Lupus Band Test in Patients with Borderline Systemic Lupus Erythematosus with Discoid Lesions

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ABSTRACT Patients with lupus erythematosus (LE) that have discoid lesions who fulfill the four diagnostic criteria of systemic lupus erythematosus (SLE) with only mucocutaneous findings and antinuclear antibody (ANA) positivity were classified as borderline SLE in the literature. Objective of this study was to determine the place of borderline SLE with discoid lesions on the LE spectrum according to the lupus band test (LBT). Lesional and sun-protected non-lesional (SPNL) skin LBTs of 94 patients with LE that had discoid lesions were retrospectively evaluated. Firstly, patients were divided into two main groups: discoid LE (DLE; group A) and SLE (Group B); three subgroups were then classified as DLE (Group A), borderline SLE (Group B1) and SLE (Group B2) using another method. Each group had its own comparisons. Immunoreactant (IR) deposition was observed on the lesional skin in all patients and on the SPNL skin in 42 (44.7%). In patients with borderline SLE, the deposition of IgM was lower on the lesional LBTs, whereas isolated IgG was higher than SLE; thus, it shows similarity with DLE. Additionally, it was also closer to DLE because of the low deposition of C3, multiple IRs, and a double conjugate of IRs on the SPNL skin. However, it showed similarity with SLE in the high percentage of LBT positivity and more immunoglobulin M (IgM) and immunoglobulin G (IgG) deposition on the SPNL skin. The deposition of multiple conjugates on SPNL skin in patients with LE with discoid lesions may reflect systemic involvement. Despite the fact that LBT positivity on SPNL skin in borderline SLE was higher than DLE, less deposition of multiple conjugates compared to SLE indicates that the classification of borderline SLE with discoid lesions in the LE spectrum is questionable.

KEY WORDS: lupus band test, discoid lupus erythematosus, borderline systemic lupus erythematosus

INTRODUCTION

Lupus erythematosus (LE) is a chronic autoimmune disease. Its clinical findings are characterized by a wide spectrum that varies from mild cutaneous involvement to life-threatening visceral manifestations. The most frequent clinical subtype of cutaneous LE (CLE) is discoid LE (DLE), presenting with discoid lesions (1-4). Such discoid lesions are characterized by coin-shaped, well defined, erythematous plaques

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located mainly on sun-exposed areas, and they can either be limited to only the skin or a part of the systemic disease (1-3). The presence of classical discoid rash is one of the most frequently observed American College of Rheumatology (ACR) diagnostic criteria of SLE (4). Such discoid lesions can be the initial symptom of SLE in approximately 10% of patients, or they may occur in the course of the disease in 20-25% of patients (1-3). Although some researchers reveal that discoid lesions are the benignity indicators of SLE, some recent studies have shown that disease activity and severity are the same in patients with SLE with or without discoid lesions (5-7). Thus, the importance of correct diagnosis and close follow-up in high-risk patients with discoid lesions has been emphasized (7,8).

As is known, the diagnosis of SLE is based on the presence of 4 of the 11 ACR criteria. However, patients who fulfill these four criteria only with skin-related findings (discoid rash, malar rash, photosensitivity, oral ulcers) have been a matter of discussion in the literature. Because of the absence of systemic involvement in most of these patients with discoid lesions, they can be easily misdiagnosed or overdiagnosed as having SLE (1,2). Thus, Vasquez *et al*. have suggested classifying patients with discoid lesions (n=32) who only have mucocutaneous findings (≥3 criteria) and antinuclear antibody (ANA) positivity into a separate subgroup termed borderline DLE/SLE that is placed between DLE and SLE. It has been observed that the lesion distribution and autoantibody profiles of the patients in this subgroup show great similarity to DLE; thus the need for non-mucocutaneous and non-ANA diagnosis criteria have been emphasized in order to reduce the possibility of excess SLE diagnosis according to the ACR criteria in such patients (9).

The lupus band test (LBT), a direct immunofluorescence (DIF) examination of skin biopsy, is commonly used in the diagnosis of CLE and SLE. It has been noted that the LBT positivity on sun-protected non-lesional (SPNL) skin can be useful in the diagnosis of SLE in patients with insufficient clinical and serological profiles (10-15). Positive LBT results on SPNL skin can be found in patients with SLE earlier than the other laboratory tests, and the sensitivity of LBT is higher in the diagnosis of active disease (10-14). However, the data in the literature showing the immune deposition on SPNL skin in patients with DLE is limited (16-20).

