

## Correlation of anti-thyroid peroxidase antibody levels with status of thyroid function among the tribal population residing in hilly area

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### Abstract

**Background:** Autoimmune thyroid diseases are most frequent thyroid disorders among young females. Among autoimmune thyroid disorders, Hashimoto's thyroiditis is the most common one. The most reliable confirmatory diagnostic test is estimation of anti-thyroid peroxidase (TPO) levels in blood. The present study deals with estimation of anti-TPO levels in relation to age, gender and thyroid stimulating hormones (TSH) in the tribal region of Wayanad, Kerala, India.

**Objective and Methods:** In the present study, total 100 cases have been selected where anti-thyroid peroxidase antibodies and thyroid stimulating hormone (TSH) levels have been estimated.

**Result:** Our present study includes total 100 cases. 57 cases show raised TPO antibodies. Hence 57% cases are considered to be having Hashimoto's thyroiditis. Most common age group affected by Hashimoto's thyroiditis is 3<sup>rd</sup>-4<sup>th</sup> decade females. Out of 57 cases showing raised TPO antibodies, 27 cases (47%) shows raised TSH values, so considered to be hypothyroid. 21 cases (37%) show normal TSH value, hence are euthyroid. Lastly, 9 cases (16%) show low TSH value, are hyperthyroid.

**Conclusion:** Hashimoto's thyroiditis patient can manifest as hypothyroid, euthyroid as well as hyperthyroid, hence only clinical findings with estimation of T3, T4 and TSH doesn't suffice for diagnosis. Around 20% of cases do present with hyperthyroidism, hence in addition to anti thyroglobulin (for Grave's disease), one has to test for Anti TPO antibodies level to rule Hashimoto's thyroiditis with toxic features.

**Keywords:** Thyroid peroxidase, Thyroid stimulating hormone, Hashimoto's, Hypothyroidism

### Introduction

Autoimmune thyroid diseases are most frequent thyroid disorders among young females. Anti-thyroid peroxidase (TPO) antibody is one among various thyroid autoantibodies which are important in inducing autoimmune thyroid diseases. Thyroid autoimmunity can cause several forms of thyroiditis and abnormal thyroid functions, ranging from hypothyroidism to hyperthyroidism. Among autoimmune thyroid disorders, Hashimoto's thyroiditis is the most common one.<sup>(1,2,3)</sup> The most reliable confirmatory diagnostic test is estimation of anti-thyroid peroxidase levels in blood. The present study deals with estimation of anti-thyroid peroxidase levels in relation to age, gender and thyroid stimulating hormones (TSH) in the tribal region of Wayanad, Kerala, India.

### Materials and Methods

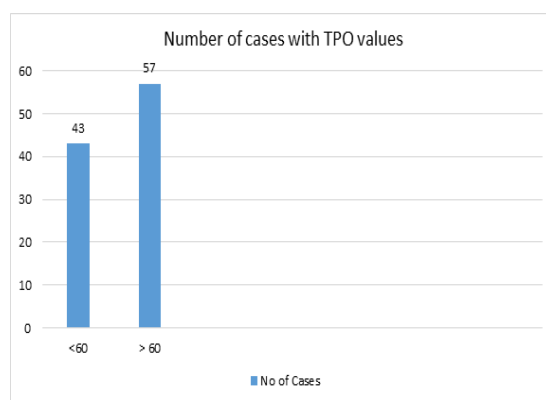
In the present study, total 100 cases have been selected where anti-thyroid peroxidase antibodies and thyroid stimulating hormone (TSH) levels have been estimated. All the cases are newly diagnosed without any prior treatment history. The ethical committee/review board has given approval for conducting the study.

### Results

Our present study includes total 100 cases. Normal TPO antibodies is considered as values < 60 U/ml. Any value more than 60U/ml is considered as abnormal rise of TPO antibodies.

In our study, Thyroid stimulating hormone levels has been taking into consideration to assess the thyroid function as it is stable and reliable when compared to T3, T4 levels which show frequent variation to stress, food habits as well as diurnal.

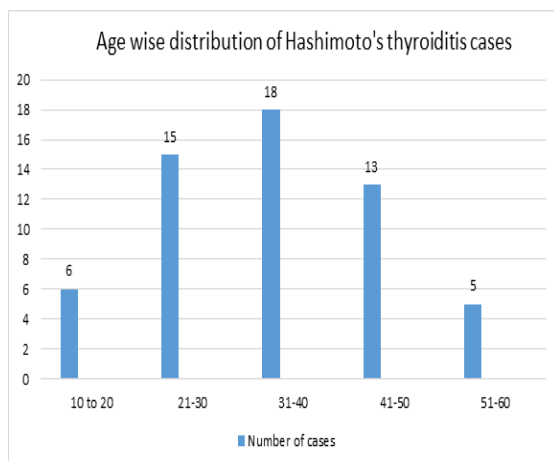
Out of 100 cases, 57 cases show raised TPO antibodies. Hence 57% cases are considered to be having Hashimoto's thyroiditis.



