

**CORRELATION BETWEEN ANTI TPO ANTIBODIES AND FNAC IN THE DIAGNOSIS OF HYPOTHYROIDISM: AN OBSERVATIONAL STUDY**Sivaranjani H<sup>1</sup>, Anna C. Das<sup>2</sup>, Govindaiah H. K.<sup>3</sup>**HOW TO CITE THIS ARTICLE:**

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**ABSTRACT: AIM OF THE STUDY:** To generate comparative clinical data between Anti TPO antibodies and FNAC in the diagnosis of Hypothyroidism in 18–60 year age group. **MATERIALS AND METHODS:** A total of 30 patients, with Hypothyroidism detected within one year from study onset was evaluated by Ultrasonography and FNAC of thyroid to arrive at an etiological diagnosis. Anti-Thyroid peroxidase antibody estimation was done for all the patients and levels were compared and contrasted with respect to various histological diagnosis. **RESULTS:** Among the cases 15 patients (50%) had FNAC proven Hashimoto's thyroiditis. Among them 11 patients (73%) had high Anti TPO levels and 4 patients (23%) had normal levels. 6 patients (6.6%) had colloid and nodular goiter each. Among those with colloid goiter high Anti TPO levels was seen in 3 patients and 3 had normal levels. In those with Nodular goiter high Anti TPO levels was seen in 2 patients and 4 had normal levels. Lymphocytic thyroiditis, Degenerative nodules and Follicular neoplasm was seen in 1 patient each. High Anti TPO antibodies was seen in Lymphocytic thyroiditis and Follicular neoplasm, and normal level in Degenerative nodule. **CONCLUSION:** Elevated Anti TPO antibodies in a patient with Hypothyroidism is an indicator of autoimmune thyroiditis.

**KEYWORDS:** Hypothyroidism, Anti TPO antibodies, Hashimotos thyroiditis.

**INTRODUCTION:** Hypothyroidism is characterized by a broad clinical spectrum ranging from an overt state of myxedema and end organ effects to an asymptomatic or subclinical condition with normal levels of thyroxin and triiodothyronine. The prevalence of hypothyroidism in the developed world is about 4-5%. The prevalence of subclinical Hypothyroidism in the developed world is about 4-15%.<sup>1</sup>

Ever since India adopted the universal salt iodization program in 1983, there has been a decline in goiter prevalence in several parts of the country, which were previously endemic. In 2004, a WHO assessment of global iodine status classified India as having "optimal" iodine nutrition. India is supposedly undergoing a transition from iodine deficiency to iodine sufficiency state.<sup>1</sup>

According to a projection from various studies on thyroid disease, it has been estimated that about 42 million people in India suffer from thyroid diseases.<sup>2</sup> Among adults in India, the prevalence of hypothyroidism has been recently studied. In a population based study done in Cochin on 971 adult subjects, the prevalence of hypothyroidism was 3.9%. The prevalence of subclinical hypothyroidism was higher in women 11.4%, when compared to men, in whom it was 6.2%. The prevalence of subclinical hypothyroidism increased with age. About 535 of subjects with subclinical Hypothyroidism were positive for anti-TPO antibodies.

Population studies have suggested that about 16.7% of adult subjects have anti-TPO antibodies and about 12.1% have anti- thyroglobulin antibodies.<sup>3</sup>

This study aims to find a correlation between Anti TPO antibody levels and FNAC in patients with Hypothyroidism.

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**AIM OF THE STUDY:** To generate comparative clinical data between Anti TPO antibodies and FNAC in the diagnosis of Hypothyroidism in 18–60 year age group.

**MATERIALS AND METHODS:** The present study was carried out in Victoria Hospital and Bowring and Lady Curzon Hospital, attached to Bangalore Medical College and Research Institute, Bengaluru, for the period of two years from October 2012 to October 2014.

In this study, 30 patients with Hypothyroidism were evaluated to find out the etiology of Hypothyroidism. A detailed clinical examination and relevant laboratory investigations were done for all patients. USG thyroid and FNAC of thyroid was done for all patients to ascertain the etiology. Anti TPO antibodies was done for all the patients.

