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ORIGINAL ARTICLE

Demographic and Clinical Insights into Vitiligo: A Cross-Sectional Study at a Tertiary Care Centre

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Abstract

Background: Vitiligo is a prevalent acquired pigmentary disorder with a worldwide incidence of 0.5%-2%, rising to 8.8% in India. Despite its non-lethal nature, it significantly impacts quality of life due to its psychosocial effects.**Aim:** To examine the demographic, etiological, and clinical profiles of vitiligo patients.**Methods:** This cross-sectional study was conducted at a tertiary care hospital involving 142 patients over a period of one year. Detailed history, clinical examination, and relevant investigations were performed to rule out other autoimmune disorders.**Results:** The study comprised 84 (59%) males and 58 (41%) females, ranging in age from 3 to 72 years, with a higher prevalence in younger individuals. Vitiligo was progressive in 69.1% patients, with vitiligo vulgaris being the most common subtype seen in 77.5% patients. Segmental vitiligo exhibited the earliest onset. A family history of vitiligo was found in 29 (18.3%) patients. Koebner's phenomenon and trichrome sign, present in 36 (25.4%) and 63 (44.4%) patients respectively, were associated with disease progression. The lower limb was the most frequently affected site, followed by the head and neck. Autoimmune conditions, particularly hypothyroidism and diabetes mellitus, were noted in 21 (14.8%) cases. A family history of other autoimmune conditions was present in 29 (20.4%) patients. **Conclusion:** Vitiligo predominantly affects younger individuals and often progresses, with vitiligo vulgaris being prevalent. Segmental vitiligo has an earlier onset. Koebner's phenomenon and trichrome sign are linked to disease progression. Significant associations include family history of vitiligo and autoimmune conditions, highlighting the importance of early diagnosis and management.

Key Words

Vitiligo, Clinical profile, Family history, Autoimmune association.

Introduction

Vitiligo is an acquired pigmentary disorder of skin with significant psychological consequences. Vitiligo occurs worldwide with an overall prevalence of 1%. However, its incidence ranges from 0.1 to > 8.8% across the country and in different countries of the globe.[1] No difference in prevalence exists according to sex, skin type, or race. However, a female preponderance is probably because a greater number of female patients seek medical help. The reported high incidence in India may be because of apparent color contrast and social stigma attached to condition.[2] It can develop at any age, although, half of patients have vitiligo before 20 years of age.

Vitiligo lesions usually present as asymptomatic chalky white macules with different patterns of distribution. Clinically, vitiligo is classified as segmental vitiligo, non-segmental vitiligo, mixed type and unclassified type. Non-segmental vitiligo is further classified into focal, generalized, acrofacial, mucosal and universal forms.

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Acrofacial vitiligo is limited to distal fingers and facial orifices and mucosal vitiligo refers to involvement of oral and genital mucosa. Segmental vitiligo is invariably stable but it is difficult to assess the stability in non-segmental vitiligo. Clinically, well-defined, hypochromic border of lesion represents a stable disease whereas ill-defined hypochromic borders represent an active disease.[3]

Vitiligo lesions are usually asymptomatic but may cause significant psychological consequences for the patients such as low self-esteem, depression, anxiety and poor quality of life of patients as well as their parents.

Vitiligo is also associated with other systemic comorbidities like thyroid disorder, diabetes mellitus, pernicious anemia, inflammatory bowel disease, alopecia aerata, chronic urticaria and psoriasis.[4] Vitiligo also carries many misconceptions, especially in countries where whitening of skin is associated with infectious diseases like leprosy. The objective of present study is to explore in detail the clinical and demographic aspects of patients attending outpatient department of dermatology in a tertiary care center in this part of country.

Material and Methods

This descriptive clinical study was conducted in the Department of Dermatology at Government Medical College, Jammu, over a one-year period. The primary objective was to examine the demographic and clinical characteristics of vitiligo patients.

Secondary objectives included analysing the prevalence of associated systemic conditions, assessing vitiligo progression and stability among different clinical subtypes, and identifying potential triggers or aggravating factors.

