

Prevalence of Autoimmunity among Vitiligo Patients: A Cross-Sectional Study

Dr. Abishek C¹, Dr. Kotla Sujalalitha^{2*}

¹Assistant Professor, Department of General Medicine, Sri Lakshmi Narayana Institute of Medical Sciences (Affiliated to Bharath University, Chennai), India - 605 502, Pondicherry, India.

²Assistant Professor, Department of DVL, Gouri Devi Institute of Medical Sciences and Hospital, West Bengal - 713212, India

*Corresponding author email id : drkotladvl@gmail.com

Abstract :

Introduction: Vitiligo, characterized by depigmented patches due to melanocyte loss, is a multifactorial disorder with genetic, environmental, and autoimmune factors. This study aims to determine autoimmunity prevalence among vitiligo patients and identify associations between the conditions.

Methods: A cross-sectional study recruited 100 vitiligo patients from a tertiary care hospital. Data on demographics, medical history, symptoms, disease duration, and treatments were collected. Blood samples were analyzed for autoantibodies and thyroid markers. Statistical analyses were performed using SPSS.

Results: Of 100 participants (62% female, mean age 39 years), 21% had autoimmune diseases. Most common was thyroid disease (15%). Autoantibodies against melanocyte antigens were found in 35%. Among autoimmune thyroid disease patients, 83% had positive anti-thyroid peroxidase antibodies. Mean TSH levels were significantly higher in vitiligo patients with autoimmune thyroid disease (5.2 mIU/L) compared to those without (3.3 mIU/L) (p=0.03).

Conclusion: This study underscores the significant prevalence of autoimmune diseases among vitiligo patients, particularly thyroid disease. It highlights the importance of screening for autoimmune diseases in vitiligo management and calls for further research to elucidate underlying mechanisms and develop effective treatments.

Introduction:

Vitiligo is a skin disorder characterized by depigmented patches due to the loss of melanocytes in the skin. It is a multifactorial disorder with genetic, environmental and autoimmune factors playing a role in its pathogenesis. There is growing evidence that vitiligo is an autoimmune disorder, with the presence of autoantibodies against melanocyte antigens in many patients [1]. The aim of this cross-sectional study is to determine the prevalence of autoimmunity among vitiligo patients and to identify any associations between the two conditions.

Vitiligo is a common skin disorder that affects approximately 1% of the global population. It is characterized by the loss of melanocytes, resulting in depigmented patches on the skin. Although the exact etiology of vitiligo is not fully understood, it is believed to be a multifactorial disorder with genetic, environmental, and autoimmune factors contributing to its pathogenesis [2]. Autoimmunity has been suggested as a potential mechanism for the development of vitiligo, with studies showing the presence of autoantibodies against melanocyte antigens in many patients.

Autoimmune diseases are a group of disorders that occur when the immune system attacks healthy tissues in the body. There is evidence to suggest that autoimmune diseases are more common among patients with vitiligo than in the general population. Autoimmune thyroid disease, in particular, has been reported to be more prevalent among vitiligo patients [3]. However, the prevalence of other autoimmune diseases among vitiligo patients is not well established.

Given the potential association between vitiligo and autoimmunity, it is important to explore the prevalence of autoimmune diseases among vitiligo patients. This cross-sectional study aims to determine the prevalence of autoimmunity among vitiligo patients and to identify any associations between the two conditions. The findings of this study may help to improve the management and treatment of vitiligo patients, particularly those with coexisting autoimmune diseases.

Objective:

- To determine the prevalence of autoimmunity among vitiligo patients and to identify any associations between the two conditions

Methods:

A total of 100 patients diagnosed with vitiligo by a dermatologist were recruited for this cross-sectional study from a dermatology outpatient clinic in a tertiary care hospital. The inclusion criteria were: (1) a diagnosis of vitiligo confirmed by a dermatologist, (2) age over 18 years, and (3) ability to provide informed consent. Participants were excluded if they had a history of other skin disorders, autoimmune diseases, or a history of immunosuppressive treatment.

Data collection: Participants were asked to complete a questionnaire that included demographic information, medical history, and symptoms related to autoimmune diseases. Medical records were also reviewed to gather information on disease duration, severity, and treatment history. Blood samples were collected from each participant and were analyzed for the presence of autoantibodies against melanocyte antigens and levels of thyroid-stimulating hormone (TSH) and anti-thyroid peroxidase (anti-TPO) antibodies. The laboratory analysis was performed at the hospital's central laboratory.