In this study we aimed to determine the place of borderline SLE in the LE spectrum by comparing the LBT results (on lesional and SPNL skin) of our patients with LE with discoid lesions whom we have classified into three subgroups: DLE, borderline SLE, and SLE.

PATIENTS AND METHODS

The files of 94 patients with LE that had classical discoid lesions, who had been diagnosed based on clinical and histopathological findings, were retrospectively evaluated in this study. Only patients with both LBTs on lesional and SPNL skin (biopsies were taken simultaneously) were included. According to the LE classification criteria defined by Gilliam and Sontheimer (21), patients who had any other distinct LE-specific skin lesion such as classical discoid lesions, drug-induced DLE history, or patients with a history of any topical or systemic corticosteroid and immunosuppressive drug use within one month before the skin biopsy and patients with insufficient file records were excluded from the study. The study was approved by the hospital ethics committee before data collection.

Our patients with LE that had discoid lesions were classified according to the ACR criteria. Patients satisfying <4 criteria were classified in the DLE group (Group A), and patients having ≥4 criteria were classified in the SLE group (Group B) (1-4). Additionally, all patients with discoid lesions were divided into three subgroups according to the classification defined by Vasquez *et al*.: DLE (Group A; with <4 ACR criteria), borderline SLE (Group B1; with either 2 or 3 skin-related ACR criteria including self-reported malar eruption, oral ulcers and photosensitivity in addition to discoid lesions, and positive findings of ANA), and SLE (Group B2; meeting ≥4 ACR criteria with at least 1 non-skin-related, non-ANA-related criterion) (9).

The examined data of the patients included: age, sex, age at the disease onset (defined as the initial manifestation clearly attributable to DLE), age at the examination of LBTs, ACR criteria, and type of the deposited immunoreactant (IR) in LBTs on both lesional and SPNL skin. LBT examination of skin biopsy is one of the routine tests for LE patients in our department. In this study, we retrospectively reviewed the DIF examinations of these patients according to the presence, type, and composition of IRs on sun-exposed lesional skin (the face or upper limbs) and on SPNL skin (the buttocks). The DIF examinations had been performed with standard techniques using fluorescein-labeled antisera to human immunoglobulin G (IgG), immunoglobulin A (IgA), immunoglobulin M (IgM), and C3 as previously described (6). The skin biopsies were assessed by one blinded pathologist, and DIF patterns were interpreted according to the standard criteria (7,15,16). Positive LBT was defined as a presence of one or more IR (IgM, IgG, IgA, and /or C3) at the dermoepidermal junction, with linear staining

in a continuous band and/or a continuous and discrete granular pattern (15).

Statistical analysis were performed comparing the two main groups (DLE: Group A; SLE: Group B) and then three subgroups (DLE: Group A; borderline SLE: Group B1; SLE: Group B2). Statistical analysis was carried out using the Statistical Package for Social Sciences (SPSS, Chicago, IL, USA), version 15. Quantitative data were presented as mean ± Standard Derivation (SD), while qualitative data were presented as number (n) and percentage (%). Non-parametric tests were performed because of the non-homogeneous distribution of data, and a *P* value of <0.05 was considered statistically significant. The chi-squared test was used to compare the qualitative data between the two groups. The Fisher exact test was used instead of the chi-squared test when the expected count in any cell was <5. The comparison between quantitative data for the two groups was done using the Mann-Whitney U test.

RESULTS

Patient groups

A total of 94 patients were studied; 41 (43.6%) of them were included in Group A, and the remaining 53 (56.4%) were included in Group B. In Group B, 23 (24.5%) patients were included in the Group B1 and the remaining 30 (31.9%) were included in Group B2. No significant difference was observed between the groups in terms of sex distribution, age at disease onset, disease duration, and age at LBT examination (Table 1). The ACR criteria for all groups are shown in Table 2.

Cutaneous immunopathological findings

A. LBT results for lesional skin:

IR deposition was observed in all patients. Total IgM, total C3, and IgG+IgM+IgA+C3 depositions were higher, but single IgG deposition was lower in Group B than Group A. In the subgroups, total IgM deposition was the highest in Group B2, and total C3, >1 IRs, IgG+IgM+C3, and IgG+IgM+IgA+C3 depositions were higher in Group B2 than Group A. Isolated single IR deposition was lower in Group B2 than in Group A, and single IgG deposition was the lowest in Group B2 (Table 3).

