Print ISSN: 2321-6379
Online ISSN: 2321-595X

Original Article

Clinical Study of Antithyroid Peroxidase Antibodies in Subclinical Hypothyroidism

Gandra Sudeep Reddy[1], Shivalingaiah[2]

[1]Junior Resident, Department of General Medicine, Rajarajeswari Medical College and Hospital, Bengaluru, Karnataka, India, [2]Professor, Department of General Medicine, Rajarajeswari Medical College and Hospital, Bengaluru, Karnataka, India

Abstract

Introduction: Subclinical hypothyroidism is an entity based on the laboratory findings of a raised serum thyrotrophin (TSH) concentration and a normal free thyroxine (FT(4)) concentration. Patients with subclinical hypothyroidism who also have antithyroid peroxidase (TPO) antibodies have a higher conversion to overt hypothyroidism than those without.

Objective: The objective of our study is to look for what percentage of patients with subclinical hypothyroidism are TPO antibodies positive as these are the subgroup of patients who need constant follow-up and treatment.

Materials and Methods: The study was conducted on 50 patients attending the OPD or admitted to the wards, Rajarajeshwari Medical College and Hospital, Bengaluru, for patients. All subclinical hypothyroid patients aged above 18 years of both sexes attending OPD, Rajarajeshwari Medical College and Hospital.

Results: Results are tabulated in research paper in the form of tables and graphs giving brief results about our study.

Conclusion: Serum TSH and anti-TPO antibodies analysis are essential in determining the etiology and risk of progression to overt hypothyroidism in patients with subclinical hypothyroidism. Estimation of only TSH would overlook the diagnosis of quite a significant percentage of subclinical hypothyroid patients

Key words: Antibody, Hypothyroid, Thyrotrophin

INTRODUCTION

Subclinical hypothyroidism is more common than overt hypothyroidism. Early diagnosis and treatment of the condition may prevent the onset of overt hypothyroidism. It is defined by isolated elevated serum TSH level in the setting of normal serum T4 level, in the presence or absence of symptoms. The worldwide prevalence of subclinical hypothyroidism ranges from 1% to 10%. The highest age and sex specific rates are in woman over 60 years, approaching to 20%. Patients with subclinical hypothyroidism with high titer of antithyroid peroxidase (anti-TPO) antibodies are more likely to progress to overt hypothyroidism. In one population-based survey with a 20-year follow-up, the progression to overt hypothyroidism was 2.6% per year among patients with elevated TSH and negative anti-TPO antibody and 4.3% per year among those with elevated TSH and anti-TPO antibody positivity.[1-5]

Access this article online

www.ijss-sn.com

Month of Submission : 01-2021
Month of Peer Review : 01-2021
Month of Acceptance : 02-2021
Month of Publishing : 03-2021

Aim

The main objective of the study is to evaluate the presence of anti-TPO antibodies among patients with subclinical hypothyroidism.

MATERIALS AND METHODS

Time Period

The study period was from August 2018 to March 2019.

Source of Data

Patients with subclinical hypothyroidism aged above 18 years, attending Rajarajeswari Medical College and Hospital who satisfied the inclusion and exclusion criteria and were willing to give informed consent.

Corresponding Author: Gandra Sudeep Reddy, Rajarajeswari Medical College and Hospital, Bengaluru, India.

Study Design
This was a prospective study.

Sample Size
40.

Inclusion Criteria
The following criteria were included in the study:
- Subclinical hypothyroid patients.
- Age above 18 years, both the sexes.

Exclusion Criteria
Females in gestational or postpartum period, patients with thyroid destruction (from radioactive iodine or surgery), and patients receiving medications which may cause thyroid dysfunction (e.g., amiodarone, lithium, and antithyroid drugs) were excluded from the study.

Investigations Required
Thyroid function test.
- Free T3 and T4
- Anti-TPO antibodies

Subclinical hypothyroidism was defined as thyroid stimulating hormone (TSH) >5.0 μIU/ml with normal FT4 (0.60–1.12 ng/dL).

Anti-TPO antibody was assessed by two-step immunoenzymatic assay. TPO antibody was considered positive if the value was more than 9 IU/mL.

