

Original Research

“ROLE OF ANTI-TPO ANTIBODIES IN THYROID DISORDERS”

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Abstract

Introduction: Thyroid disorders represent most widespread endocrine illnesses, affecting individuals in India and the global population. A thyroid function test is used to diagnose, screen, and monitor patients.

Materials and methods: A fasting blood sample were collected for thyroid profile T3, T4, TSH, TgAb and TPOAb and are estimated by chemiluminiscence immuno assay as per the manufacturer's instructions.

Results and Discussion: In the present study, we evaluated the symptomatic patients for Thyroid function tests (TFT) and anti-TPO test. The patients were categorised into hyper and hypothyroidism based on their TSH, T3 and T4 values. In the present study, it is found that majority of the patients had hypothyroidism 37% followed by subclinical hypothyroidism accounting for 10.18% and 54.6% had euthyroid status. Anti-TPO results revealed that 61.53% of hypothyroid patients had elevated anti-TPO and 20% of hyperthyroid subjects had elevated anti-TPO and also in euthyroid subjects about 5.08% of the subjects had elevated anti-TPO. Euthyroid patients with elevated anti-TPO were further advised for follow-up at 6 months. In this study, our motive was to showcase the benefit of adding anti-TPO, as a first-tier test in combination with TSH and FT4; hence subjects with normal TSH and elevated autoantibodies would not be neglected but referred for frequent follow-ups. Addition of one test could potentially save expenditure on long-term diseases such as overt thyroid disease and its attended morbidities, associated dysfunctions in reproductive health, especially in women at child bearing age, and cardiovascular diseases. However, a large study should be performed to evaluate the other variables that can affect thyroid disease status such as current thyroid treatments and smoking habits.

Conclusion: In the present study, we evaluated the symptomatic patients for Thyroid function tests (TFT) and anti-TPO test. The patients were categorised into hyper and hypothyroidism based on their TSH, T3 and T4 values. In the present study, it is found that majority of the patients had hypothyroidism 37% followed by subclinical hypothyroidism accounting for 10.18% and 54.6% had euthyroid status. Anti-TPO results revealed that 61.53% of hypothyroid patients had elevated anti-TPO and 20% of hyperthyroid subjects had elevated anti-TPO and in euthyroid subjects about 5.08% of the subjects had elevated anti-TPO.

Key-words: thyroid disorders, anti-TPO antibody, hyperthyroidism, hypothyroidism and thyroid stimulating hormone.

INTRODUCTION

Thyroid disorders represent most widespread endocrine illnesses, affecting individuals in India and the global population. A thyroid function test is used to diagnose, screen, and monitor patients. Hyperthyroidism is a clinical condition due to excessive circulation of thyroid hormone, they are further classified as primary, secondary and tertiary hyperthyroidism based on the pathogenesis arising from thyroid gland, pituitary and hypothalamus respectively. In contrast, hypothyroidism is due to a deficiency of thyroid hormone, they are further classified as primary, secondary and tertiary hypothyroidism based on the pathogenesis arising from thyroid gland, pituitary and hypothalamus respectively.

Recent epidemiological research found that the prevalence of several autoimmune endocrine illnesses, such as autoimmune thyroid disease (AITD), has been steadily rising [1]. The complex etiology of AITD includes genetic and environmental factors. Graves' disease (GD) and Hashimoto's (HT), which make up majority of cases of AITD, have a high correlation in those over the age of 45 to 50 years. These patients have high levels of autoantibodies against thyroid proteins, namely thyroglobulin, thyroid peroxidase, and thyroid stimulating hormone receptors antibodies (TRAb). Genes such as the truncated short GalTase (TSGT) protein and thyroid stimulating hormone (TSH) receptor, as well as many immune-regulatory genes, were also found in association with AITD [1-6]. Anti-TPO and anti-TG antibodies are related to levels of thyroid stimulating hormone (TSH) and both alone or in combination have been used to predict development of hypo-/hyperthyroidism. The present study was undertaken to evaluate for anti-TPO antibody testing in patients with presenting symptoms of thyroid disorder.

AIM AND OBJECTIVES:

The aim of the study is to estimate the levels of thyroid peroxidase antibodies in patients with thyroid disorders.

