

Original Research Article

A clinical and epidemiological study on discoid lupus erythematosus

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ABSTRACT

Background: Discoid lupus erythematosus (DLE) is the commonest form of cutaneous lupus erythematosus. The objective of our study is to analyze the clinical and epidemiological aspects of DLE.

Methods: All clinically diagnosed cases of DLE attending the dermatology OPD from October 2010 to September 2012 were included in the study. A detailed history, complete physical examination, biopsy for confirmation and other relevant investigations were done in all cases.

Results: The incidence was 4.79 per 10000 cases (51 of 106368 dermatology patients) showing female to male ratio of 4.1:1. Localized type was more common than the disseminated type. Few lesions (less than five) in a localized area without head and neck involvement were also classified as localized type in this study. Mucosal, verrucous, tumid and lupus panniculitis were the variants of DLE encountered. The sites involved were face, scalp, trunk, upper and lower limb in descending order of frequency. Antinuclear antibody (ANA) was positive in 22 of 30 cases done (73%). The systemic involvement was seen in 15 patients all of whom were diagnosed as systemic lupus erythematosus (SLE). Squamous cell carcinoma was seen in 2 cases of disseminated DLE.

Conclusions: Majority of patients had disease onset at 3rd to 5th decade showing female predominance. When compared to localized type, disseminated type was found more frequently in males. Early onset and severe disease was noted among offspring born to a patient suffering from disseminated DLE. Serious morbidity like lupus nephritis was observed only in 1 case. The occurrence of DLE over the herpes zoster scar was an interesting observation.

Keywords: DLE, Lupus nephritis, SLE, Squamous cell carcinoma

INTRODUCTION

Discoid lupus erythematosus (DLE) is a chronic disfiguring inflammatory skin disease. It is the most common form of cutaneous lupus erythematosus, characterized by erythematous indurated well defined scaly plaques of variable size, that resolve with atrophy, scarring and pigmentary changes.¹ Follicular involvement is a prominent feature in DLE. Since there are only few studies on DLE reported from India, we decided to do a study on clinical and epidemiological profile of DLE patients.

Aim of the study

- To study the clinical profile of DLE seen among patients attending the skin OPD.
- To find the cutaneous and systemic associations of DLE.
- To identify the complications seen in DLE patients.

METHODS

The study was done in the Government Rajaji Hospital, Madurai Medical College, Dermatology clinic for two

years from October 2010 - September 2012. Fifty one patients who were clinically diagnosed as DLE and confirmed by histopathology were included in the study. A detailed history including the age at onset, duration, triggering factors, systemic symptoms, and family history were elicited. A complete dermatological screening, general examination and systemic examination were done to identify the clinical type and to find the cutaneous and systemic associations of the disease. Blood investigations like complete hemogram, renal function test, thyroid function test were carried out. Skin biopsy was done in all the patients after obtaining informed consent and sent for histology. Antinuclear antibodies (ANA) screening was done only in thirty patients of the study group. It was detected using Hep-2 cells as substrate by immunofluorescence technique (IFA) for 15cases and by ELISA method in other 15cases. Anti-double stranded DNA (anti ds-DNA) antibody was done in 15 cases who were both ANA positive and had other features of SLE. Direct immunofluorescence (covered and uninvolved area) was done only for 5 patients depending on the affordability and this included disseminated DLE (n=3), localized DLE (n=1) and lupus panniculitis (n=1). Immunological study was not done in all patients included in the study due to financial constraint and this was the limitation of this study. Patients were on follow up and complications and sequelae if any were recorded.

Descriptive statistics were used to describe demographic characteristics. The results are presented as numbers, mean, range, ratio and percentages. Since we intend to present the descriptive study information and did not involve any comparison, statistical software for analysis was not used.

RESULTS

A total of 51 patients out of 106368 new dermatology cases over a period of 2 years were diagnosed and confirmed as DLE. This amounted to the incidence of 4.79 per 10000 (51/106368) patients attending Dermatology clinic. The following observations were made among this study group.