B. LBT results for SPNL skin:

At least one IR deposition was observed in 42 (44.7%) patients. LBT positivity, total IgM, total IgG, total C3, single IgM, >1 IRs, and double conjugate IR depositions were higher in Group B than Group A. In the subgroups, LBT positivity, total IgM, and IgG depositions were lowest in Group A. Total C3, >1 IRs, and double conjugate IR depositions (especially IgM+C3) were the highest in Group B2. Isolated single IR deposition was the highest in Group B1, especially the deposition of single IgM, which was higher in Group B1 than Group A. IgG+IgM+C3 deposition was higher in Group B2 than Group A (Table 4).

DISCUSSION

In this study we investigated the immunopathological findings on lesional and SPNL skin of patients with LE that had discoid lesions and thus aimed to determine the place of borderline SLE among these patients on the LE spectrum. There are a limited number

Table 1. Demographic features of the patient groups

Variables	All patients	DLE (Group A)	SLE (Group B)	SLE (Group B)		P values			
				Borderline SLE (Group B1)	SLE (Group B2)	A vs B	A vs B1	B1 vs B2	A vs B2
No of patients, n (%)	94 (100)	41 (43.6)	53 (56.4)	23 (24.5)	30 (31.9)	NA	NA	NA	NA
Sex, n (%) Female, Male	 63 (67) 31 (33)	 24 (58.5) 17 (41.5)	 39 (73.6) 14 (26.4)	 16 (69.6) 7 (30.4)	 23 (76.7) 7 (23.3)	0.124	0.382	0.561	0.111
Age at disease onset, years Mean±SD (min.-max.)		38.0±10.9 (17-68)	36.6±16.1 (12-77)	42.1±16.3 (15-77)	32.4±14.8 (12-59)	0.985	0.223	0.060	0.118
Disease duration, *months* Mean±SD (min.-max.)		36.0±48.7 (1-216)	28.0±42.6 (1-240)	17.2±22.2 (1-72)	36.3±52.1 (1-240)	0.304	0.157	0.177	0.976
Age at LBT examinations, *years* Mean±SD (min.-max.)		40.5±10.9 (20-75)	38.9±15.5 (18-77)	43.5±15.7 (18-77)	35.4±14.6 (18-60)	0.813	0.272	0.073	0.134

Abbreviations: SD: Standard Deviation; DLE: discoid lupus erythematosus; SLE: systemic lupus erythematosus; LBT: lupus band test; NA: not applicable

Table 2. American College of Rheumatology (ACR) criteria of the patient groups

ACR criteria, n (%)	**All patients**	**DLE (Group A)**	**SLE (Group B)**	**SLE (Group B)**	
				Borderline SLE (Group B1)	**SLE (Group B2)**
Discoid rash	94 (100.0)	41 (100.0)	53 (100.0)	23 (100.0)	30 (100.0)
Malar rash	36 (38.3)	4 (9.8)	32 (60.4)	15 (65.2)	17 (56.7)
Photosensitivity	76 (80.9)	26 (63.4)	50 (94.3)	21 (91.3)	29 (96.7)
Oral ulcers	22 (23.4)	5 (12.2)	17 (32.1)	9 (39.1)	8 (26.7)
ANA positivity	51 (54.3)	4 (9.8)	47 (88.7)	23 (100.0)	24 (80.0)
Arthralgias/Arthritis	21 (22.3)	6 (14.6)	15 (28.3)	0 (0.0)	15 (50.0)
Serositis	1 (1.1)	0 (0.0)	1 (1.9)	0 (0.0)	1 (3.3)
Renal disorder	10 (10.6)	1 (2.4)	9 (17.0)	0 (0.0)	9 (30.0)
Neurological disorder	2 (2.1)	0 (0.0)	2 (3.8)	0 (0.0)	2 (6.7)
Hematologic disorder	9 (9.6)	0 (0.0)	9 (17.0)	0 (0.0)	9 (30)
Immunologic abnormality	22 (23.4)	1 (2.4)	21 (39.6)	0 (0.0)	21 (70.0)

Abbreviations: ANA: antinuclear antibodies; DLE: discoid lupus erythematosus; SLE: systemic lupus erythematosus.

of reports in the literature comparing the cutaneous IR depositions in patients with LE with discoid lesions according to the presence of concomitant systemic involvement. Furthermore, they had number of patients and the results varied between studies (19,20). To our knowledge, this was the first comprehensive study examining LBT results both on lesional and SPNL skin related to the presence of systemic involvement in patients with LE that had discoid lesions.