All patients presenting with leukoderma to the dermatology outpatient department were evaluated. Patients were included in the study if they had a clinical diagnosis of vitiligo and consented to participate. Patients with leukoderma due to chemical burns or other non-vitiligo conditions, as well as those unwilling to participate, were excluded.

Ethical clearance was obtained from the institutional ethics committee before the commencement of the study. Vide letter no: IEC/GMC/2019/858; Dated:21-12-2019.

Each patient underwent a comprehensive data collection process, which included detailed history-taking, clinical examination, and investigations as required. Patient history captured demographic details (age, sex, address), age of vitiligo onset, disease duration, progression pattern, any history of trauma before onset, and any known triggering or aggravating factors. Information was also gathered on the presence of other skin diseases or comorbidities, as well as family history of vitiligo or other autoimmune and endocrine disorders.

A thorough physical, systemic, cutaneous, and mucocutaneous examination was conducted on each patient. Vitiligo lesions were evaluated in terms of number, symmetry, morphology, leukotrichia, perifollicular re-pigmentation, and the pigmentation status of lesion borders.

Classification was done according to Vitiligo Global Issues Consensus Conference 2011-12[5]

1. Vitiligo vulgaris, 2. Acrofacial vitiligo, 3. Focal vitiligo, 4. Segmental vitiligo, 5. Vitiligo universalis, 6. Mucosal vitiligo, 7. Other unclassified vitiligo.

Vitiligo was considered stable if there had been no progression for last one year. The collected data were organized and analysed using Microsoft Excel for data management and IBM SPSS Statistics version 26 for statistical analysis. Descriptive statistics, including frequencies and percentages, were used to summarize demographic and clinical characteristics of the study population.

Results

The study comprised of 142 clinically diagnosed vitiligo patients attending the dermatology outpatient department. The demographic analysis revealed that 59% of patients were males and 41% were females. The resulting in male-to-female ratio is 1.56: 1. A majority of patients i.e., 55.6% were from urban areas, while 44.4% were from rural areas. The age range of patients ranged from 3 years to 72 years, with mean age of onset as 22.7 ± 14.24 years. Age distribution of vitiligo patients in study population is depicted in table 1.

Vitiligo in our study appears to predominantly affect younger age group, with highest burden among individuals aged $\leq$ 20 years of age.

The duration of vitiligo among patients ranged from 15 days to 50 years, with a mean duration of 3.97 ± 6.47 years. The majority of patients (32%) had a disease duration of 1-5 years. Only 6% of patients had a disease duration exceeding 10 years, while 94% of patients had a duration of 10 years or less. The age of onset varied between 1 and 62 years with a mean age of onset of 18.21 ± 13.4 years. The most common age of onset was between 6-10 years, affecting 22% of patients while the least common age of onset was after 45 years, observed in only 6% of patients. Overall, 70% of patients experienced disease onset at or before 20 years of age.

Vitiligo vulgaris was the most common clinical type affecting 77.5% patients followed by acrofacial type (13.4%) [Figure 1], focal vitiligo (2.8%) [Figure 2], universal vitiligo (2.2%), segmental vitiligo (2.1%), mucosal vitiligo (1.4%) and mixed vitiligo (0.7%).

Lower limb was the most common site affected in 48

Table 1: Age Distribution of Vitiligo Patients in Study Population

Age	Number	Percentage (%)
0-10 years	44	31
11-20	38	26.8
21-40	40	28.2
41-60	16	11.2
61-80	4	2.8
Total	142	100

Table 2: Disease Duration of Vitiligo in Study Population

Age	Number	Percentage
0-6 month	41	28.9
7-12 month	25	17.6
1- 5 years	46	32.4
6-10 years	22	15.5
>10 years	8	5.6
Total	142	100

(33.8%) [Figure 3] patients followed by face, neck and scalp (27.5%), trunk (14.1%), eyelids (5.6%), genitalia (3.5%) and lips in 3 (2.1%) patients.

A history of triggering factor was present in 36 (25.4%) patients. Trauma was the most common triggering factor (13.4%) followed by emotional stress (5%), itching (2.8%), surgery (1.4%) and chicken pox (0.7%).

