Clinical Association of Lupus Erythematosus with Patients of Vitiligo: A Case Control Study

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Abstract

Background:
Vitiligo is an idiopathic acquired depigmentary skin/ mucous membrane disorder. Lupus erythematosus and vitiligo are diseases of autoimmune origin. A genetic explanation for the association between lupus erythematosus and vitiligo has recently been attempted.

Objective:
To find out the association of lupus Erythematosus in patients of vitiligo.

Methods:
This case control study was carried out in the department of Dermatology & Venereology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka during the period of January 2023 to December 2023. A total of 180 patients with and without vitiligo from both genders and different ages for case and control groups were included in the study based on inclusion and exclusion criteria. Patients were divided into two groups, 90 patients with vitiligo as cases and 90 patients without vitiligo (healthy subjects) as controls. Wood's lamp examination was performed for diagnosis of vitiligo. LE was diagnosed based on ACR criteria and laboratory test including Complete blood count, Urinalysis, ANA, anti-ds DNA, VDRL and Skin biopsy. Patients with lupus erythematosus and patients without lupus erythematosus were considered as group I and group II respectively.

Results:
In this study, the mean age was found 41.7±12.8 years in case group (Vitiligo) and 42.1±13.6 years in control group (Healthy subjects).More than half (51.1%) of the patients were female in case group and 41(45.6%) in control group. There was no significant difference was found regarding age, sex, anemia, leucopenia, thrombocytopenia, proteinuria, ANA and anti ds-DNA. Family history of vitiligo was significantly higher in vitiligo patients than healthy patients (26.7% vs 12.2%). The majority 45(50.0%) presented with generalize followed by 21(23.3) acrofacial, 13(14.4%) focal, 10(11.1%) segmental and 1(1.1%) mucosal of vitiligo. Lupus erythematosus was higher in vitiligo patients than healthy patients (4.4% vs 1.1%) but the difference was not statistically significant between the two groups (p=0.184).

Conclusions:
This study concluded that family history of vitiligo was significantly higher in vitiligo patients than healthy patients. Lupus erythematosus was higher in vitiligo patients than healthy patients, but not statistically significant.

Keywords: Vitiligo, Lupus erythematosus

Introduction:

Vitiligo is one of the skin diseases that cause white spots due to loss of skin pigment cells, which is considered as an autoimmune disease. Melanocytes, mucous membrane, and retina are damaged and lead to white spots in different areas of the skin. The face, lips, hands, arms, feet, and the genitals are commonly affected skin area.[1] It is an autoimmune process, which causes the destruction of melanocytes leading to depigmentation of the skin. The rate and extent are variable and unpredictable.[2] These theories

include autoimmune mechanisms in the humoral and cellular immunity, cytotoxic, intrinsic, oxidant, and neural mechanisms.[3] The prevalence of vitiligo is estimated to be 0.06-2.28% worldwide.[4] Family history is present in 30% of the cases. The prevalence is higher in females and the mean age of onset is 20 years old.[3] Vitiligo can be segmental or non-segmental and is described as well-demarcated patches and macules of depigmented lesions. It is diagnosed clinically, and the diagnosis is confirmed by biopsy.[5] Recently, the dermoscope has been introduced and used for the diagnosis of evolving vitiligo.[6]
Vitiligo is commonly associated with the following autoimmune diseases: (1) Autoimmune thyroiditis, Graves' disease,[7,8] (2) Addison's disease,[9] (3) Lupus Erythematosus,[10] (4) Alopecia aerate,[10] (5) Morphoea,[11] (6) Diabetes mellitus type-1[10] and (7) Pernicious anemia.[10] At least 30% of patients with vitiligo to be affected with at least one additional autoimmune disorder.[10]

Lupus erythematosus and vitiligo are diseases of autoimmune origin. Reports in the literature suggest patients are more likely to suffer more than 1 autoimmune disease (30% of patients with generalized vitiligo have another autoimmune disease). However, there are few reports of lupus erythematosus in association with vitiligo.[12] In a study of 16 European families found that the *SLEV1* gene on chromosome-17 may explain the relationship between Systemic Lupus Erythematosus (SLE) and vitiligo. Patients with SLE are always symptomatic and, if left untreated, usually have a life-threatening immune-destructive disease process.[13] Rahner et al[14] related various mutS homolog 6 gene mutations (present in hereditary nonpolyposis colorectal cancer) with the presence of both autoimmune processes. Other cases reported were patients with vitiligo and cutaneous lupus who also presented other nonautoimmune conditions.[15,16] This study will ultimately help to solve this physical and social problem more meticulously. The purpose of this study was to find out the association of lupus erythematosus in patients with vitiligo.