The LBT results on lesional skin of our patients with LE and discoid lesions showed a predominant deposition of IgG in accordance with most other authors,

Table 3. Lupus band test (LBT) results on lesional skin

IR types and quantity of conjugate expressed, n (%)	**All patients**	**DLE (Group A)**	**SLE (Group B)**	**SLE (Group B)**		**P values**			
				Borderline SLE (Group B1)	**SLE (Group B2)**	**A vs B**	**A vs B1**	**B1 vs B2**	**A vs B2**
Positivity	94 (100.0)	41 (100.0)	53 (100.0)	23 (100.0)	30 (100.0)	NA	NA	NA	NA
In total									
IgG	84 (89.4)	38(92.7)	46 (86.8)	20 (87)	26 (86.7)	0.505	0.658	1.00	0.446
IgM	60 (63.8)	19 (46.3)	41 (77.4)	14 (60.9)	27 (90.0)	**0.002**	0.264	**0.012**	**<0.001**
C3	48 (51.1)	14 (34.1)	34 (64.2)	13 (56.5)	21 (70.0)	**0.004**	0.082	0.311	**0.003**
IgA	33 (35.1)	12 (29.3)	21 (39.6)	7 (30.4)	14 (46.7)	0.297	0.922	0.231	0.133
Single IR	24 (25.5)	14 (34.1)	10 (18.9)	7 (30.4)	3 (10.0)	0.092	0.762	0.082	**0.019**
IgG	22 (23.4)	14 (34.1)	8 (15.1)	7 (30.4)	1 (3.3)	**0.031**	0.762	**0.015**	**0.002**
IgM	2 (2.1)	1 (2.4)	1 (1.9)	0 (0.0)	1 (3.3)	1.000	1.000	1.000	1.000
C3	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	NA	NA	NA	NA
IgA	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	NA	NA	NA	NA
>1 IRs	70 (74.5)	27 (65.9)	43 (81.1)	16 (69.6)	27 (90.0)	0.092	0.762	0.082	**0.019**
Double conjugate	31 (33.0)	15 (36.6)	16 (30.2)	7 (30.4)	9 (30.0)	0.513	0.619	0.973	0.562
IgG+IgM	14 (14.9)	7 (17.1)	7 (13.2)	3 (13)	4 (13.3)	0.602	1.000	1.000	0.750
IgG+C3	7 (7.4)	4 (9.8)	3 (5.7)	1 (4.3)	2 (6.7)	0.695	0.646	1.000	1.000
IgG+IgA	3 (3.2)	3 (7.3)	0 (0.0)	0 (0.0)	0 (0.0)	0.080	0.547	NA	0.258
IgM+IgA	2 (2.1)	0 (0.0)	2 (3.8)	0 (0.0)	2 (6.7)	0.503	NA	0.499	0.175
IgM+C3	5 (5.3)	1 (2.4)	4 (7.5)	3 (13)	1 (3.3)	0.382	0.128	0.305	1.000
Triple conjugate	17 (18.1)	6 (14.6)	11 (20.8)	3 (13)	8 (26.7)	0.445	1.000	0.313	0.208
IgG+IgM+IgA	3 (3.2)	2 (4.9)	1 (1.9)	0 (0.0)	1 (3.3)	0.579	0.532	1.000	1.000
IgG+IgM+C3	11 (11.7)	2 (4.9)	9 (17)	2 (8.7)	7 (23.3)	0.106	0.614	0.270	**0.031**
IgG+IgA+C3	2 (2.1)	1 (2.4)	1 (1.9)	1 (4.3)	0 (0.0)	1.000	1.000	0.434	1.000
IgM+IgA+C3	1 (1.1)	1 (2.4)	0 (0)	0 (0.0)	0 (0.0)	0.436	1.000	NA	1.000
Quadruplet conjugate IgG+IgM+IgA+C3	22 (23.4)	5 (12.2)	17 (32.1)	6 (26.1)	11 (36.7)	**0.024**	0.182	0.413	**0.015**

Abbreviations: IgA: Immunoglobulin A; IgM: Immunoglobulin M; IR: immunoreactant; DLE: discoid lupus erythematosus; SLE: systemic lupus erythematosus; NA: not applicable

