

Epidemiological Study of Hypothyroidism in Women of Reproductive Age in Lower Assam

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Abstract: ***Introduction:** Thyroid disorders are common in reproductive age of female. In various studies done in different part of India, it is found that thyroid disorders are the one of the most common endocrine disorders among female in reproductive age group. Thyroid disease is the second most common cause of endocrine dysfunction in the women of child bearing age after diabetes. Thyroid disease is known to affect many aspects of pregnancy and postpartum health, as well as the health of the baby. The main aim of this study to find out hypothyroidism among reproductive age of female population of lower Assam as no such studies was done in lower Assam. **Material and Method:** This was a cross-sectional, multi-centered epidemiology study conducted at different places of lower Assam which include which include Barpeta, BongaiGaon, and Baksa district of Assam. This study subjects were women aged 18–45 years. Known cases of other medical disorders and women who did not give consent for TSH estimation were excluded from the study. Thyroid-stimulating hormone (TSH) assay was done in all blood samples as a screening test for thyroid disease. TSH assay was performed using Serum TSH (Thyroid Stimulating Hormone) levels were measured in the Central Clinical Laboratory (Biochemistry) of FAA Medical College. Abnormal TSH values were grouped into three categories: (a) Mild TSH elevation: TSH of 4.5–10 mIU/ml (b) Significant TSH elevation: TSH > 10mIU/ml (c) Suppressed TSH: TSH <0.4 mIU/ml. **Results:** The overall prevalence of thyroid dysfunction in this study was 17.31%. The most common abnormality in our study was elevated TSH (79.1%). Of the 79.1 %, the majority (69.3%) had mild TSH elevation (4.5–10 mIU/ml). The majority of this group could have sub-clinical hypothyroidism. A small number in this group could also have overt hypothyroidism (with low free T4) and rarely may have central hypothyroidism. TSH value > 10 mIU/ml was found in 9.8% of our subjects. Low TSH (<0.4 mIU/ml) was seen in 20.8% of the study population. Majority of female with elevated TSH were from higher age group. **Conclusion:** In our study we found that more 13.7 % of women in their reproductive age group in lower Assam was suffering from Hypothyroidism (Both subclinical and overt hypothyroidism) which is alarmingly high in comparison to other studies. And the female with higher age group suffers from hypothyroidism than younger One.*

Keywords: Epidemiological Study, TSH, Lower Assam, Female, Reproductive age.

1. Introduction

Thyroid disorders are common in reproductive age of female. In various studies done in different part of India, it is found that thyroid disorders are the one of the most common endocrine disorders among female in reproductive age group. The common thyroid disorders in the reproductive age group of female found to be hypothyroidism. Thyroid disorder in reproductive age group leads to delay in sexual maturation and onset of puberty, reduced fertility, impaired mental functions, heart disorders, atherosclerosis, pleural effusion, reduced appetite, anaemia, constipation, delayed muscle contraction and relaxation, decreased renal blood flow, diabetes mellitus etc.

Thyroid disease is the second most common cause of endocrine dysfunction in the women of child bearing age after diabetes. Thyroid disease is known to affect many aspects of pregnancy and postpartum health, as well as the health of the baby. In a study done by Baruah MP et al in 8 wards of Guwahati, it was found that hypothyroidism were common in female population¹. The main aim of this study to find out hypothyroidism among reproductive age of female population of lower Assam as no such studies was done in lower Assam.

2. Materials and Methods

2.1 Study design and enrollment criteria

This was a cross-sectional, multi-centered epidemiology study conducted at different places of lower Assam which include which include Barpeta, BongaiGaon, and Baksa district of Assam.

Sample collections was done at Fakhruddin Ali Ahmed Medical and Hospital, Barpeta and approved by ethics committee of Fakhruddin Ali Ahmed Medical and Hospital, Barpeta.

The study was done over a period of one year after the year of ethical clearance. Primary outcome measure of the study was the prevalence of hypothyroidism assessed by measurement of thyroid hormones mainly the TSH.

This study subjects were women aged 18–45 years. Known cases of other medical disorders and women who did not give consent for TSH estimation were excluded from the study.

2.2 Study procedure

Demographic and clinical data were collected from each individual. Socio demographic profile of the participants

like age, education, marital status, occupation, diet, and duration of stay in the above mentioned areas recorded. Detailed medical history was collected including that of existing thyroid disorder on or off treatment. Following all aseptic and antiseptic measures, 5 mL of blood sample from each individual was collected by trained before 11 AM. Blood and serum samples, after proper labeling, were stored at -20° . Blood samples were then analyzed periodically.

Thyroid-stimulating hormone (TSH) assay was done in all blood samples as a screening test for thyroid disease. TSH assay was performed using Serum TSH (Thyroid Stimulating Hormone) levels were measured in the Central Clinical Laboratory (Biochemistry) of FAA Medical College. The quantification of TSH was carried out with ADVIA Centaur CP/Chemiluminescence which is a two side sandwich immunoassay using direct chemiluminometric technology, which use constant amount of two antibodies. Random Blood Sugar, Serum creatinine, were assayed using principles of dry chemistry with Vitros 350 Autoanalyzer from Johnson & Johnson. The statistical calculation done using Medcalc software.

Abnormal TSH values were grouped into three categories

- Mild TSH elevation: TSH of 4.5–10 mIU/ml
- Significant TSH elevation: TSH > 10mIU/ml
- Suppressed TSH: TSH <0.4 mIU/ml.

