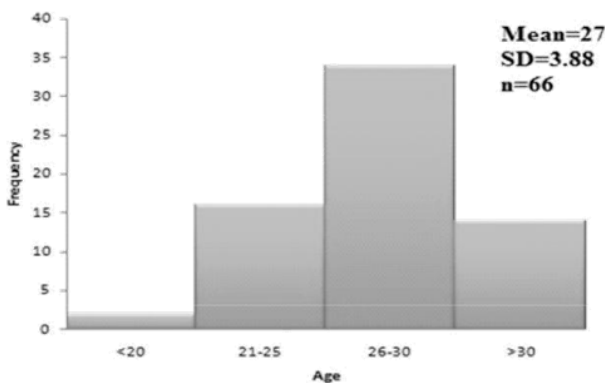


Figure 1: Age (in years) distribution among the preeclamptic pregnancies (n=66)

Regarding urinary protein level among the sample (n=66), 26 (39.39 %) had 1+ urinary protein level and 40 (60.61%) had $\geq 2+$ urinary protein level (Figure 2).

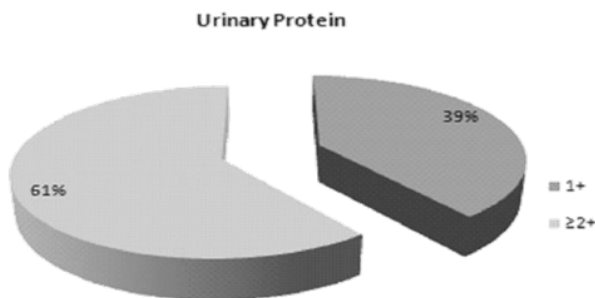


Figure 2: Urinary Protein among the sample (n=66)

Regarding urinary protein level, 26 (39.39 %) patients had 1+ urinary protein level and 40 (60.61%) patients had $\geq 2+$ urinary protein level. Serum TSH level was 6.16 ± 0.85 (mean \pm SD) among total 66 patients. Among the preeclamptic pregnant patients having 1+ urinary protein level, TSH level was 5.38 ± 0.70 (mean \pm SD) and among the patients having $\geq 2+$ urinary protein level TSH level was 6.67 ± 0.49 (mean \pm SD) (Figure 3).

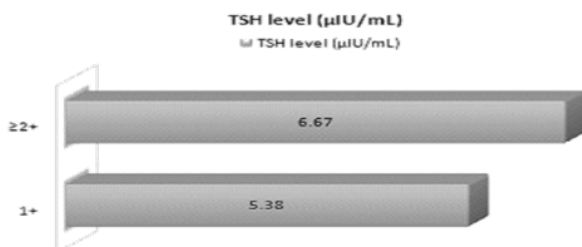


Figure 3: TSH level among the sample (n=66) having different urinary protein level

DISCUSSION

The result of this study showed that hypothyroidism is associated with preeclampsia and reflected the severity of preeclampsia. Actually, vascular endothelial damage plays an important role in the pathogenesis of preeclampsia and may cause multiple organ damage. Altered production of vasodilators like nitric oxide due to such vascular endothelial damage may thereby affect hypothalamic pituitary thyroid axis and thus result hypothyroidism. Multiple factors may invoke vascular endothelial damage like placental ischemia, immune maladaptation, genetic imprinting (9, 10). It may complicate the pregnancy through causing eclampsia, pulmonary edema, HELLP syndrome (Hemolysis, Elevated Liver Enzymes and Low Platelet Count), disseminated intravascular coagulation (DIC), acute renal failure, placental abruption, preterm delivery, intrauterine growth retardation (IUGR) of fetus (11). Therefore, thyroxin replacement therapy can improve the quality of life through reducing the above mentioned morbidities, if hypothyroidism in preeclampsia is detected early in pregnancy.

CONCLUSION

According to the present study, Thyrotropin level is higher in preeclamptic pregnant patients and reflects severity of preeclampsia. The results will be helpful in the relevant prospective studies which will be concerned with developing preeclampsia management algorithm, in addition to the role of other parameters like thyroid function tests especially thyrotropin level.

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