

ORIGINAL ARTICLE

SCREENING FOR HYPOTHYROIDISM-RESULTS OF A STUDY CONDUCTED AT DISTRICT HEADQUARTER HOSPITAL, ABBOTTABAD

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Background: Sub-clinically hypo-functioning thyroid is a condition in which there is biochemical evidence of hypothyroidism but patient is clinically asymptomatic. This concept is not new. The typical picture of this condition is increased thyroid stimulating hormone and normal thyroxine levels. Subclinical hypothyroidism has been found to have variable prevalence ranging from 4–10% to 10–26%. **Methods:** This cross sectional study was conducted on 378 adult patients coming to outpatient department of District Headquarter Hospital Abbottabad over a period of two years from February 2013 to February 2015. **Results:** Out of the 378 individuals studied, 37 (9.78%) had subclinical hypothyroidism. Mean age of the patients was 43.5±10.5 years. Females outnumbered males, i.e., 24 out of 37 (65%). It was noted that there was no correlation between mean TSH level and gender or age of the patients. **Conclusion:** Subclinical hypothyroidism is not an uncommon condition and its diagnosis is established easily by doing thyroid hormone levels in fasting condition. Early diagnosis and therapeutic intervention may not only prevent the progression to clinical hypothyroidism but also help in preventing the wastage of resources on doing unnecessary investigations.

Keywords: Subclinical hypothyroidism, Thyroid disorders

J Ayub Med Coll Abbottabad 2016;28(2):312–4

INTRODUCTION

Clinical presentations of subclinical hypothyroidism vary from patient to patient and are not uniform. Classical clinical picture of hypothyroidism is not common finding these days. In subclinical hypothyroidism, the picture is nonspecific; usually not fitting in thyroid disease and routine screening for thyroid dysfunction is much helpful in its diagnosis well in time. Thyroid function testing in subclinical patient commonly reveals normal T3, T4 and mildly raised TSH. Patients having mild dysfunction of thyroid gland are seen by clinicians not infrequently.

It is not difficult to identify these patients by doing simple test of thyroid gland function when they come to doctor with signs and symptoms not fitting specifically in any ailment. Significant advancement in the diagnosis of thyroid disease at asymptomatic stage has been developed over the past many years. This is mainly due improvement in the laboratory testing.^{1,2} Rate and pattern of progression of sub-clinically hypo-functioning thyroid gland is not predictable in most of the patients. Sometimes there is no significant measurable clinical or biochemical progression to hypothyroidism. Progression to hypothyroidism varies from population to population.³

It has been seen that subclinical hypothyroidism is more prevalent in elderly people (26%) and its overall prevalence in general population is around 10%.⁵ Association of subclinical hypothyroidism has been observed with cardiovascular disease, especially coronary atherosclerosis.⁶⁻⁹ It also has association with higher mortality rate in patients with

chronic renal failure, especially those who are on haemodialysis and also in patients suffering from diabetes.^{10,11} In subclinical hypothyroidism, autoimmune thyroiditis, iodine deficiency and treatment induced hypothyroidism are considered to be some its causes.¹³⁻¹⁸

Table-1: Conditions in which thyroid-stimulating hormone is raised (source Franklyn 2013)¹²

1	Hashimoto thyroiditis
2	¹³¹ I therapy for hyperthyroidism
3	Previous thyroid surgery
4	Antithyroid drugs
5	Post treatment thyrotoxicosis
6	Immune mediated inflammation of thyroid gland
7	Inadequate or irregular treatment with thyroid hormone
8	Radiotherapy to head or neck
9	Diabetes mellitus (insulin dependent), rheumatoid arthritis, immune hypoadrenalism and megaloblastic anaemia)
10	Trisomy ²¹
11	Treatment with amiodarone
12	Using radio-labelled substances in radiography
13	Lithium therapy
14	Diseases not involving thyroid gland
15	Radiotherapy to head or neck

Thyroid hormone levels are regulated by thyroid stimulating hormone.¹⁹ Thyrotropin-releasing hormone (TRH) secreted by hypothalamus acts upon the pituitary gland. This results in secretion of thyroid stimulating hormone (TSH). TSH acts upon Thyroid gland for the secretion of thyroid hormones, a dynamic equilibrium is maintained between these hormones in physiological conditions in a normal person. Any disturbance in this control mechanism could lead to elevate TSH.²⁰

MATERIAL AND METHODS

This descriptive cross-sectional study included 378 adult outdoor patients seen in DHQ Abbottabad, between August 2013 to February 2015 and fulfilled following inclusion criteria. Which include Male and females more than 20 years of age who are clinically asymptomatic from thyroid point of view. All those who showed an evidence of current or past thyroid disease having Palpable goitre, pregnant females and those with chronic ailments and on medicines such as Levothyroxine/Antithyroid drugs, amiodarone were excluded from the study. TSH (Thyroid Stimulating Hormone) cut off value for the study was set at 5uIU/ml those with TSH >5 were defined to have subclinical Hypothyroidism. The data was analysed using SPSS version 16.

