

Assessment of thyroid functions and anti-thyroid peroxidase antibodies in patients with vitiligo in a tertiary care Hospital

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Abstract

Background: Vitiligo is a common skin disorder, and the pathogenesis is unknown. An increased prevalence of autoimmune thyroid diseases has been described in these patients.

Objective: to assess the prevalence of thyroid dysfunction and hypoparathyroidism in patients with vitiligo.

Methods: One hundred and twenty patients (48 males and 72 females) with vitiligo were enrolled. Thyroid physical examination was carried out. Thyroid function tests, thyroid antibodies, calcium and phosphorus were assessed. The collected data were analyzed.

Results: Thyromegaly was found in 32.1% of patients. In 16 patients (15.7%), TSH levels were more than normal, and in 12 of them, it was more than 5 mIU/l. In these 16 cases, there were 12 females and 4 males. Antibody positivity was the most common disorder (anti-TPO and anti-tg were positive in 38.7 and 34.1%, respectively). No patient had hypoparathyroidism.

Conclusion: Thyroid dysfunction, particularly hypothyroidism and thyroid antibodies increased in patients with vitiligo.

Keywords: Thyroid antibodies, Thyroid dysfunction, Vitiligo

Introduction

Vitiligo is one of the most common skin disorders with a prevalence of 1-2% in different populations. The condition occurs when pigmented cells are destroyed, causing patches of skin to lose their normal color and appear whiter.^(1,2) The etiology of this disorder is not clear but different theories suggest that autoimmune, genetic disorders, toxic metabolites, oxidative stimuli are the main factors. The nervous system and or the absence of the melanocyte growth factor may be included.⁽³⁾

From these factors, autoimmune disorder is the most common cause and some of the patients have antibodies to melanocytes or melanocytic proteins. Although it is not confirmed that these antibodies cause disease or lead to melanocyte destruction, there is some evidence that cell-mediated immunity plays a role in melanocyte destruction.⁽⁴⁻⁶⁾ Autoimmune thyroid diseases with prevalence of up to 30% accompany vitiligo, from which hypothyroidism is one of the most common disorder.⁽¹⁾ In a study of 121 children with vitiligo, 16% showed some abnormalities in the thyroid function tests, The antithyroid peroxidase antibody (Anti-tpo) was the most common disorder. In other study, the prevalence of autoimmune disorders, including thyroid disease, was more common than that of the general population.⁽²⁾ Dave et al showed that the frequency of thyroid disorders (endocrine and or immunologic or both) were 57.1% in people with vitiligo in comparison to 10% in people without vitiligo. Thirty-four percent of patients in their study had thyroid antibodies.⁽⁷⁾

Manighalam and colleagues conducted a study on 30 patients with vitiligo and they found

hyperthyroidism and hypothyroidism in 10 and 6.6%, respectively.⁽⁸⁾ The aim of this study is to access the incidence of thyroid dysfunction and antithyroid antibodies in patients attending skin OPD with vitiligo.

Methods

This was a prospective study conducted between 2013 and 2015 in KMCT Medical College hospital. A total of 120 patients with vitiligo (48 males and 72 females) with a mean age of 34.4±13 years were selected. Institutional ethics committee's clearance was obtained prior to start of the study.

A dermatologist diagnosed the condition as vitiligo at least 5 months before the initiation of the study. All the patients underwent thyroidal physical examination for the presence of goiter.

Thyroid stimulating hormone (TSH), T3 and T4 were measured using the ELISA test (DRG-USA kit). The anti-TPO and anti-thyroglobulin antibody (Anti-Tg) were measured using the ELISA test (DRG-USA kit) the normal range being below 30.

Serum calcium and phosphorus were measured in all patients, and if the results were abnormal, the measurement was repeated and parathyroid hormone (PTH) was measured as well.

Statistical analysis

Student's t-test/chi-square/and Mann-Whitney U tests were performed. All the data was analysed with SPSS, version 13.

Results

One hundred and twenty patients were enrolled. The mean age was 34.41±13 (CI: 8-65) years [72

females (65%) and 48 males (35%]. Seventy-eight patients had a normal thyroid size and 34 patients (30.1%) had goiter.

The laboratory findings are shown in Table 1.

Table 1: Laboratory investigations in patients with vitiligo

	Mean	SD	Range
TSH (mIU/L)	2.15	±5	0.3-3.5
Anti-Tg (IU/ml)	212	±482	<30
Anti-Tpo (IU/ml)	248	±649	<30
Ca++ (mg/dl)	9.1	±0.5	8.5-10.5
P (mg/dl)	3.1	±0.57	2.5-5.5

Nineteen patients (17.4%) had abnormal TSH levels and in three patients (3.2%), the TSH level was less than normal, one patient had Grave's disease and in another two patients, T3 and T4 were normal.