**Fig. 1: It represents total cases included in the study with Anti-TPO values**

Age wise distribution of 57 cases:

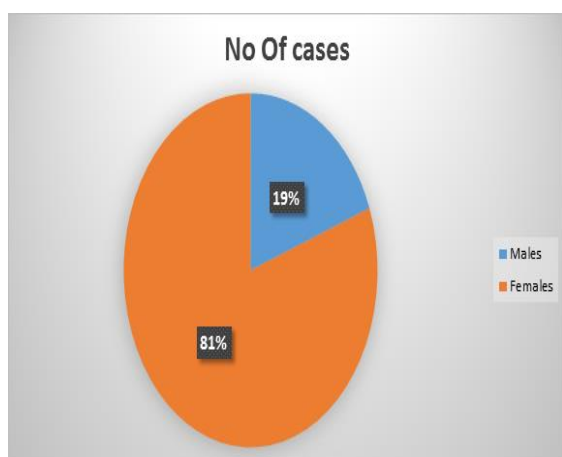
Most common age group affected by Hashimoto's thyroiditis is 3<sup>rd</sup>-4<sup>th</sup> decade.



**Fig. 2:** It represents age wise distribution of cases with raised Anti-TPO antibodies

Gender wise distribution of 57 cases:

Females suffer more when compared to male population.



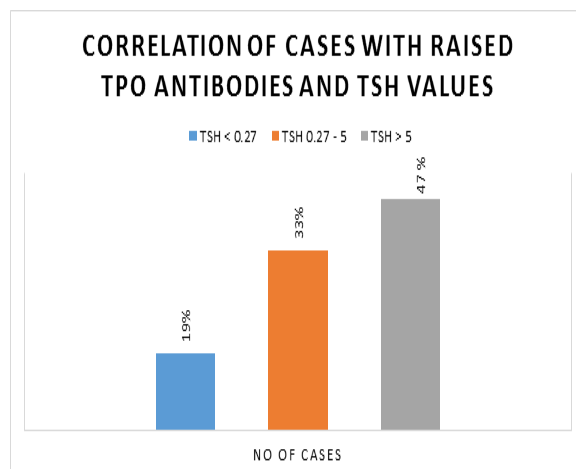
**Fig. 3:** It represents the gender wise distribution of cases with raised Anti-TPO antibodies

Correlation of TSH values with cases of raised TPO values (57 cases)

Normal TSH values is 0.27 to 5 IU/ml

Out of 57 cases showing raised TPO antibodies, 27 cases (47%) shows raised TSH values, so considered to be hypothyroid. 21 cases (37%) show normal TSH value, hence are euthyroid. Lastly, 9 cases (16%) show low TSH value, are hyperthyroid.

Hence to diagnose Hashimoto's thyroiditis, only doing T3, T4, TSH values doesn't suffice, Anti-TPO antibodies to be done to confirm the diagnosis. Proven cases of Hashimoto's can manifest as hypothyroid (47%), euthyroid (33%) as well as hyperthyroid (19%).



**Fig. 4:** It shows correlation between cases with raised Anti-TPO antibodies and TSH values

### Discussion

Hashimoto's thyroiditis is a most common autoimmune thyroid disease in the hilly and tribal region of Wayanad, Kerala, India. Hashimoto's thyroiditis is more common in females when compared to males. In our study, we found that 81% are females and 19% are males. This data is correlating with most of the studies conducted by Ghoraishian et al,<sup>(1)</sup> Dr. SalmanAziz Al-Juburi et al,<sup>(2)</sup> Fatourechi.<sup>(3)</sup> Considering age wise distribution from our study, Hashimoto's thyroiditis is more common in the age group 31-40 years, consists of about 1/3<sup>rd</sup> cases, which is correlating with the study conducted by Cyriac T et al,<sup>(6)</sup> Mahashabde M et al,<sup>(10)</sup> Samuels et al,<sup>(13)</sup> Duntas et al.<sup>(12)</sup> Now, we are correlating 57 cases of high TPO antibody titer with TSH values. Our study shows 47% of cases show high TSH values, hence hypothyroid, 37% of cases show normal TSH values and hence euthyroid and 16% of cases show low TSH values, hence hyperthyroid. Our study is well correlated with study conducted by Mohanthy S et al,<sup>(5)</sup> Jeena EJ et al,<sup>(7)</sup> Seror J et al,<sup>(8)</sup> Ghitany MK et al,<sup>(9)</sup> Heuck CC et al,<sup>(16)</sup> Cooper DS.<sup>(15)</sup>

### Conclusion

To conclude we are going to summarize the well correlated findings of this study.

1. Hashimoto's thyroiditis is more common among females of 3<sup>rd</sup> decade.
2. Hashimoto's thyroiditis patient can manifest as hypothyroid, euthyroid as well hyperthyroid, hence only clinical findings with estimation of T3, T4 and TSH doesn't suffice for diagnosis.
3. Around 20% of case do present with hyperthyroidism, hence in addition to anti thyroglobulin (for Grave's disease), one has to test for Anti TPO antibodies level to rule Hashimoto's thyroiditis with toxic features.

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There is no conflict of interests in the present study.

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