Table 4. Lupus band test (LBT) results on sun-protected non-lesional skin

IR types and quantity of conjugate expressed	All patients	DLE (Group A)	SLE (Group B)	SLE (Group B)		P values			
				Borderline SLE (Group B1)	SLE (Group B2)	A vs B	A vs B1	B1 vs B2	A vs B2
Positivity	42 (44.7)	7 (17.1)	35 (66)	13 (56.5)	22 (73.3)	**<0.001**	**0.001**	0.200	**<0.001**
In total									
IgG	14 (14.9)	1 (2.4)	13 (24.5)	5 (21.7)	8 (26.7)	**0.003**	**0.020**	0.679	**0.003**
IgM	35 (37.2)	4 (9.8)	31 (58.5)	10 (43.5)	21 (70.0)	**<0.001**	**0.002**	0.052	**<0.001**
C3	21 (22.3)	4 (9.8)	17 (32.1)	2 (8.7)	15 (50.0)	**0.010**	1.000	**0.001**	**<0.001**
IgA	1 (1.1)	0 (0.0)	1 (1.9)	0 (0.0)	1 (3.3)	1.000	NA	1.00	0.423
Single IR	20 (21.3)	5 (12.2)	15 (28.3)	10 (43.5)	5 (16.7)	0.058	**0.005**	**0.032**	0.733
IgG	3 (3.2)	1 (2.4)	2 (3.8)	2 (8.7)	0 (0.0)	1.000	0.291	0.184	1.000
IgM	14 (14.9)	2 (4.9)	12 (22.6)	7 (30.4)	5 (16.7)	**0.016**	**0.008**	0.235	0.125
C3	3 (3.2)	2 (4.9)	1 (1.9)	1 (4.3)	0 (0.0)	0.579	1.000	0.434	0.505
IgA	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	NA	NA	NA	NA
>1 IRs	22 (23.4)	2 (4.9)	20 (37.7)	3 (13)	17 (56.7)	**<0.001**	0.341	**0.001**	**<0.001**
Double conjugate	16 (17)	2 (4.9)	14 (26.4)	2 (8.7)	12 (40.0)	**0.006**	0.614	**0.010**	**<0.001**
IgG+IgM	4 (4.3)	0 (0.0)	4 (7.5)	2 (8.7)	2 (6.7)	0.129	0.125	1.000	0.175
IgG+C3	1 (1.1)	0 (0.0)	1 (1.9)	0 (0.0)	1 (3.3)	1.000	NA	1.000	0.423
IgM+C3	11 (11.7)	2 (4.9)	9 (17)	0 (00)	9 (30.0)	0.106	0.532	**0.003**	**0.006**
Triple conjugate									
IgG+IgM+C3	5 (5.3)	0 (0.0)	5 (9.4)	1 (4.3)	4 (13.3)	0.066	0.359	0.374	**0.028**
Quadruplet conjugate	1 (1.1)	0 (0.0)	1 (1.9)	0 (0.0)	1 (3.3)	1.000	NA	1.000	0.423

Abbreviations: IgG: Immunoglobulin G; IgM: Immunoglobulin M; IR: immunoreactant; DLE: discoid lupus erythematosus; SLE: systemic lupus erythematosus; NA: not applicable

but the dominance of IgM has also been emphasized by some others (22-24). Kontos *et al*. specified that IgG is more specific for LE lesions, while IgM is more sensitive (25). Additionally, the most frequently observed IR was IgM on the lesional LBT in patients diagnosed with SLE, and it was demonstrated by various authors that the most frequently detected patterns were the IgM+IgG (11) or IgM+C3 combinations (25-27), as was the case in our study. However, none of these studies reported the morphological properties of the lesional skin or the presence of concomitant discoid lesions in patients with SLE (27). Thus, it is not appropriate to compare these findings with the results in our patients with LE with discoid lesions. Nevertheless, because the IgM deposition on lesional LBT was the highest in Group B2, it can be estimated that Group B1 may be closer to DLE in terms of systemic involvement.

When we reviewed the studies comparing lesional LBT results according to the presence of concomitant systemic involvement in patients with DLE, we found only one report by David-Bajar *et al*. This study that included 11 patients with DLE found that the lesional LBT results (particularly C3, IgG and/or IgM) did not show any significant difference between the patients with and without systemic involvement (66.6% and 80%, respectively), in contrast to our study. However, the IR types and combinations were not shown in detail (20). The specificity and predictive value of the LBT increase together with the IR quantity in the dermoepidermal junction has also been demonstrated by various authors (10,26). In our study, due to the less single IgG deposition in Group B and a significantly lower ratio of this deposition pattern in the Group B2, Group B1 is closer to DLE. However, it is placed between DLE and SLE on the spectrum in terms of the deposition of >1 IRs, IgG+IgM+C3, and quadruple conjugate on lesional LBT.

