

Original article:

Evaluation of Subclinical Thyroid Dysfunction Among Pregnant Women at a Tertiary Care Teaching Hospital

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ABSTRACT

Background: Thyroid hormones play a vital role in neurodevelopment of foetus, therefore availability of thyroxin to foetus is essential during early gestation. Both overt and sub clinical thyroid disorders adversely affect maternal and foetal outcome. There is paucity of data regarding the incidence of thyroid dysfunction amongst pregnant women; our present aims to throw light on the incidence of subclinical thyroid dysfunction amongst pregnant women in a tertiary care hospital.

Materials and methods: The present study was conducted in the Department of Obstetrics & Gynaecology, Shri Vasantnao Naik Government Medical College, Yavatmal, Maharashtra (India) during a period of 8 months. Using a method of sampling 170 patients was included in the study. All the patients were aged between 20-40 years of age. Blood was collected from the antecubital vein under aseptic conditions. Complete demographic detail of each patient was taken including their educational qualification, religion and occupation. Patient's nutritional status was assessed. Levels of T3, T4 and TSH were calculated using radioimmunoassay. All the data was arranged in a tabulated version and SPSS software was used for analysis. The tests of significance were applied, if the probability value was less than 0.05, then it was regarded significant.

Results: The TSH levels were 4.43 +/- 1.12 mU/L. The mean levels of T3 and T4 were 2.61 +/- 0.89 ng/dl and 1.53 +/- 0.88 ng/dl respectively. There were 65.8% women (n=112) who had subclinical hypothyroidism and 34.1% pregnant women (n=58) who showed Hyperthyroidism.

Conclusion: We can conclude from the above study that there is a lack of sufficient information about subclinical hypothyroidism amongst pregnant women. Thyroid screenings should be done at a regular interval so that there is improvement in perinatal outcome. The incidence of subclinical hypothyroidism in our study was 65.8%.

Keywords: Hypothyroidism, Incidence, Perinatal, subclinical.

INTRODUCTION

There are significant changes that occur in the maternal thyroid during pregnancy. Thyroxin plays a vital role in neurodevelopment of foetus, therefore availability of thyroxin to foetus is essential during early gestation. Both overt and sub clinical thyroid disorders adversely affect maternal and foetal outcome. Symptoms of hypothyroidism overlap with those of pregnancy like weight gain, lethargy, Constipation, weakness. Therefore, it is

difficult to rely on symptoms of hypothyroidism to make its diagnosis during pregnancy.¹ It has been estimated that 0.3%-0.5% of the pregnant women show symptoms of overt hypothyroidism and 2-3% of them show subclinical hypothyroidism.²

In few studies in India, the incidence of hypothyroidism amongst pregnant women ranges from 4.8% to 14.3%.^{3,4} It has been seen that there is 50% increase in the production of T3 and T4 with an increase in iodine demand. So, pregnant mothers

who are euthyroid in the beginning become hypothyroid later during the course of pregnancy.⁵ According to study conducted in China and India, the reference range for TSH was 0.6-5.0 mU/L for the first trimester.⁶ There is paucity of data regarding the incidence of thyroid dysfunction amongst pregnant women; our present aims to through light on the incidence of subclinical thyroid dysfunction amongst pregnant women in a tertiary care hospital.

MATERIALS AND METHODS

The present study was conducted in the Department of Obstetrics &Gynaecology, ShriVasantraoNaik Government Medical College, Yavatmal, Maharashtra (India)during a period of 8 months. Using a method of sampling 170 patients was included in the study. All the patients were aged between 20-40 years of age. Any women with preexisting thyroid disorder, taking medication for thyroid disease, multiple gestations, diabetes mellitus or on medications like antipsychotic drugs were excluded from the study. The study was approved by Institute’s ethical committee and all the patients were informed about the study and a written consent was obtained from all in their vernacular language. Patients reporting to the OPD of Department of Gynecology irrespective of the gestational period were included in the study. Blood was collected from the antecubital vein under aseptic conditions. Complete demographic detail of each patient was taken including their educational qualification, religion and occupation. Patient’s

nutritional status was assessed. Levels of T3, T4 and TSH were calculated using radioimmunoassay.

