ORIGINAL RESEARCH PAPER
Volume - 9 | Issue - 6 | June - 2020 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

A STUDY OF HYPOTHYROIDISM ON WOMEN WORKING AT GAUHATI MEDICAL COLLEGE & HOSPITAL GUWAHATI, ASSAM

Physiology

Dr (MRS) Reeta Baishya* Professor, Department of Physiology, Gauhati Medical College, Guwahati, Assam,India *Corresponding Athor

Dr Kaustuv Jyoti Bhuyan MD Physiology, Guwahati,Assam, India

Rinku Das Laboratory Technician, Gauhati Medical College, Guwahati, Assam,India

ABSTRACT

Background & Objectives: Thyroid disorders are a widespread endocrinological problem, but data on its prevalence in Northeast India is scanty. The study was done to assess the thyroid function among the female staff workers of reproductive age group of Gauhati Medical College.
Methods: Atotal of568Healthy female non pregnant workers of reproductive age group ofGauhati medical college divided into two Groups: - Group I – 18 to 30 yrs, Group II - 31 to 43 yrs.Serum Thyroid Stimulating Hormone (TSH) was estimated by Minividas.
Results: Statistical analysis was done by unpaired - t test.TSH was found to be significantly higher in Group II as compared to Group I ($p<0.05$).
Conclusion: The study suggested that the serum TSH shows significantly increases with increase in age. The effect of thyroid disorder on the women of increased reproductive agegroup is noteworthy.

KEYWORDS

Female staff, Reproductive age group, TSH

INTRODUCTION:

Thyroid disorders are a widespread endocrinological problem. Functional disorders of the thyroid (hypothyroidism and hyperthyroidism) are common.One of the most common thyroid disorders in women of reproductive age group is hypothyroidism. Large number of literature exists regarding what really should be the normal range for TSH and this topic is covered at length in recent reviews[1,2] and in clinical guidelines for the diagnosis and management of hypothyroidism.[3,4] Indeed, even though the normal range for TSH is generally listed at between 0.35 mIU/mL and 4.50 mIU/mL, it is likely that the "most normal" range is between 0.5 mIU/mL and 2.50 mIU/mL. But the range of treatment for thyroid disorder differs from this normal value.While there may be slight differences in TSH reference ranges based on race,[5] the effect of age on normal range appears to be more important, especially in advanced age.[6] The symptoms of thyroid dysfunction are often nonspecific and diagnosis is confirmed by laboratory tests. Current guidelines for the diagnosis and management of thyroid dysfunction focus primarily on the measurement of TSH, as the most sensitive and specific marker of systemic thyroid status, with test results interpreted according to defined reference ranges .[7-9]Data on prevalence of thyroid related diseases in Northeast India is scanty. The study was done to assess the thyroid function among the female staff workers of reproductive age group of Gauhati Medical College

MATERIALS AND METHODS:

The present study was conducted in the Department of Physiology, Gauhati Medical College and Hospital, Guwahati, Assam. The project was funded by SrimantaSankaradeva University of Health Sciences, Assam (SSUHS)

DURATION OF STUDY: - Two (2) years.
TYPE OF STUDY: - Cross sectional study.

STUDY POPULATION:-The study was carried out on Healthy female non pregnant workers of reproductive age group (18-43 years) ofGauhati medical college.

Sample size - Total **568nos of female**, divided into two groups:-
Group I -18 to 30 yrs (284 numbers)
Group II - 31 to 43 yrs. (284 numbers)

INCLUSION CRITERIA:
1) All female workers in age group 18-43 which were not pregnant
2) No history suggestive of any acute or chronicsystemic illness

EXCLUSION CRITERIA:
1) All female workers age group of > 43 years
2) All female workers who were pregnant
3) Any history of endocrinological disorders

Ethical clearance was obtained from the Institutional Ethics Committee (Human), Gauhati Medical College and Hospital, Guwahati, Assam.

COLLECTION OF SAMPLES:-
Blood samples were collected from each participant of the study in Clot **activator vial**- 3 ml for serum TSH level. All the samples were collected after 12 hours of overnight fasting.Serum Thyroid Stimulating Hormone (TSH) was measured in MINIVIDAS from Biomerieux using VIDAS®Ferritin(FER)kit as per manufacturer's protocol.[10]

Proper analysis and computation was done by entering the data into the Microsoft excel software, 2007. The data was presented as mean ± standard deviation. **"p"** value of < 0.05 was considered statistically significant. The statistical analysis was done by using unpaired t –test.