The disease was progressive in 69.1% patients at presentation and 26.6% patients had stable disease for at least 12 months. Koebner's phenomenon was present in 36 (25.4%) patients.

Cutaneous association were present in 34 (25.4%) patients. Pruritus was the most common association (5.6%) followed by halo nevus (2.1%) [Figure 4], psoriasis (1.4%) [Figure 5], alopecia areata (1.4%), atopic dermatitis (0.7%), bullous pemphigoid (0.7%) and chronic urticaria in (2.1%) patients.

Associated systemic diseases were present in 37 (26%) patients of which anemia was the most common finding in 22 (15.5%) and asthma was the least common associated systemic disease with only 1 (0.7%) patient (Table 3).

Discussion

Vitiligo is a chronic autoimmune disease characterised by depigmented white patches on the skin caused by the

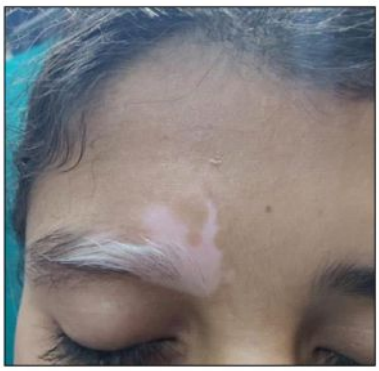

Figure 1: Patient with Acral Vitiligo Over Eyebrow

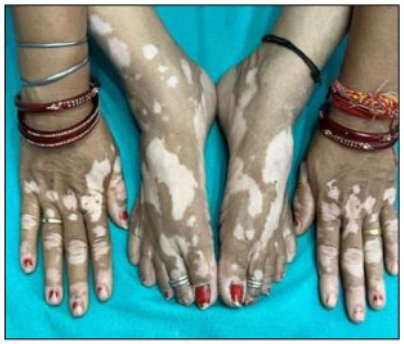

Figure 2: Vitiligo Lesion with Leukotrichia

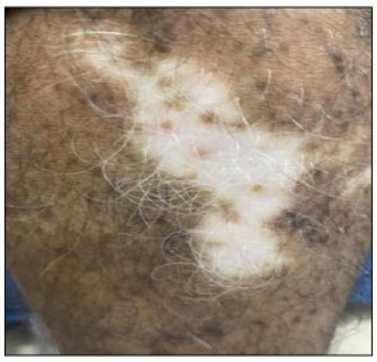

Figure 3: Vitiligo Lesion Over Leg with Leukotrichia

depletion of melanocytes.[6] The resulting depigmentation can be traumatic, especially when it involves the face, hands, and genitals, and particularly among people with dark skin tones, leading to a substantial emotional and psychosocial burden for patients with vitiligo.[7] Instead of substantial research in last few decades, it still remains a challenge to treat vitiligo. The disease is characterized according to the extent of involvement and pattern of depigmentation.[8] Our study was carried out to describe the clinical and epidemiological aspects of the disease and associated morbidities with vitiligo.