Methods:
This case control study was carried out in the department of Dermatology & Venereology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka during the period of January 2023 to December 2023. A total of 180 patients with and without vitiligo from both genders and different ages for case and control groups were included in the study. Patients were divided into two groups, 90 patients with vitiligo as cases and 90 patients without vitiligo (healthy subjects) as controls. Patients who do not want to take part in the study, patients with depigmentation of skin due to causes other than vitiligo and control group patients with autoimmune or alteredimmune disorders were excluded from the study. An informed consent was sought from each patient to take part in this study. Blood samples were collected and analyzed for CBC, ANA, Anti-ds-DNA, VDRL. Urinalysis and skin biopsy for histopathology were performed. All the relevant collected data were compiled on a master chart first and then statistical analysis of the results were obtained by using window-based computer software devised with Statistical Packages for Social Sciences (SPSS-23) (SPSS Inc, Chicago, IL, USA).The unpaired t-test was used for quantitative variables and the Chi square test used for qualitative variables. The significant value of 'p' was decided to be at a level of 0.05 in two tailed tests.

Results:
In this study, mean age was found 41.7±12.8 years in case group and 42.1±13.6 years in control group. More than half (51.1%) of the patients were female in case group and 41(45.6%) in control group. There were no significantly difference was found regarding age, sex, clinical profile and co-morbidities were not statistically significant between two groups (Table-I, II & III). Family history of vitiligo was significantly higher in vitiligo patients than healthy patients (26.7% vs 12.2%) (Figure-1). The majority 45(50.0%) presented with generalize followed by 21(23.3) acrofacial, 13(14.4%) focal, 10(11.1%) segmental and 1(1.1%) mucosal of vitiligo (Figure-2). Anemia, leucopenia, thrombo-cytopenia, proteinuria, ANA and anti ds-DNAwere not statistically significant ($p>0.05$) between two groups (Table-IV). Lupus erythematosus was higher in vitiligo patients than healthy patients (4.4% vs 1.1%) but the difference was not statistically significant between two groups (Table-V).

Table-I: Baseline characteristics of the study patients (n=180)

Characteristics	Case (n=90) no.(%)	Control (n=90) no.(%)	p-value
Age (years)			
21-40	53(58.9)	51(56.7)	
41-60	28(31.1)	29(32.2)	0.839
61-80	9(10.0)	10(11.1)	
Mean±SD	41.7±12.8	42.1±13.6	
Sex			
Male	44(48.9)	49(54.4)	0.456
Female	46(51.1)	41(45.6)	

Case group: Vitiligo group,
Control group: Healthy group

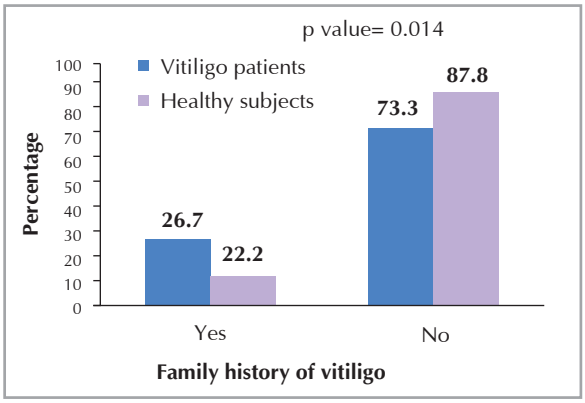

Figure-1: Family history of the study patients (n=180)

Table-II: Clinical profile of the study patients (n=180)

Clinical profile	Case (n=90) no.(%)	Control (n=90) no.(%)	p-value
Malar rash	2(2.2)	0(0.0)	0.249
Oral ulcer	3(3.3)	1(1.1)	0.310
Discoid rash	3(3.3)	0(0.0)	0.123
Photosensitivity	4(4.4)	1(1.1)	0.184
Arthritis/Arthralgia	3(3.3)	1(1.1)	0.310

Table-III: Co-morbidities of the study patients (n=180)

Co-morbidities	Case (n=90) no.(%)	Control (n=90) no.(%)	p-value
Diabetes mellitus	10(11.1)	14(15.6)	0.380
Hypertension	5(5.6)	9(10)	0.266
Thyroid disease	7(7.8)	5(5.6)	0.550

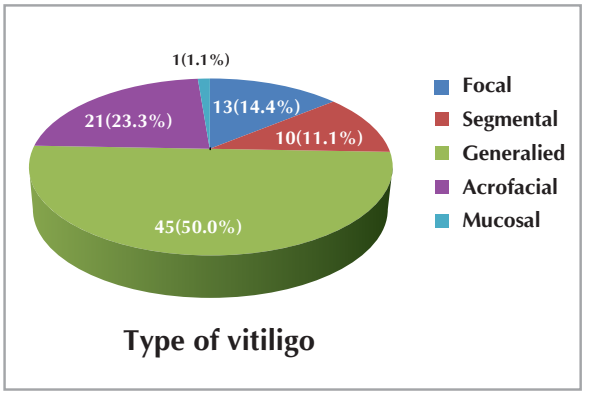

Figure-2: Type of vitiligo of the study patients (n=180)

Table-IV: Laboratory findings of the study patients (n=180)