RESULTS AND OBSERVATIONS:

The results and observations of the study groups have been expressed in the form of Tables complemented byBar diagrams etc. as per requirement.

Table 1:- Serum TSH level in two age groups

Parameter	Group I (18-30 yrs)	Group II (31-43 yrs)	p-value
TSH value in mIU/L(Mean±SD)	2.29 ± 1.61	3.32 ± 2.05	< 0.001*

N.B. SD: Standard Deviation; $p < 0.05$ is considered as significant.*Two-tail p-value calculated by unpaired t-test,

Interpretation:
As shown in the Table 1, the values of Serum TSH is significantly higher in older age group (i.e. Group II) when they were compared between Group I and Group II.($p<0.05$). Mean serum TSH level in group II was found to be 3.32±2.05mIU/litre (milli international unit / litre) and in group I it was found to be 2.29±1.61mIU/litre.

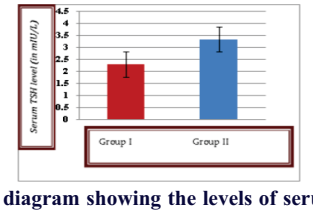

Figure 1:- Bar diagram showing the levels of serum TSH in two different age groups.

DISCUSSION AND CONCLUSION:

In the present study when the value of serum TSH were compared between the two groups of female workers of reproductive age group (group I comprising age group of 18-30 and group II comprising age group of 31-43), we found that the value of TSH was significantly higher in the Group II as compared to Group I i.e. the value of TSH was significantly increasing with increase in the age group.

TSH is an important marker for the diagnosis of thyroid dysfunction. Recent studies have shown that the TSH distribution progressively shifts toward a higher concentration with age, and it is debatable whether this is due to a real change with age or an increasing proportion of unrecognized thyroid disease in the elderly.

In one of the studies conducted in Meghalaya recorded 3.33% prevalence of hypothyroidism in non-pregnant women of 36–45 years age group, and 3.70% prevalence of hypothyroidism in pregnant women of 15–25 years age group. Hypothyroidism was found in individuals belonging to 15–25 years age group and 36–45 years age group. When considering the total number of samples, 1.11% prevalence of hypothyroidism was recorded among non-pregnant women and 1.43% prevalence of hypothyroidism was recorded among pregnant women. When considering all (both pregnant and non-pregnant) the samples together, 1.25% prevalence of hypothyroidism seemed to be evident in the screened population.[11]The prevalence of subclinical hypothyroidism increased with age.[12]Subclinical hypothyroidism is the most prevalent thyroid disorder affecting 3–15% .[13] of the adult population. Its incidence increases with advanced age. [14-16]

Thyroid hormones have profound effects on reproduction and pregnancy. Thyroid dysfunction is implicated in a broad spectrum of reproductive disorders, ranging from abnormal sexual development to menstrual irregularities and infertility.[17, 18]Hypothyroidism is associated with increased production of TRH (Thyrotropin- Releasing Hormone), which stimulates pituitary to secrete TSH and Prolactin(PRL). Thyroid dysfunction is a common cause of infertility which can be easily managed by correcting the appropriate levels of thyroid hormones.[19,20] It has been recommended that in the presence of raised TSH along with raised PRL levels, the treatment should be first to correct the hypothyroidism before evaluating further causes.

However our study encountered some limitations:-

1) Confounding factors such as ethnicity, nutritional status, geographical location etc. have to be adjusted for statistical procedures to find out the changes in the variables independent of these factors.
2) Follow up of the subjects could not be done to see whether serum TSH level will be higher in the post reproductive age groups when compared with the female of reproductive ages.

Recommendation and Future scope :-

Studies demonstrating association of serum TSH and serum Prolactin among reproductive age groups can also be done in order to correlate whether hypothyroidism has any relation with prolactin level and whether it may lead to infertility. If the in-depth knowledge of mechanisms involved in the development of the diseases is known then preventive measures can be taken against those mechanisms

ACKNOWLEDGEMENT:

I express my sincere gratitude and regards to all faculty members of Department of Physiology, Gauhati Medical College and Hospital, Guwahati, all study participants, my family Members and friends for their supports and advice in completing this work.