The importance of complement deposition at the dermoepidermal junction in patients with LE is contradictive, and its value in the diagnosis of DLE is unknown (24). Isolated C3 deposition is usually rare, as in our study, and it mostly presents together with IgM and/or IgG (28). Although it has been claimed that C3 is the most frequent deposition subsequent to IgM on lesional LBT in patients with SLE, contrary to the results in our study, no data showing the significance of C3 deposition in terms of systemic involvement was found (11,25-27). Our patients in the Group B1 were placed between DLE and SLE in terms of lesional C3 deposition.

When we reviewed the LBT results on SPNL skin of patients with LE with discoid lesions, the results were generally negative in patients with CLE (espe-

cially with isolated cutaneous findings), but depositions of some IRs (especially IgM and/or C3, less often IgG) were also rarely found in patients with DLE. The most frequently deposited IR was usually IgM, as in our study; however, Cardinali *et al*. found that C3 deposition was more dominant. Nevertheless, the percentage of IgG deposition on SPNL skin was somewhat higher in our study when compared to previous studies (16-19).

Despite the diagnostic value of positive LBT on SPNL skin in patients with DLE, studies showing the deposited IR type and quantity that can be related to systemic involvement are insufficient (19,20). David-Bajar *et al*. did not determine any IR on SPNL skin in patients with DLE without systemic involvement, while IgG and/or IgM and C3 depositions were observed in 66.6% of these patients with systemic involvement (20). In contrast, we found IR deposition on SPNL skin in Group A with a low incidence (17.1%) and in Group B (66%) with a high incidence. In another study, a total of 65 patients from different CLE groups were examined by Cardinali *et al*. These authors showed that the most frequently deposited component on the LBT of SPNL skin in 40 patients with DLE (33 without systemic involvement, 7 with systemic involvement) was C3 (in 57.6% of the patients without systemic involvement and in 85.7% of the patients with systemic involvement), while the most frequently observed immunoglobulin was IgM (in 24.2% of the patients without systemic involvement and 57.1% of the patients with systemic involvement). The second most frequently observed immunoglobulin was IgG, and the deposition was only observed in 6% of the patients with DLE without systemic involvement. Although it was found that the incidence of all IRs observed on SPNL skin in patients with CLE with systemic involvement was high, no significant difference was observed when compared with patients with CLE without systemic involvement. However, this comparison was not made between chronic CLE patients who only had discoid lesions like in our study (19).

In our patients with LE with discoid lesions, the IR types deposited on SPNL skin were determined to be IgM, C3, and IgG, in order of their frequencies. It was observed that the LBT positivity and the depositions of IgM, IgG, and C3 on SPNL skin were higher in Group B than Group A. In the literature, LBT positivity on SPNL skin has generally been observed in 25-70% of patients with SLE, and there are some reports demonstrating the dominant deposition of IgM or C3 (11,14). However, the presence of cutaneous involvement as well as the discoid lesions at the time of the biopsy in these patients is uncertain. In our study, Group B1 was similar to SLE in terms of LBT positivity and the depositions of IgM and IgG on SPNL skin, but closer to DLE in terms of total C3 deposition. Moreover, some authors have noted that the LBT positivity on SPNL skin is of prognostic importance, especially with increasing quantities of IRs, and having ≥3 IR depositions on SPNL skin has the highest specificity for SLE diagnosis when compared with other tests (10-15). In our study, a higher percentage of >1 IRs deposition and double conjugate deposition in Group B2 compared with Group B1 indicate that group B1 is similar to DLE in terms of the number of deposited IRs on SPNL skin.

As a result, considering the place of patients with borderline SLE with discoid lesions on the LE spectrum, LBT examinations have resulted in both similar and distinct findings compared with DLE and SLE. However, due to certain limitations of our study such as its single-centered, cross-sectional, and retrospective nature, excluding patients with other LE-specific skin lesions, lack of follow-up LBT findings in patients with borderline SLE, and lack of the correlation of these LBT results with clinical and laboratory features, more extensive prospective follow-up studies are required in order to obtain more significant data.

CONCLUSION

In conclusion, deposition of multiple IRs in the forms of conjugates on the LBT of SPNL skin in patients with LE with discoid lesions may be an indication of possible systemic involvement. Despite the higher LBT positivity on SPNL skin in patients with borderline SLE with discoid lesions compared with DLE, the presence of lower deposition of multiple IRs than in SLE indicates that the placement of borderline SLE with discoid lesions in the LE spectrum is still questionable.

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