Patients with newly detected hypothyroidism, who had been on treatment for hypothyroidism for more than one year were included in the study. All patients were in the age group of 18–60 years. Patients with Diabetes were also involved in the study.

Patients who did not fit into the age criteria, who had undergone total thyroidectomy or on anti-thyroid drugs were excluded from the study. Patients on thyroxin for more than one year, on steroids and Pregnant and lactating women were also excluded from the study.

Based on the data collected, descriptive statistical analysis was done. Categorical measurements are expressed in percentage. Microsoft word and excel were used to generate charts and tables.

### RESULTS:

- In our study, FNAC proven aetiopathology of hypothyroidism in cases were as follows:
- Hashimotos thyroiditis in 15(50%) patients.
- Colloid Goitre in 6(20%) patients.
- Nodular Goitre in 6(20%) patients.
- Degenerative nodules in 1(3.33%) patient.
- Lymphocytic thyroiditis in 1(3.33%) patient.
- Follicular neoplasm in 1(3.33%) patient.

The distribution of etiology among patients with Subclinical Hypothyroidism was as follows: Hashimotos thyroiditis in 3(30%), Colloid goiter in 4(40%), Nodular goiter, Follicular neoplasm and Degenerative nodule in 1(10%) each.

The distribution of etiology among patients with Overt Hypothyroidism was as follows: Hashimotos thyroiditis in 12(60%), Nodular Goiter in 5(25%), Colloid Goiter in 2(10%), and Lymphocytic thyroiditis in 1(5%).

The following observations were made regarding the status of Anti TPO antibodies among various etiological subgroups: In patients with Hashimotos thyroiditis, 11(73%) had high Anti TPO antibodies and 4(27%) had normal antibodies. In patients with Colloid Goiter, the distribution of Anti TPO was equal; 3(50%) had normal antibodies and 3(50%) had high antibody status. In patients with Nodular goiter, 2(33.3%) had high antibody titre and 4(66.6%) had normal antibodies. Both Lymphocytic thyroiditis and follicular neoplasm had high Anti TPO antibody titre, whereas degenerative nodule had normal titre. Among patients with Subclinical Hypothyroidism (10 out of 30), 6(60%) had high Anti TPO antibodies and 4(40%) had Normal Anti TPO antibodies. Among patients with Overt Hypothyroidism 13 patients (Out of 20, 65%) had high Anti TPO antibodies and 7 patients

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had normal Anti TPO antibodies. The data correlates well with other studies on the aetiology of Hypothyroidism in Iodine sufficient areas.

**DISCUSSION:** The present study consisted of 30 cases of Hypothyroidism with the average age of 37.13 years+/-5.27 years. Among the cases, 40% (12pts) were in the 30–44 year age group. 30% (9pts) each, were in the 18–29 age group and 45–60 year age group. Among the cases studied 96.6% (29) were females and 3.33% (1) was male.

The presentation of hypothyroidism was as overt hypothyroidism in 20 (66.66%) patients and as Subclinical Hypothyroidism in 10(33.33%) patients. The data correlates well with other studies on the aetiology of Hypothyroidism in Iodine sufficient areas.

In a study by Kumar KV and Priya S et. al.<sup>3</sup> Out of 50 patients 11 had goiter and subclinical hypothyroidism in 28% (14 out of 50 patients) and was more frequent in Anti TPO positive patients. 40% (20 out of 50 patients) had autoimmune thyroid disease. In our study, 12 out of 30 had goiter and subclinical Hypothyroidism was present in 33.3% (10 out of 30 patients). 5 out of the 12 goiter patients had high Anti TPO. 50% had autoimmune thyroiditis.

In a study by Legakis I and Manousaki M et al.<sup>4</sup> 909 patients were assessed on OPD basis and 30.4% had Positive Anti TPO antibodies. The positivity was correlated with abnormally high TSH concentrations, especially in female population. 7.2% of female patients had hypothyroidism. In our study 63. 3% patients had high Anti TPO antibody concentrations.