REFERENCES:

1) Wartofsky L, Dickey RA. The evidence for a narrower thyrotropin reference range is compelling. J ClinEndocrinolMetab 2005; 90:5483–5488
2) Surks MI, Goswami G, Daniels GH. The thyrotropin reference range should remain unchanged. J ClinEndocrinolMetab 2005; 90:5489–5496.
3) Garber JR, Cobin RH, Gharib H, Hennessey JV, Klein I, Mechanick JI, Pessah-Pollack R, Singer PA, Woeber KA; American Association of Clinical Endocrinologists and American Thyroid Association Taskforce on Hypothyroidism in Adults. Clinical practice guidelines for hypothyroidism in adults: cosponsored by the American Association of Clinical Endocrinologists and the American Thyroid Association. EndocrPract 2012; 18:988–1028.
4) Jonklaas J, Bianco AC, Bauer AJ, Burman KD, Cappola AR, Celi FS, Cooper DS, Kim BW, Peeters RP, Rosenthal MS, Sawka AM. Guidelines for the treatment of hypothyroidism: prepared by the american thyroid association task force on thyroid hormone replacement. Thyroid 2014;24:1670–1751.
5) Hollowell JG, Staehling NW, Flanders WD, Hannon WH, Gunter EW, Spencer CA, Braverman LE. Serum TSH, T (4), and thyroid antibodies in the United States population (1988 to 1994): National Health and Nutrition Examination Survey (NHANES III). J ClinEndocrinolMetab 2002; 87:489–499.
6) Franklyn JA. The thyroid–too much and too little across the ages. The consequences of subclinical thyroid dysfunction. ClinEndocrinol 2013; 78:1–8.
7) Okosieme O, Gilbert J, Abraham P et al., Management of primary hypothyroidism: statement by the British thyroid association executive committee," Clinical Endocrinology, vol. 84, 2016; 6: pp. 799–808.
8) National Institute for Health and Care Excellence, Clinical Knowledge Summaries. Hypothyroidism, National Institute for Health and Care Excellence, London, UK, 2018, Available from https://cks.nice.org.uk/hypothyroidism.
9) Jonklaas J, Bianco AC, Bauer A.J etal.Guidelines for the treatment of hypothyroidism: prepared by the American thyroid association task force on thyroid hormone replacement. Thyroid, vol. 24, 2014; 12 pp. 1670–751.
10) VIDAS®Ferritin (FER) [kit insert]. France: BIOMERIEUX.
11) Kharkongor IJ, Gupta BBP. Study on prevalence of hypothyroidism in women of reproductive age in Meghalaya, North-Eastern India. Current Science.1998 (75);12:1390-3
12) Unnikrishnan AG, MenonUV.Thyroid disorders in India: An epidemiological perspective. Indian J EndocrinolMetab. 2011 Jul; 15(Suppl2): S78–S81.
13) Ayala AR, Danese MD, Ladenson PW. When to treat mild hypothyroidism. EndocrinolMetabClin N Am. 2000;29:399–415.
14) Tunbridge WM, Evered DC, Hall R, Appleton D, Brewis M, Clark F, et al. The spectrum of thyroid disease in a community. The Wickham survey. ClinEndocrinol (Oxf) 1977;7:481–93
15) Sawin CT, Castelli WP, Hershman JM, McNamara P, Bacharach P. The aging thyroid. Thyroid deficiency in Farmingham study. Arch Intern Med. 1985;145:1396–88
16) Geul KW, van Sluisveld IL, Grobbee DE, Docter R, de Bruyn AM, Hooykaas H, et al. The importance of thyroid microsomal antibodies in development of elevated serum TSH in middle age women; Association with serum lipids. ClinEndocrinol (Oxf) 1993;39:275–80
17) Bercovici JP. Menstrual irregularities and thyroid diseases. Feuillets de biologie. 2000; 74:1063–70.
18) Vaquero E, Lazzarin CD, Valensise H, Moretti C, Ramanini C. Mild thyroid abnormalities and recurrent spontaneous abortion: Diagnostic and therapeutic approach. Am J ReprodImmunol. 2000;43:204–8.
19) Davis LB, Lathi RB, Dahan MH. The effect of infertility medication on thyroid function in hypothyroid women who conceive. Thyroid. 2007; 17:773–7
20) Dajan CM, Saravanan P, Bayly G. Whose normal thyroid function is better –yours or mine? Lancet. 2002; 360:353–4.