Presence of thyroid dysfunction was classified according to American Thyroid association Guidelines. Subclinical hypothyroidism was taken if TSH levels were high (2.5-10mU/L) with normal T4 levels (0.7-1.8 ng/dl). The condition was regarded as subclinical Hyperthyroidism if TSH was low (<0.1 mU/L) with normal T4 levels.

All the data was arranged in a tabulated version and SPSS software was used for analysis. The tests of significance were applied, if the probability value was less than 0.05, then it was regarded significant.

RESULTS

A total of 170 females were enrolled in the study. The mean age of women were 29.27+-1.89 years.

Table 1 illustrates the mean levels of thyroid hormone (TSH, T3 and T4). The TSH levels were 4.43 +/- 1.12 mU/L. The mean levels of T3 and T4 were 2.61+/- 0.89 ng/dl and 1.53+/- 0.88 ng/dl respectively.

There were total of 74 pregnant women who showed the presence of clinical thyroid dysfunction (43.5%). Rest all the pregnant women i.e. 56.4% were normal clinically (n=96) [Table 2].

Table 3 shows the incidence of subclinical thyroid dysfunction amongst women. There were 65.8% women (n=112) who had subclinical hypothyroidism and 34.1% pregnant women (n=58) who showed Hyperthyroidism.

Table 1: Thyroid hormone levels amongst women

THYROID HORMONE	Mean +/- SD
TSH (mIU/L)	4.43+/- 1.12
T3(ng/dL)	2.61+/- 0.89
T4(ng/dL)	1.53 +/- 0.88

Table 2: Incidence of thyroid dysfunction amongst women

THYROID DYSFUNCTION	FREQUENCY	PERCENTAGE
Present	74	43.5%
Euthyroid	96	56.4%

Table 3: Incidence of subclinical thyroid dysfunction amongst women

THYROID DYSFUNCTION	FREQUENCY	PERCENTAGE
Hypothyroidism	112	65.8
Hyperthyroidism	58	34.1

DISCUSSION

Disorders of Thyroid are the second most common endocrinal dysfunctions amongst pregnant women. If this condition is not treated, then there is a risk of various complications occurring during pregnancy like growth restriction, premature births, elevated risk of miscarriage and hypertension.⁷ Because of increase in demand of thyroxin and iodine during pregnancy, it is recommended by WHO that iodine intake should be 250 µg as compared to normal of 150 µg per day.⁸ In our present study, there were 56.4% pregnant women who were clinically euthyroid. The incidence of subclinical hyperthyroidism was 34.1% (n=58).

In a study conducted by Elisabeth HA et al⁹ in the year 2000 to determine whether subclinical hypothyroidism is an independent risk factor for myocardial infarction, they found that 10.8% of the elderly women have subclinical hypothyroidism. In a study conducted by Casey BM et al to determine the prevalence of subclinical hypothyroidism amongst pregnant women, they concluded that 2-3% of women during pregnancy have hypothyroidism.¹⁰ A study conducted by Vadiya et

al¹¹, they said that if thyroid screening is done only amongst high risk population then approximately half of the women with subclinical hypothyroidism would be missed.

According to a study done by Rao et al¹², there is a statistically significant relationship between hypothyroidism and pregnancy loss during first trimester and they said that if hypothyroidism can be controlled, then recurrent losses during pregnancy can be prevented. The prevalence of subclinical hypothyroidism was comparatively high compared to the other studies; this bias may be due to the difference in reference values taken in various other studies. The various other limitations of our study are that there was no control group and anti TPO antibodies were not estimated.

CONCLUSION

We can conclude from the above study that there is a lack of sufficient information about subclinical hypothyroidism amongst pregnant women. Thyroid screenings should be done at a regular interval so that there is improvement in perinatal outcome. The incidence of subclinical hypothyroidism in our study was 65.8%.

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