In 16 patients (15.7%), TSH levels were more than normal, and in 12 of them, it was more than 5 mIU/l. In these 16 cases, there were 12 females and 4 males. Two patients had clinical hypothyroidism. Anti-Tpo and anti-Tg antibody were positive in 41 (38.7%) and 37 (34.1%) cases, respectively. Thirty-four patients had goiter, from which 14 of them (42.4%) had abnormal TSH levels and this correlation was significant with Mann-Whitney U test ($P = 0.002$) and 21 of them (67.7%) had anti-Tpo antibody ($P = 0.001$).

There was a positive correlation between TSH and anti-Tpo antibody ($r = 0.4$, $P = 0.002$).

One case had serum calcium levels less than normal and two had increased serum phosphate levels, which was normal after tests was repeated and PTH was normal in all cases. Therefore, no patient had hypoparathyroidism.

Discussion

Vitiligo is a common skin disorder in which skin depigmentation is due to destruction of melanocytes and decreased melanin. Although the exact pathogenic processes involved in the destruction of melanocytes in vitiligo are still unknown, autoimmune melanocytic destruction have been advocated.⁽³⁾ This disorder always accompanies other autoimmune diseases, and the presence of autoantibodies is used to prove this theory.⁽¹⁰⁾

We carried out this study in order to determine the association between autoimmune thyroid diseases, parathyroid disorder with vitiligo. Eighteen (16.7%) patients had overt thyroid disorders with hypothyroidism as the most common presentation and one patient had Grave's disease. These results can be compared to those of other studies.

In a study that was performed on 121 children with vitiligo, nine patients had hypothyroidism and one

patient had hyperthyroidism.⁽¹⁾ In another study that was conducted in India, the thyroidal disorders were more common and in 35 patients with vitiligo, 40% had thyroidal dysfunction and 34.1% were anti-tpo antibody positive.⁽⁷⁾ In a research that was carried out on 30 patients with vitiligo in Iran, hyperthyroidism and hypothyroidism was observed in 10 and 6.6% cases, respectively.⁽⁸⁾ In a report, there was no thyroidal dysfunction, but the anti-tpo antibody positivity was more than that of the control group.⁽⁹⁾

The important findings of this study were the increased positivity of anti-tpo and anti-tg antibodies.

38.7% and 34.1% of cases had elevated anti-tpo antibody and anti-tg antibody, respectively.

In other studies, the positive anti-tpo antibody and Anti-tg antibody were the most common disorders. In a study, the positive anti-tpo antibody was observed in 10% children; however, this can be due to the lower age group of this study, in which the children normally have lower antibody level than that of the adults.

In a study by Daneshpazhooh et al, increased anti-tpo antibody levels were found in approximately 18% of their patients.⁽⁹⁾ Although the frequency of positivity of anti-tpo antibody in their study was different to our findings, it could be due to the age group of their study sample and also female was more predominant in our study.

In a study in India, the anti-Tpo antibody was positive in 31.4% cases, which was similar to this study conducted in Andhra Pradesh.⁽⁷⁾ In a study that was conducted in UK in 40 patients, 34% had positive anti-thyroid antibody,⁽¹¹⁾ and in a report from Australia, 106 patients 21% had positive anti-thyroid antibody.⁽¹²⁾ In Greece, in 54 children and adult cases with vitiligo, the prevalence of anti-tpo antibody was 24.1%.⁽¹³⁾

34 patients (301%) had some degree of goiter and most of them were women. Further, in another study that was performed, the prevalence of goiter was 20%.⁽⁹⁾

This may be due to high number of women in our study, who normally have more thyroid enlargement than men.

There are few studies that search the relation between vitiligo and hypoparathyroidism.

In a study by Betterle et al, the prevalence of autoimmune parathyroid disease in patients with vitiligo was 1%.⁽¹⁴⁾ There was no abnormalities in serum calcium, phosphorus and PTH levels; therefore, we did not detect any patients with hypoparathyroidism.

In conclusion, this study showed that the autoimmune thyroid diseases, most commonly hypothyroidism and autoimmune thyroiditis that are confirmed with the presence of anti-thyroid antibody, are more common in patients with vitiligo than general population.⁽¹⁵⁾

Conclusion

It is recommended that the measurement of the TSH levels and anti-Tpo antibodies in all the patients with vitiligo and all of them who have a high level of anti-Tpo antibodies should be followed-up annually with TSH.

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Conflict of Interest: Nil.

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