3. Results

A total of 1300 subjects were screened with TSH and the results were analyzed. The number of subjects with abnormal TSH and the number of subjects in each TSH category are discussed below.

Prevalence of abnormal thyroid-stimulating hormone

Among the 1300 subjects, abnormal TSH was seen in 225 subjects and the overall prevalence of abnormal TSH was 17.31 %. (Fig 1)

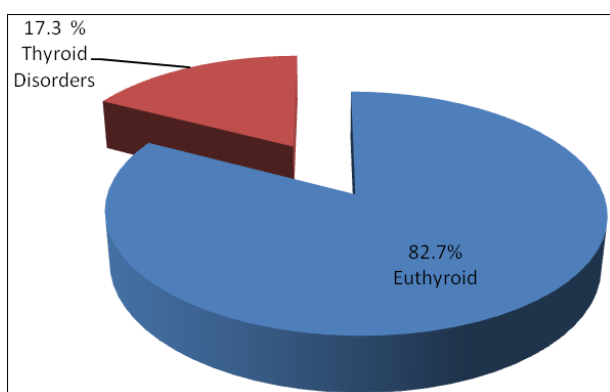


Figure 1: Prevalence of abnormal TSH level

Thyroid-stimulating hormone values of 4.5–10 mIU/ml

Out Of 225 subjects with abnormal TSH, 69.3 % (156) had TSH values between 4.5–10 mIU/ml. The overall prevalence of mild TSH elevation among the 1300 subjects was 12 %. Mean age of the population 35.3 ± 2.57 yrs. (Fig.2)

Thyroid-stimulating hormone values >10 mIU/ml

22 lady out of 225 abnormal TSH subjects (9.8%) had TSH values >10 mIU/ml. The overall prevalence of TSH values >10 was 1.7% in the study population with mean age of 44.04 ± 1.4 yrs. (Fig.2)

Thyroid-stimulating hormone values <0.4 mIU/ml

Among the 225 subjects with TSH abnormality, 47 had a TSH value <0.4 mIU/ml (20.8%). The overall prevalence of suppressed TSH was 3.61 % in the study population. The mean age of the population found to be 21.6 ± 2.57 yrs.(Fig.2)

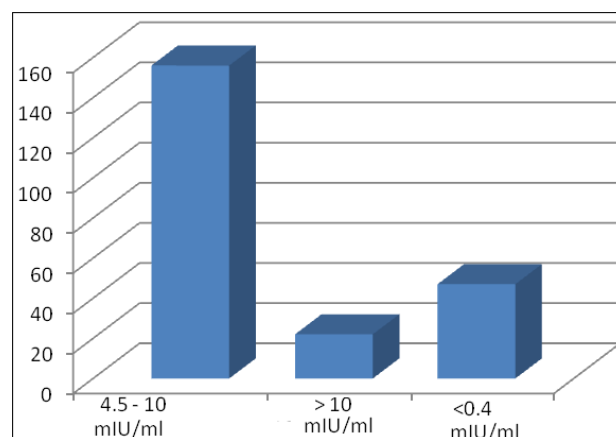


Figure 2: Population distribution among abnormal TSH individuals

Thyroid-stimulating hormone values 0.4 – 4.5 mIU/ml

Out of 1300 lady in the study group 1075 lady was found to in euthyroid state with mean age of 23 ± 3.59 yrs.

Table 1: Data collected during the study

Total study population	1075 women found to be Euthyroid (82.7%)	TSH value mIU/ml	Mean Age in year
		0.4 – 4.5	23 ± 3.59
225 women found to be abnormal thyroid disorders (17.3%)	4.5-10 (n=156)	35.3 ± 2.57	
	> 10 (n=22)	44.04 ± 1.4	
	< 0.4 (n=47)	21.6 ± 2.57	

4. Discussion

In this study it is found that 13.7 % women suffered from hypothyroidism. The most common abnormality in our study was elevated TSH (79.1%). Of the 79.1 %, the majority (69.3%) had mild TSH elevation (4.5–10 mIU/ml). The majority of this group could have sub-clinical hypothyroidism. A small number in this group could also have overt hypothyroidism (with low free T4) and rarely may have central hypothyroidism. TSH value > 10mIU/ml was found in 9.8% of our subjects. Low TSH (<0.4 mIU/ml) was seen in 20.8% of the study population. This group would include both subclinical and overt thyrotoxicosis. In the study it is found that lady whose has hypothyroidism or subclinical hypothyroidism, mean age is 35.3 ± 2.87 yrs and above. The prevalence of hypothyroidism in the study is much lower than the study done by Baruah MP et al in and around Guwahati¹. The reasons for the high prevalence of thyroid disease in spite of the improvement in iodine status may be due to that iodine supplementation which may lead to thyroid autoimmunity². In a study done by Kumaravel

Velayutham et al in south Indian young female population, the overall elevation of TSH was 11% out of which 9.7 % had mild TSH elevation³. This is the first large-scale study in Lower Assam, to look the prevalence of thyroid disorders.

5. Conclusion

In our study we found that more 13.7 % of women in their reproductive age group in lower Assam was suffering from Hypothyroidism (Both subclinical and overt hypothyroidism) which is alarmingly high in comparison to other studies. And the female with higher age group suffers from hypothyroidism than younger One.

References

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