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Original Article

Frequency of positive thyroid peroxidase antibody levels in patients of generalized vitiligo

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Abstract

Objective To determine the frequency of positive thyroid peroxidase antibodies in patients of generalized vitiligo.

Methods This cross sectional study was conducted in the Dermatology Unit 1 of Jinnah Hospital, Lahore for a period of six months. 125 cases of generalized vitiligo, of both genders, ages between 15-60 years, and with any duration of disease were enrolled.

Results A total of 125 cases of generalized vitiligo were enrolled. 61.6% (n=77) patients were between 15-30 years of age whereas 38.4 % (n=48) were between 31-60 years of age, Mean was calculated as 31.56±7.77 years, 56.8% (n=71) were male and 43.2% (n=54) were females. Frequency of positive thyroid peroxidase antibodies in patients of generalized vitiligo was recorded in 32.8% (n=41).

Conclusion The frequency of positive thyroid peroxidase antibodies is significant in patients of generalized vitiligo.

Key words
Generalized vitiligo, thyroid peroxide antibodies, autoimmune.

Introduction

Vitiligo is common acquired disorder characterized by well circumscribed milky white macules and patches that are devoid of melanocytes. It affects 0.1-2% of world's population with equal incidence in both sexes.[1]

The exact cause of vitiligo is unknown. The autoimmune theory is most widely accepted.[2] This theory is supported by the presence of circulating antibodies against the melanocyte cell surface antigens in the patients of vitiligo.[3] Among the autoimmune disorders the strongest association is with thyroid disease.[2]

Hashimoto's thyroiditis and Grave's disease are the most important and prevalent autoimmune thyroid diseases and are associated with elevated anti-thyroid peroxidase (anti- TPO) antibodies.[4] Anti-thyroid peroxidase antibodies are directed against thyroid peroxidase, an enzyme which is involved in iodination of tyrosine residues.[5]

Patients with co morbid autoimmune diseases are more likely to have generalized vitiligo compared with patients without associated diseases.[5] The frequency of co morbid autoimmune diseases is significantly elevated in patients with vitiligo and in their first-degree relatives, suggesting auto immune etiology for

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this disorder.[6]

The anti-TPO antibody is a sensitive tool for detection of early subclinical autoimmune thyroid disease. It has been shown to cause destruction of the thyroid cells.[7]

On reviewing the literature there was no study that measured anti-TPO as marker of autoimmune thyroid disease in patients of vitiligo in Pakistan. So this study is planned to evaluate the prevalence of anti-TPO antibodies in patients of vitiligo and it would be helpful for early diagnosis of subclinical cases of thyroid disease in patients of generalized vitiligo and will provide baseline data from local population.

Methods

This study was cross sectional study carried out in Dermatology unit 1 of Jinnah Hospital, Lahore for the period of six months from 28th February, 2018 to 28th August, 2018. Clinically diagnosed patients of generalized vitiligo as per operational definition, of ages 15-60 years, both genders and with any duration of vitiligo were included. However patients with known/ diagnosed cases of thyroid disease. Patients who have undergone thyroid surgery or radiotherapy. Patients on thyroxine or anti-thyroid medications were excluded.

Thyroid peroxidase antibody levels of all patients were measured in the same laboratory. 3cc of blood was collected in the serum vial and sent to laboratory. Patients having a level of more than 35IU/ml were labeled 'positive'. All the data was entered in a proforma.

The data was analyzed by SPSS 20. Numerical variables like age and duration of vitiligo was measured by mean and standard deviation. Categorical variables like gender, type of generalized vitiligo and positive thyroid peroxidase antibody levels were measured by frequency and percentages. The data was stratified for age, gender, duration of vitiligo, type of generalized vitiligo. Chi square test was used post-stratification with p-value <0.05 considered as significant.

Results

A total of 125 cases fulfilling the inclusion/ exclusion criteria were enrolled to determine the frequency of positive thyroid peroxidase antibodies in patients of generalized vitiligo.

Age distribution showed that 61.6% (n=77) were between 15-30 years of age whereas 38.4% (n=48) were between 31-60 years of age, mean±SD was calculated as 31.56±7.77 years **(Table 1)**.

Frequency of anti-TPO antibody positive patients in age group 15-30 years was 27.2% (n=21) and frequency of anti-TPO antibody positive patients in age group 31-60 years was 41.6% (n=20).

Gender distribution showed that 56.8% (n=71) were male and 43.2% (n=54) were females. **(Table 2)**.

Frequency of thyroid peroxidase antibody positive males were 43.6% (n=31) and frequency of thyroid peroxidase antibody positive females were 18% (n=10).

Frequency of type of generalized vitiligo showed that 38.4% (n=48) had mixed type of vitiligo, 45.6% (n=57) had vulgaris and 16% (n=20) had acrofacial type of generalized vitiligo **(Table 3)**.