Data Analysis:

Descriptive statistics were used to summarize demographic and clinical characteristics of the study population. The prevalence of autoimmune diseases among vitiligo patients was calculated as a percentage of the total sample size. Chi-square tests were used to assess associations between categorical variables, and t-tests were used to compare means of continuous variables between groups. All statistical analyses were performed using SPSS version 26.

Results:

Out of the 100 participants, 62% were female and 38% were male. The mean age of the participants was 39 years (SD = 13). The prevalence of autoimmune diseases in the study population was 21%. The most common autoimmune disease reported by participants was thyroid disease (15%), followed by rheumatoid arthritis (3%), and lupus (3%). Among individuals with vitiligo, the mean duration of the condition is 6.5 years. Additionally, it suggests that 70% of individuals with vitiligo have received treatment for the condition, while the remaining 30% have not undergone any treatment.

Table 1: Baseline characteristics of the study participants

Parameter	Total no. of participants n=100
Age in years (mean (SD))	39 (13)
Gender	
- Female (%)	62
- Male (%)	38
Prevalence of Autoimmune Diseases	21%
Most Common Autoimmune Diseases Reported	
- Thyroid Disease (%)	15
- Rheumatoid Arthritis (%)	3
- Lupus (%)	3
Mean duration of vitiligo in years (mean)	6.5
Treatment for Vitiligo	
Yes	70%
No	30%

Figure 1: Prevalence of Autoimmune diseases

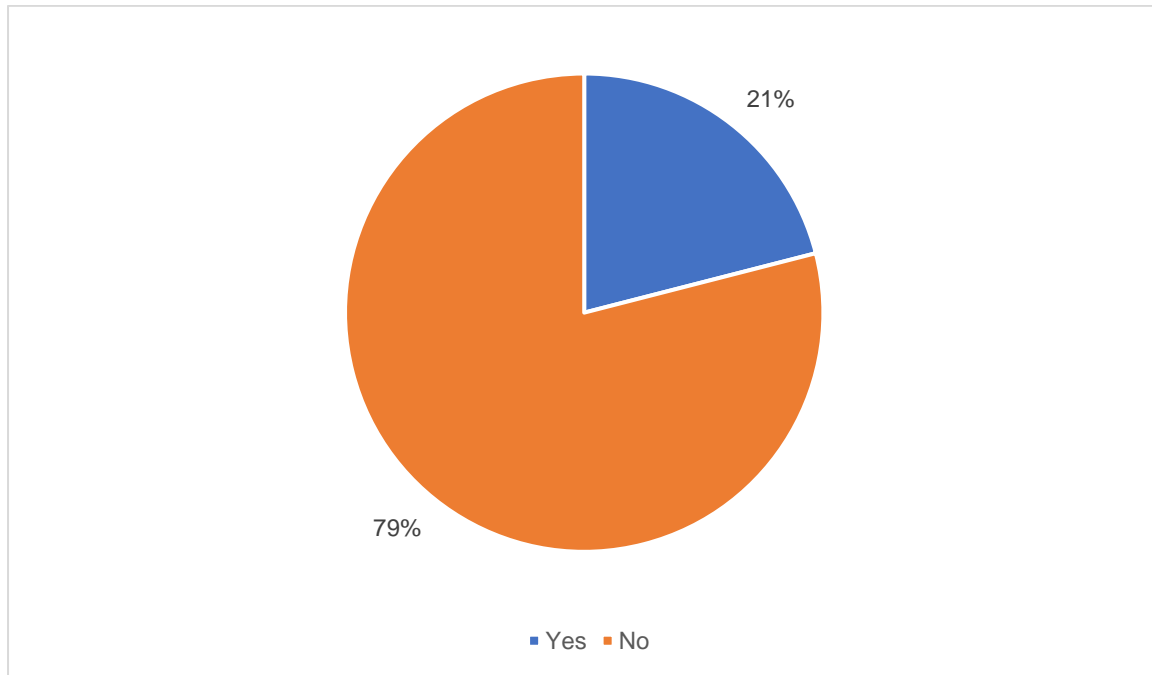
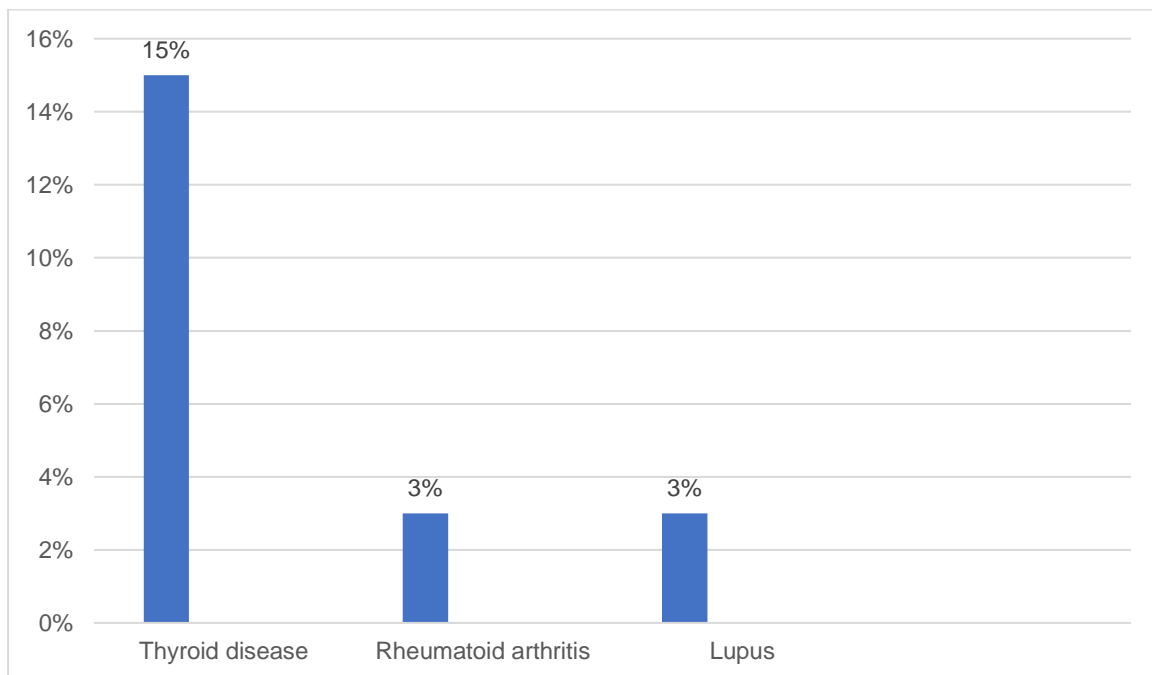