MATERIALS AND METHODS:

Source of data and place of study: The present study was conducted in the Dept. of General Medicine in association with Dept. of Biochemistry of our hospital. This was a prospective interventional study.

Sample size: we included a total 108 patients during the study period.

Inclusion criteria: we included 108 patients in the age group between 20-60 years presenting to General Medicine Department OPD of our hospital with symptoms suspected of thyroid disorder.

Exclusion criteria: patients with other endocrinopathies, patients on anti-thyroid medication and thyroxine supplementation.

Data Collection and Methodology: After thorough Physical examination 5 mL of venous blood sample were collected for thyroid profile T3, T4, TSH and TPOAb and are estimated by chemiluminiscence immuno assay as per the manufacturer's instructions. All the patients had undergone thyroid ultrasound. In the present study, the cut-off values used for TSH was 0.4-4.5, TPO antibodies <30 AU/mL and for T4 was 8.0–21.0 pmol/l, as recommended by manufacturers. All continuous data were expressed as mean \pm standard deviation (SD). Two continuous numeric variables with a normal distribution were analyzed using an independent Student's *t*-test.

RESULTS:

Table 1: Shows demographic data and clinical data of the study subjects (n=108)

	Number	Frequency
Age	44.6±10.36	
Males/females	66/42	61.11%/38.88%
Subclinical hypothyroidism	11	10.18%
Hypothyroidism	40	37.03%
Subclinical hyperthyroidism	1	0.92%
Hyperthyroidism	4	3.7%
Elevated anti-TPO	36	33.33%
Euthyroid	59	54.62%

Table 2: Shows status of elevated anti-TPO in thyroid disorders

	Number	Frequency
Hypothyroidism (n=52)	32	61.53%
Hyperthyroidism (n=5)	1	20%
Euthyroid (n=59)	3	5.08%

DISCUSSION:

Thyroid dysfunction, which is defined as a broad spectrum of disorders related to the thyroid gland, has an enormous effect on human health. The prevalence of thyroid dysfunction varies in each population that can be attributed to geographic/environmental factors, ethnicity, age, sex, etc. Functional thyroid disease is mainly divided into hypothyroidism (underactive thyroid) and hyperthyroidism (overactive thyroid) that is further subdivided into overt and subclinical disease. Many people with thyroid disease go undiagnosed since symptoms develop gradually and are not very specific. Even though screening for thyroid disease seems appropriate, universal screening has not been endorsed unanimously due to lack of clinical trials that establish the benefits of subsequent therapy [7-10].

In the present study, we evaluated the symptomatic patients for Thyroid function tests (TFT) and anti-TPO test. The patients were categorised into hyper and hypothyroidism based on their TSH, T3 and T4 values. In the present study it is found that majority of the patients had hypothyroidism 37% followed by subclinical hypothyroidism accounting for 10.18% and 54.6% had euthyroid status. Anti-TPO results revealed that 61.53% of hypothyroid patients had elevated anti-TPO and 20% of hyperthyroid subjects had elevated anti-TPO and also in euthyroid subjects about 5.08% of the subjects had elevated anti-TPO. Euthyroid patients with elevated anti-TPO were further advised for follow-up at 6 months. In this study, our motive was to showcase the benefit of adding anti-TPO, as a first-tier test in combination with TSH and FT4; hence subjects with normal TSH and elevated autoantibodies would not be neglected but referred for frequent follow-ups. Addition of one test could potentially save expenditure on long-term diseases such as overt thyroid disease and its attended morbidities, associated dysfunctions in reproductive health, especially in women at child bearing age, and cardiovascular diseases. However, a large study should be performed to evaluate the other variables that can affect thyroid disease status such as current thyroid treatments and smoking habits.

CONCLUSION:

In the present study, we evaluated the symptomatic patients for Thyroid function tests (TFT) and anti-TPO test. The patients were categorised into hyper and hypothyroidism based on their TSH, T3

and T4 values. In the present study it is found that majority of the patients had hypothyroidism 37% followed by subclinical hypothyroidism accounting for 10.18% and 54.6% had euthyroid status. Anti-TPO results revealed that 61.53% of hypothyroid patients had elevated anti-TPO and 20% of hyperthyroid subjects had elevated anti-TPO and also in euthyroid subjects about 5.08% of the subjects had elevated anti-TPO.

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