Subjects fulfilling inclusion criteria were included in the study after taking informed consent and a detailed history, clinical examination, and relevant investigations were carried out on each subject.

RESULTS

Out of 40 patients included in the study, 30 were female and 10 were male.

Thirty-three participants belonged to the 35–60 age group, 7 in > 60 years age group. The mean age of the subjects was gender distribution across all age group was done,predominantly females with highest percentage of females in the age groups of 35-50 years.

Out of the 40 subjects with subclinical hypothyroidism, 14 were anti-TPO positive and 26 were negative. The corresponding percentage of anti-TPO noted in subclinical hypothyroidism is 35% [Figures 1-3].

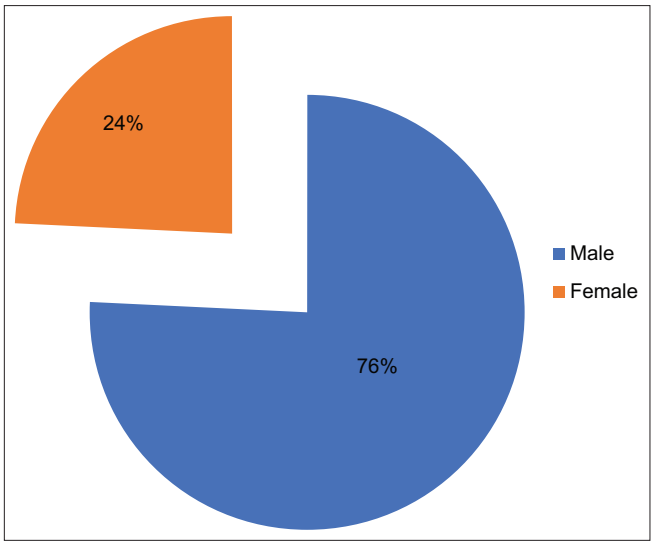


Figure 1: Sex-wise distribution

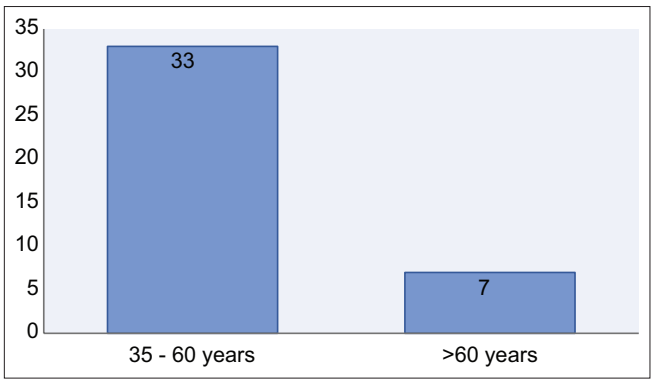
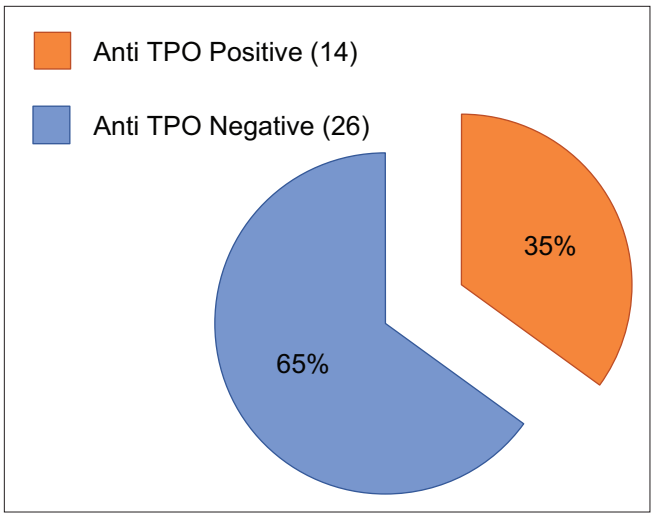


Figure 2: Age-wise distribution



	Male	Female
Anti-TPO positive	2	12
Anti-TPO negative	8	18

Figure 3: Gender-wise distribution of anti-TPO

DISCUSSION

The enzyme thyroid peroxidase (TPO) plays a major role in thyroid hormone synthesis. Measuring the levels of anti-TPO autoantibodies is significant in diagnosing autoimmune thyroid diseases and predicting their clinical course. The prevalence of anti-TPO antibody noted in the current study in patients with subclinical hypothyroidism was 35%.