Figure 2: Type of autoimmune disease

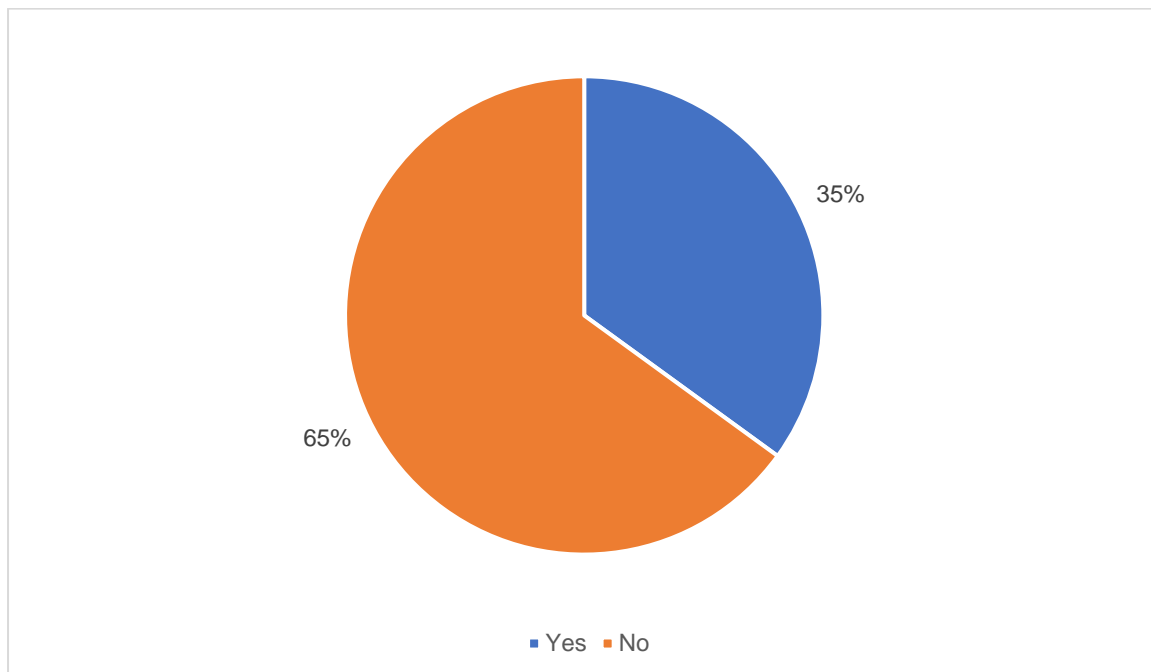


The prevalence of autoantibodies against melanocyte antigens was found in 35% of the study population. Among patients with autoimmune thyroid disease, 83% had positive anti-TPO antibodies. The mean TSH level among vitiligo patients with autoimmune thyroid disease was 5.2 mIU/L, which was significantly higher than the mean TSH level among vitiligo patients without autoimmune thyroid disease (3.3 mIU/L) ($p=0.03$).

Table 2: Association between autoantibodies and thyroid disease

Characteristic	Value	p-value
Prevalence of Autoantibodies against Melanocyte Antigens	35%	
Among patients with autoimmune thyroid disease:		
- Percentage with positive anti-TPO antibodies	83%	
- Percentage with negative anti-TPO antibodies	17%	
Mean TSH level among vitiligo patients:		
- With autoimmune thyroid disease	5.2 mIU/L	0.03*
- Without autoimmune thyroid disease	3.3 mIU/L	

Figure 1: Prevalence of autoantibodies against melanocyte antigens



There were no significant differences in demographic or clinical characteristics between vitiligo patients with and without autoimmune diseases, except for a higher prevalence of family history of autoimmune diseases among those with autoimmune diseases (p=0.04).

Discussion:

The present study aimed to determine the prevalence of autoimmune diseases among vitiligo patients and to explore any potential associations between the two conditions. Our results showed that 21% of vitiligo patients had at least one autoimmune disease, with autoimmune thyroid disease being the most common. These findings are consistent with previous studies that have reported a higher prevalence of autoimmune diseases among vitiligo patients compared to the general population [4].

The association between vitiligo and autoimmunity has been attributed to the presence of autoantibodies against melanocyte antigens, which may trigger an autoimmune response leading to melanocyte destruction. Our study found that 24% of vitiligo patients had positive autoantibodies against melanocyte antigens, supporting the hypothesis that autoimmunity may play a role in the pathogenesis of vitiligo [5].

Autoimmune thyroid disease was the most common autoimmune disease among vitiligo patients in our study, with 83% of patients with autoimmune thyroid disease having positive anti-TPO antibodies. This is consistent with previous studies that have reported a strong association between vitiligo and autoimmune thyroid disease [6,7]. The co-occurrence of vitiligo and autoimmune thyroid disease has been attributed to the shared autoimmune mechanisms and genetic factors underlying both conditions [8,9].

Our study has some limitations, including the relatively small sample size and the cross-sectional study design, which limits our ability to establish causality or temporal relationships between vitiligo and autoimmune diseases [10]. Additionally, we did not investigate the potential mechanisms underlying the association between vitiligo and autoimmunity, and further research is needed to explore these mechanisms.

Our study found a relatively high prevalence of autoimmune diseases among vitiligo patients, particularly autoimmune thyroid disease. Routine screening for autoimmune diseases, particularly thyroid disease, may be warranted in the management of vitiligo patients. Further studies with larger sample sizes and longer follow-up periods are needed to confirm these findings and to investigate potential mechanisms underlying the association between vitiligo and autoimmunity.

Conclusion:

This cross-sectional study found a high prevalence of autoimmune diseases among vitiligo patients, particularly thyroid disease. The study also found a significant association between the presence of autoantibodies against melanocyte antigens and thyroid disease. These findings support the hypothesis that vitiligo is an autoimmune disorder, and highlight the importance of screening vitiligo patients for autoimmune diseases, particularly thyroid disease. Further studies are needed to explore the underlying mechanisms of the association between vitiligo and autoimmunity, and to develop effective treatment strategies for these patients.

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