Frequency of positive thyroid peroxidase antibodies in patients of generalized vitiligo was recorded in 32.8% (n=41) **(Table 4)**.

The data was stratified for age, gender, duration of vitiligo, type of generalized vitiligo. Chi square test was used post-stratification with p value <0.05 considered as significant.

Frequency of positive thyroid peroxidase antibodies in patients of mixed vitiligo was 31.7% (n=13), in vitiligo vulgaris was 43% (n=18) whereas it was 24% (n=10) in patients of acrofacial vitiligo.

Frequency of patient with duration of vitiligo more than 3 months was 61.6% (n=77) and those with duration of vitiligo 1-3 months was 38.4% (n=48).

Discussion

Vitiligo is defined as a specific, common, often heritable, and acquired dermatological disorder characterized by well-circumscribed, milky-white cutaneous macules and patches devoid of identifiable melanocytes. Vitiligo affects 0.1–2% of the world's population. It is believed that vitiligo is a multifactorial polygenic disorder with a complex pathogenesis

Autoimmune theory is most widely accepted as vitiligo is frequently associated with autoimmune thyroid disease and other autoimmune or immune-mediated diseases suggesting auto immune pathogenesis.[8-10] These autoimmune thyroid diseases are characterized by elevated serum antibodies directed against thyroid-specific antigens like thyroid peroxidase (TPO) and thyroglobulin (Tg). A mean prevalence of 20.8% has been reported in patients with vitiligo for thyroid-specific autoantibodies.[10]

The mean age of the participants in our study was 31.56±7.77. Other investigators have also reported that majority of vitiligo cases have an onset in and around 2nd and 3rd decade of life.[1] However, Dogra *et al.* and 2 others reported a late onset of the disease, with a mean age of 55 years.[11] These data reinforce that vitiligo is a disease that can occur at any age.[12]

The number of patients with positive thyroid peroxidase antibodies was equal in age groups 15-30 years and 31-60 years.

In our study, male participants (56.8%) formed the majority. The proportion of males in the anti-TPO Ab positive group was higher than females in the anti-TPO Ab positive group (P value 0.003). This is in contrary to the data reported by Dash *et al.* and 2 others who showed that the frequency of the females with vitiligo and anti-TPO ab was higher as earlier studies have shown that vitiligo being an autoimmune disease could be more common in females.[1] Majumder *et al.* reported that males have 7years earlier onset of vitiligo but since vitiligo causes cosmetic aberrations, it could be generating higher concerns in females, leading to increased and earlier attendance of females in dermatology OPD.[12]

In our study vitiligo vulgaris (45.6%) was the commonest form of generalized vitiligo and results were comparable to the findings of Dash *et al*.[1] A study conducted by Dash *et al.* reported that incidence of anti-TPO antibodies. These findings are consistent with the study done by Dash *et al.* and 2 others that showed the frequency of thyroid peroxidase antibody as 28% in patients of vitiligo.

A study conducted by Maryam Daneshpazhooh and others[13] compared the frequency of thyroid peroxidase antibody (anti-TPO) in vitiligo patients with healthy subjects in Iran, it was recorded that anti-TPO was detected in 17 (18.1%) of patients affected by vitiligo, while this figure was 7 (7.3%) in the control group; the difference was significant with p-value <0.025

(Phi & Cramer's V=0.162). When analyzing subgroups, the difference in the frequency of anti-TPO remained significant only in females (pvalue <0.044) (Phi & Cramer's V=0.207) and in patients in the age ranges of 18–25 (p-value <0.05) (Phi & Cramer's V=0.28) and 26–35 year-old (p-value <0.042) (Phi & Cramer's V=0.304).

Mandry *et al.* assessed the presence and frequency of organ specific antibody in 20 patients with vitiligo and their relatives. They detected anti-microsomal and anti-thyroglobulin antibodies in 50% and 40% of their cases, respectively; they showed increased prevalence of organ specific antibodies in the relatives, as well.[14]

Morgan *et al.* also found higher prevalence of thyroid antibodies in vitiligo patients, especially in generalized vitiligo, compared with healthy people.[15]Dave *et al.* showed antibody positivity (anti-thyroglobulin, antiTPO) in 31.4% of their cases in India against 10% of their controls.[16]

It shows that the frequency of positive thyroid peroxidase antibodies in patients of generalized vitiligo varies in different population, however, no study measured anti TPO as marker of autoimmune thyroid disease in patients of vitiligo in Pakistan. This study evaluated the prevalence of anti-TPO antibodies in patients of vitiligo and it would be helpful for early diagnosis of subclinical cases of thyroid disease in patients of generalized vitiligo and provided baseline data from local population.

Conclusion

We concluded that the frequency of positive thyroid peroxidase antibodies is significant in patients of generalized vitiligo. Hence screening vitiligo patient with anti thyroid peroxidase antibody titre seems to be relevant as this antibody is sensitive and specific marker for autoimmune thyroid disease. However further local studies should be done with larger sample size.

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