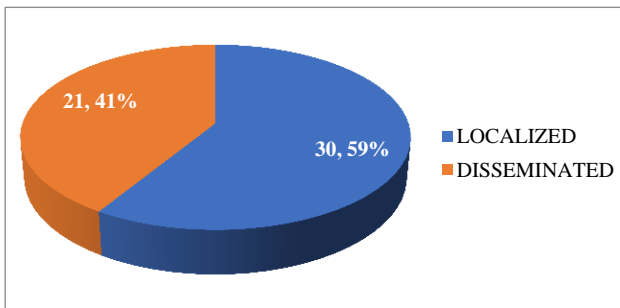


Figure 1: Clinical type of DLE.

Clinical type of DLE

The localized type (n=30) was found to be more common than disseminated type (n=21) (Figure 1). Localized

disease was classified based on the total number of lesions, as mild (<5), moderate (5-10) and severe (>10). Mild localized disease was recorded in 66% (n= 20), moderate form in 33% (n=10) and none had severe form of localized disease. Less than 5 lesions restricted to one area away from head and neck region without involving the later 9.8% (n=5) were included in the localized type in our study.

The age of onset

Majority of the patients (61%) had disease onset between 31-50years of age. One female patient with disseminated lesions had onset of the disease during her pregnancy (Figure 2).

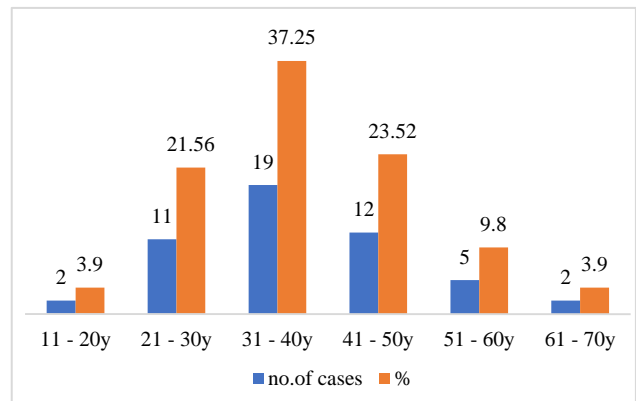


Figure 2: Age of onset of DLE.

Sex distribution

Overall female to male ratio in this study was 4.1: 1. The female to male sex ratio in localized type was 9:1 and in disseminated type it was 2:1 (Table 1).

Table 1: Sex distribution.

Type of DLE	Male	Female
Localized	3	27
Disseminated	7	14

Duration of the lesion and its distribution

About 76% patients had lesions of less than 5 years duration, 19% had disease duration between five and fifteen years and duration exceeding 20 years were found in 2 patients (3.9%) with disseminated lesions.

Scalp involvement was observed in 50% (n=26) cases. DLE lesions on face constituted 76% (n=39) cases. In Face, cheek was found to be the commonest site involved in 39% (n=20) cases, followed by eyelid, perioral region and nose. Shuster’s sign was seen in 35% of patients. Widespread disease was noticed with the involvement of upper limb in 37% (n=19), trunk in 41% (n=21) and lower limb in 15% (n=8).

Triggering factors

UV exposure related occupation, ingestion of drugs, trauma and smoking in men (Table 2) are the various triggers of the disease observed.

Table 2: Triggering factors.

Inducing or trigger factor	No. of patients	Percentage (%)
Occupation-(excessive UV exposure)	25	49.01
Drugs*	11	21.56
Viral infection	2	3.9
Trauma /burns	4	7.84
Smoking	8	15.68

*Drugs were anti tuberculosis drugs-isoniazid, anti hypertensive, thyroxine and anti psychiatry drugs.

Morphological variants of DLE

Classical discoid lesion in 94% (n=48), mucosal involvement in 49% (n= 25), verrucous or hypertrophic variant in 7.8% (n=4), lupus panniculitis and tumid lesions among 3.9% (n=2) each respectively were noted (Table 3).

Mucosal DLE

Classical discoid lesion was the most common mucosal pattern seen in 84% (n=21/25). Depigmented white patches and palatal erosion were seen in 8% (n=2/25) each. Cheilitis and erythematous plaque were noticed among 4% (n=1/25) each. According to site, the lower lip was involved in 84% (n=21/25) and upper lip in 40% (n=10/25). Nine patients (36%) had involvement of both upper and lower lip (Table 4).