Similarly, Mohanty *et al.* have showed that 45 of the 61 subclinical hypothyroid patients had elevated anti-TPO (73.78%), thereby suggesting an autoimmune etiology for subclinical thyroid dysfunction and a higher risk of developing overt hypothyroidism in such patients.

Bjoro *et al.*, in a 20-year follow-up study, conducted among Norwegian inhabitants (94,009), have found that the positive anti-TPO levels correlated significantly with thyroid dysfunction and the prevalence of elevated TSH was nearly 10-fold higher in both females and males with positive anti-TPO when compared to anti-TPO-negative subjects.

Lock *et al.* have highlighted the importance of considering anti-TPO antibody testing as an integral part of the clinical investigation for subclinical hypothyroidism.

A rise in prevalence of anti-TPO positivity was noted in the southern part of India in two different studies conducted in Kerala and Chennai with rates 16.7% and 25.81%, respectively.

In the current study, an increased preponderance of autoimmune thyroid disease was seen in women, especially in the age group of 35–50 years.

The study by Ghoraishian *et al.* reported similar findings. The study has demonstrated that the prevalence of anti-TPO antibody in females was about 7 times higher than males.[6-9]

CONCLUSION

Serum TSH and anti-TPO antibodies analysis are essential in determining the etiology and risk of progression to overt hypothyroidism in patients with subclinical hypothyroidism.

Estimation of only TSH would overlook the diagnosis of quite a significant percentage of subclinical hypothyroid patients.

REFERENCES

1. Cooper DS. Subclinical hypothyroidism. JAMA 1987;258:246-7.
2. Tunbridge WM, Evered DC, Hall R, Appleton D, Brewis M, Clark F, *et al*. The spectrum of thyroid disease in a community: The Whickham survey. Clin Endocrinol (Oxf) 1977;7:481-93.
3. Lock RJ, Marden NA, Kemp HJ, Thomas PH, Goldie DJ, Gompels MM. Subclinical hypothyroidism: A comparison of strategies to achieve adherence to treatment guidelines. Ann Clin Biochem 2004;41:197-200.
4. Bjoro T, Holmen J, Krüger O, Midthjell K, Hunstad K, Schreiner T, *et al*. Prevalence of thyroid disease, thyroid dysfunction and thyroid peroxidase antibodies in a large, unselected population. The Health Study of Nord-Trondelag (HUNT). Eur J Endocrinol 2000;143:639-47.
5. Mohanty S, Amruthlal W, Reddy GC, Kusumanjali G, Kanagasabapathy AS, Rao P. Diagnostic strategies for subclinical hypothyroidism. Indian J Clin Biochem 2008;23:279-82.
6. Jeena EJ, Malathi M, Sudeep K. A hospital-based study of anti-TPO titer in patients with thyroid disease. J Med Sci Res 2013;4:74-7.
7. Marwaha RK, Tandon N, Ganie MA, Kanwar R, Sastry A, Garg MK, *et al*. Status of thyroid function in Indian adults: Two decades after universal salt iodization. J Assoc Physicians India 2012;60:32-6.
8. Usha Menon V, Sundaram KR, Unnikrishnan AG, Jayakumar RV, Nair V, Kumar H. High prevalence of undetected thyroid disorders in an iodine sufficient adult south Indian population. J Indian Med Assoc 2009;107:72-7.
9. Ghoraishian SM, Hekmati Moghaddam SH, Afkhami-Ardekani M. Relationship between anti-thyroid peroxidase antibody and thyroid function test. Iran J Immunol 2006;3:146-9.

How to cite this article: Reddy GS, Shivalingaiah. Clinical Study of Antithyroid Peroxidase Antibodies in Subclinical Hypothyroidism. Int J Sci Stud 2021;8(12):37-39.

Source of Support: Nil, **Conflicts of Interest:** None declared.