RESULTS

Out of the 378 individuals, 193 (51.1%) were females and 185 (48.9%) males, with mean age of 40.99±16.62 years. Majority of the participants 293 (77.5%) belonged to district Abbottabad followed by Mansehra, 32 (8.5%). The mean TSH of the participants was 3.13±1.77 uIU/ml (Range 0.43–10.01uIU/ml).

As much as 37/378 (9.78%) had SCH with mean age of 43.5±10.5 years. Out the subclinical hypothyroid group, 24 (65%) were females and 13 (35%) were males. No difference in means of TSH was observed between the two genders ($p=0.778$). No significant correlation was detected between age and TSH values of the SCH patients in this study.

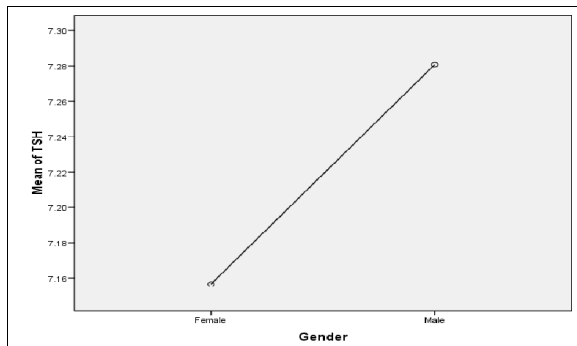


Figure-1: Gender mean TSH values

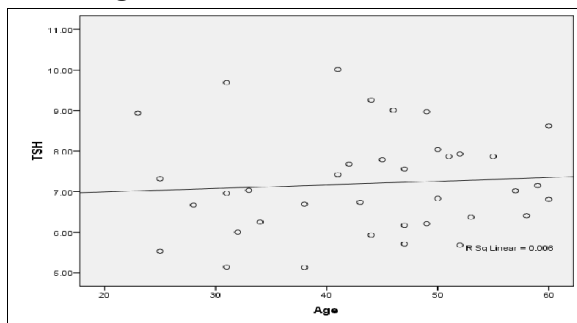


Figure-2: Correlation Age and TSH values

DISCUSSION

The study was conducted to assess the usefulness of screening for subclinical hypothyroidism. In an Indian study subclinical hypothyroidism was seen in as much as 15% women and 5% men.²¹ Another study revealed subclinical hypothyroidism in 61.5% females with gestational diabetes.²² Our findings are different from those of the earlier researchers. A study conducted at Rawalpindi revealed that subclinical hypothyroidism was more common in females.²³ Our findings are in accordance with the findings of this study.

The association of overt hypothyroidism has been seen with depressive ailment, dementia, cardiac dysfunction, impaired serum lipids and formation of atherosclerotic plaques. These may be aborted with initiation of timely treatment of the condition.²³

Initiation of treatment for the condition under discussion is indicated if patients present with deteriorating features of mild hypothyroidism, hypercholesterolemia, or goitre. Although the overlap in symptoms between patients with subclinical hypothyroidism and euthyroid persons makes it difficult to predict who will have a response to treatment, some patients have a remarkable improvement in their symptoms with thyroxine therapy. The positive findings in some small clinical trials²⁴⁻²⁶ also support the use of therapy in symptomatic patients. Decision to stop administering hormone may be taken anytime if there is no improvement in patient's clinical condition. However this still remains controversial without any clear guidelines.

Although screening is controversial, it is warranted in men then 65 years of age and five yearly in females more than 35 years old, especially if higher frequency, potential complications, and ease of treatment of the disorder are taken into account.²⁷ One cannot ignore the significance of the early diagnosis of hypo-functioning thyroid gland in pregnant females, because undetected subclinical hypothyroidism in pregnant ladies may badly affect the psycho-neurological development²⁸ and survival²⁹ of the baby in utero. It may also cause high blood pressure and eclampsia,³⁰ requiring early therapeutic intervention.

CONCLUSION

It is concluded that mild thyroid failure is not an uncommon disorder in our people which may progress to overt hypothyroidism if not diagnosed well in time and kept under observation.

RECOMMENDATION

Fair and transparent, clinical trials are much needed to answer the important questions about the relation of hypo-functioning thyroid gland with intellectual dysfunctions, coronary artery disease, and the overall

quality of life as well as the effect of early therapeutic intervention on prevention of these conditions.

AUTHOR'S CONTRIBUTION

All the authors contributed almost equally.

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