Epidemiologically, we observed a male

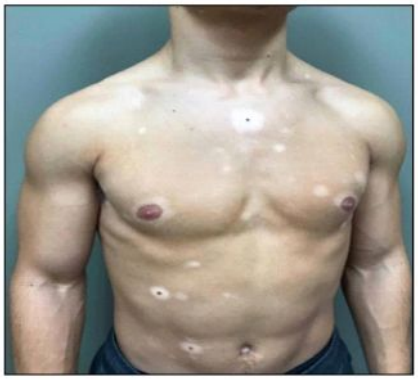

Figure 4: Patients with Vitiligo Vulgarisand Halo Nevi

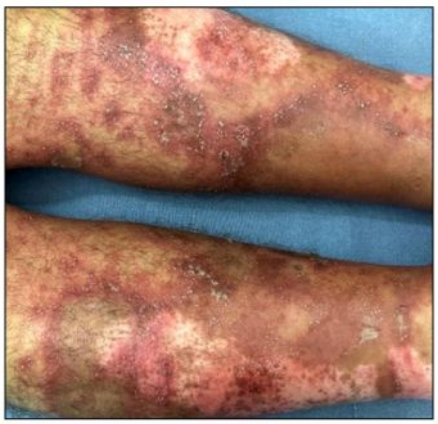

Figure 5: Case of Pustular Psoriasis with Vitiligo

predominance,with 59% patients being males and 41% being females depicting a male predominance. However, majority of studies in past have reported a female predominance.[9,10] This may possibly be because of more psychological concern in females. The large number of male patients in our study may be due to more frequent visits by males to hospitals because of their outdoor work profile as reported by Habab *et al.*[11]

The mean age of onset in our study was 22.7± 14.24 years. A similar mean age of onset had been reported earlier[12,13]. Majority of our patients were below 20 years of age group. The finding is consistent with Barros et al.,[14] indicating that childhood age group is significantly affected by vitiligo. Segmental vitiligo had the earliest onset in our study as reported by Chintamani [15]

Disease Duration in our study ranged widely from 15 days to 50 years, with a majority (94%) experiencing vitiligo for less than 10 years. The highest prevalence was seen in patients with disease duration between 1-5 years (32%), reflecting a trend toward chronicity in this condition.

Positive family history was present in 18.3% of our patients out of which 12.7% had a family history in first degree relative and 4.9% in a second degree relative. A study in past has reported similar results with a family history in 18.56% [16] relatives out of which 14.28% had history of first degree relative and 4.28% had second degree relative suffering from vitiligo.

Regarding the clinical spectrum, Vitiligo vulgaris was the most common clinical type in our study followed by acrofacial and focal forms. This is in accordance with other previous studies.[16,17] However, Agarwal et al., and Sakhiya *et al*., have reported acrofacial vitiligo as the most common clinical variant of vitiligo.[18,19].

The pattern and site of involvement highlighted the lower limbs as the most affected area (60.6%), followed by the face, neck, and scalp, a distribution pattern also corroborated in study by Sheth *et al*.,[20] where the extremities are commonly involved. Koebner's phenomenon is associated with progressive disease.[21] Leukotrichia was present in 30.3% of our patients in contrast to a study conducted by Shah H *et al*., where it was present in 9% patients only.[22]

Autoimmune association was found in 21(14.8%) patients in our study. Hypothyroidism (clinical as well as subclinical) was present in 5.6% of the patients. The prevalence of thyroid disorder in our study is comparable to other studies[23] but in contrast to other studies which

Table 3: Prevalence of Associated Systemic Conditions in Vitiligo Patients

Systemic condition	No. of Males	No. of Females	Total	Percentage (%)
Hypothyroidism	3	5	8	5.6
Anemia	12	10	22	15.5
Diabetes mellitus	2	1	3	2.1
Hypertension	1	1	2	1.4
Asthma	1	0	1	0.7
Peptic ulcer disease	1	0	1	0.7
Total	20	17	37	26

show as high prevalence as 23%.[24] Diabetes mellitus was found in 2.1% of our patients.

The other studies have shown high prevalence up to 9%.[25] The frequency of alopecia in our study was 1.41%. However, study by Saleem & Azim have shown high prevalence of alopecia areata up to 8%. [26] The prevalence of psoriasis, atopic dermatitis, chronic urticaria and asthma seen in our study was 1.4%, 0.7%, 2.1% and 0.7% were comparable to other studies% respectively. Premkumar *et al* [27] however reported the higher prevalence of psoriasis and atopic dermatitis in his study i.e., 6% and 6.9% respectively.

Conclusion

This clinico-epidemiological study highlights that vitiligo predominantly affects younger individuals, with vitiligo vulgaris being the most common subtype and the lower limbs as the most frequently involved site. The disease is progressive in a majority of cases, and a significant portion of patients have a family history of vitiligo or associated autoimmune conditions, such as hypothyroidism. These findings underscore the importance of early diagnosis, tailored management, and consideration of comorbid conditions in the comprehensive care of vitiligo patients.

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