Laboratory findings	Case (n=90) no(%)	Control (n=90) no(%)	p-value
Anemia	8(8.9)	6(6.7)	0.578
Leucopenia	2(2.2)	0(0.0)	0.249
Thrombocytopenia	3(3.3)	2(2.2)	0.500
Proteinuria	3(3.3)	1(1.1)	0.310
ANA	8(8.9)	2(2.2)	0.051
Anti ds-DNA	4(4.4)	1(1.1)	0.184

Table-IV: Laboratory findings of the study patients (n=180)

Lupus erythematosus	Case (n=90) no.(%)	Control (n=90) no.(%)	RR (95% CI)	p-value
Yes	4(4.4)	1(1.1)	4.0	0.184
No	86(95.6)	89(98.9)	(0.45-35.09)	

Discussion:

Vitiligo is an acquired skin pigmentation disorder, which can affect any part of the skin, hair, eyes, and mucus membrane. It is an autoimmune process, which causes the destruction of melanocytes leading to depigmentation of the skin.[2] Lupus erythematosus and vitiligo are diseases of autoimmune origin. A genetic explanation for the association between lupus erythematosus and vitiligo has recently been attempted.[13] Therefore, the purpose of the study was to find out the association of lupus erythematosus in patients of vitiligo.

In present study the mean age was found

41.7±12.8 years in case group (vitiligo) and 42.1±13.6 years in control group(Healthy subjects), that was not significant between two groups. In a study done by Al Houssien et al[2] described that the mean age was 45±19 years for cases, and it was 40±17 years for controls. Riera-Leal et al[17] reported that the mean age was 45±13 years in vitiligo group and 45±13 years in controls subjects. Dragoni et al[18] also observed that the mean age of the patients was 43.7±16 years and that of the controls was 44.3±16.1 years. In this study more than half (51.1%) of the patients were female in case group and 41(45.6%) in control group. Male was 44(48.9%) in case group and 49(54.4%) in control group and that was not significant (p>0.05). Dragoni et al[18] also showed female patients were predominance in both groups, 54.0% in case group and 54.0% in controls group. Rahimi et al[19] demonstrated that more than half 107/200 (53.5%) and 108/200 (54%) of the patients were females in both cases and controls, respectively.

In the present study 4(4.4%) patients had photosensitivity in case group and 1(1.1%) in control group. The difference was not statistically significant (p>0.05) between two groups.Gorial et al[20] revealed that 22(34.9%) patients had photosensitivity in vitiligo group and not found in control group.

Family history of vitiligo was significantly higher in vitiligo patients than healthy patients (26.7% vs 12.2%) in our study. Similarly, Riera-Leal et al[17] reported that family history of vitiligo was present in 50.0% in vitiligo group and 8.0% in controlgroup, that was significant (p<0.001). Rahimi et al[19] described that family history of vitiligo was present in 60/200 (30%) and 3/200 (1.5%) patients in cases and controls, respectively (*p*-value <0.001). Sharquie et al[21] also found family history of vitiligo was present in 40.0% in vitiligo group and 8.0% in healthy control group, that was significant (p<0.001).

Regarding type of vitiligo observed that 45(50.0%) presented with generalize followed by 21(23.3%) acrofacial, 13(14.4%) focal, 10(11.1%) segmental and 1(1.1%) mucosal of vitiligo. Riera-Leal et al[17] had observed thatvitiligo was generalized in 42 subjects (84%), localized in seven (14%), and universal in one (2%). 34 cases (68%) had active vitiligo and 16 cases (32%) were classified as stable. Rahimi et al[19] demonstrated that among cases, most of the patients (148/200, 74%) had vulgaris, followed by focal (30/200, 15%) and segmental (11/200, 5.5%) types of vitiligo.

In this study anemia, leucopenia, thrombocytopenia, proteinuria, ANA and Anti ds-DNAwere not statistically significant (p>0.05) between two groups. Kasumagic-Halilovic et al[22] described that in the vitiligo group there were 7 (17%) patients with positive findings of ANA and the control group, only 2(5%). No significant association between clinical features of the disease and ANA was detected. ANA was statistically associated with a lower duration of the disease. The highest prevalence of ANA in vitiligo patients reported Paravarat al[23], they found that ANA were positive in 33% cases. In a study Ingordo et al[24] reported that ANA were positive in only 2.5%.

We observed that lupus erythematosus was higher in vitiligo patients than healthy patients (4.4% vs 1.1%) but the difference was not statistically significant between two groups. Many studies suggest that vitiligo has been associated with lupus erythematosus[10] Paul et al[25] found 5.94% patients have systemic lupus erythematosus.

There were limitations in our study. Data was collected among patients attending one hospital. Small sample size. It would be better if data was collected randomly from different hospitals.

Conclusion:

From the findings of this study, it may be concluded that family history of vitiligo was significantly higher in vitiligo patients than healthy patients. Lupus erythematosus was higher in vitiligo patients than healthy patients. The findings mandate further research, and the importance of monitoring these disorders among vitiligo patients. Further studies can be undertaken by including large number of patients to find the association of lupus erythematosus in vitiligo patients.

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