In a study by Kasagi K and Takahashi N<sup>5</sup> 1818 Japanese adults were assessed for Hypothyroidism based on clinical and biochemical parameters and prevalence of overt hypothyroidism was found 0.7% and subclinical hypothyroidism was 5.8%. Anti TPO antibodies was positive in 17.7% of men and 31.4% of women.

**CONCLUSION:** From our study and other above mentioned studies it is evident that autoimmune thyroiditis is emerging as a common cause of Hypothyroidism. Measuring Anti TPO antibodies in patients with subclinical hypothyroidism is an indicator of underlying autoimmune pathology.

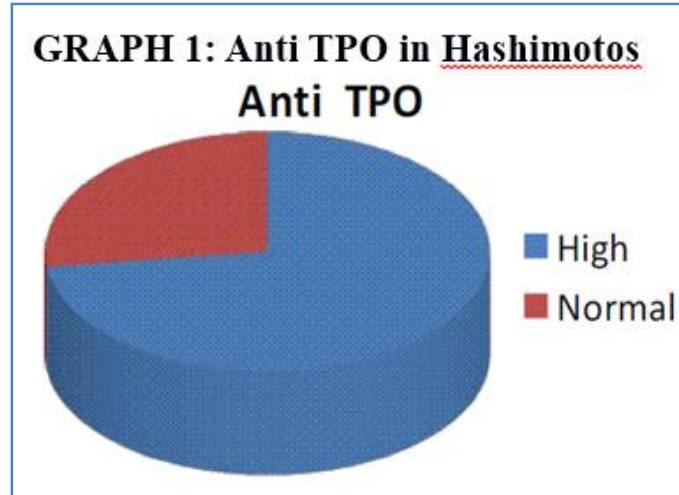
Aetiology	No.	%
Hashimotos thyroiditis:	15	50%
Colloid goitre:	06	6.66%
Nodular goitre:	06	6.66%
Lymphocytic thyroiditis:	01	3.33%
Degenerative Nodules:	01	3.33%
Follicular neoplasm:	01	3.33%

Table 1: Aetiopathogenesis of Hypothyroidism based on FNAC

Anti TPO levels In Hashimotos:	No. of patients
High	11(73%)
Normal	04(27%)

Table 2: Anti TPO in Hashimotos thyroiditis

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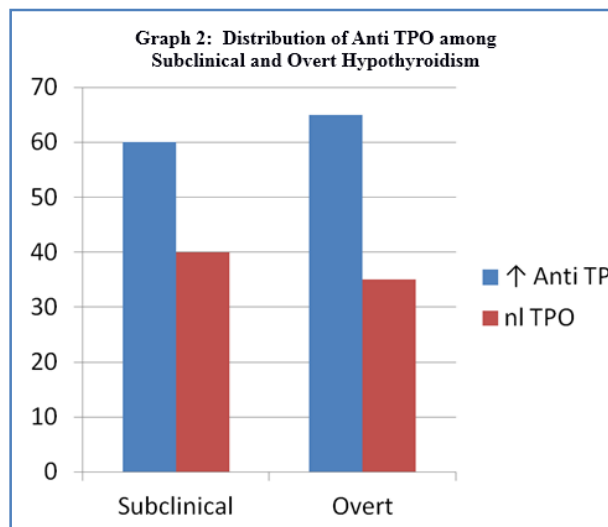


Anti TPO	Goiter:	
	Colloid:	Nodular:
High	03	02
Normal	03	04

Table 3: Anti TPO in Goitre

	Subclinical Hypothyroidism (10 patients)	Overt Hypothyroidism (20 patients)
Anti TPO ↑	6 (60%)	13 (65%)
Anti TPO (wnl)	4 (40%)	07 (35%)

Table 4: Distribution of Anti TPO in Overt and Subclinical Hypothyroidism



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