Table 3: Variants of DLE.

Variant	Localized	Disseminated	Total	Percentage (%)
Classical	16	5	21	41.17
Classical, mucosal	11	11	22	43.13
Classical, mucosal, verrucous	-	2	2	3.9
Classical, mucosal, tumid	1	-	1	1.9
Classical, verrucous	-	1	1	1.9
Classical, panniculitis	-	1	1	1.9
Verrucous	1	-	1	1.9
Tumid	1	-	1	1.9
Panniculitis	-	1	1	1.9

Table 4: Mucosal pattern of involvement.

Morphology	Upper lip	Lower lip	Buccal mucosa	Palate	Gingiva
Discoid	10	20	-	-	-
Erythematous plaque	-	-	1	-	-
Depigmented/white patches	-	-	2	1	2
Ulcerated plaque/cheilitis	-	1	-	-	-
Erosion	-	-	-	2	-
Total	10	21	3	3	2

Alopecia in DLE

Among the 26 patients with scalp lesions, disfiguring scarring alopecia was observed in 10 cases (38%) each of localized and disseminated DLE. Diffuse non-scarring alopecia was noted in 11.5% (n=3/26) patients. Few small lesions without significant alopecia was seen in 11.5% patients (n=3/26) (Table 5).

Anti nuclear antibodies

ANA was done in 30 patients, of which for 15 patients it was done by IFA (immunofluorescence anti-nuclear antibody) method and in another 15 by ELISA method. A total of 22 among 30 patients (73%) showed ANA

positivity of whom seven were localized type and fifteen were disseminated type. By IFA method, 13 showed positive reaction among the 15 tested and granular/speckled pattern was the most common pattern observed in our study (Table 6).

Histopathological findings

The diagnostic histopathological findings were seen in all the cases of DLE including its variants. The most significant histological finding which is, focal to diffuse basal layer degeneration was observed in 100%. Hyperkeratosis (92%), follicular plugging (90%), epidermal thinning (90%), pigment incontinence (49%), upper dermal lymphocytic infiltrate (94%), periappendageal (96%) and perivascular infiltrate (90%),

interstitial infiltrate (64%), pilosebaceous atrophy (29%) was observed in this study. Sub epidermal bulla was observed in the biopsy of 3 patients (5.8%) particularly from the lesion over scalp. Mucin deposition in the dermis (H & E section) was observed only in 5 patients (9.8%).

Table 5: Alopecia in DLE.

Type	Disfiguring Scarring alopecia	Diffuse nonscarring alopecia
Localized	10	-
Disseminated	10	3

Table 6: Pattern in ANA.

Pattern-ANA (IFA)	No of patients	
	localized	disseminated
Granular/speckled	3	5
Homogenous	-	3
Nucleolar	1	-
Nuclear dots	-	1

Direct immunofluorescence

DIF was done only in 5 patients because of affordability and it included disseminated DLE (n=3), Localized DLE (n=1) and lupus panniculitis (n=1). Among the 3 patients with disseminated disease, 2 showed positive lupus band test and it was negative in 1 patient (probably because the disease was under remission). In lupus panniculitis, IgG, IgM, and fibrinogen deposits were seen in the septae of subcutaneous fat. The deposits of immunoreactants were found in lesional skin in 1 patient with localized disease.

Associated cutaneous diseases in DLE

Cutaneous disorders associated with DLE were polymorphic light eruption (n=1), Hansen’s disease (n=2), melasma (n=2), macular amyloid on lower limbs (n= 1) and vitiligo (n=1).

Systemic associations of DLE

Systemic associations were found in 23 cases of which Systemic lupus erythematosus (SLE) was diagnosed in 23.5% patients (n=12) by ARA criteria and they had anti ds-DNA positivity. But according to SLICC criteria, 29.4% (n=15) cases found to have SLE. Other associations found were thyroid dysfunction in 13% and systemic sclerosis in 1.9% respectively (Figure 3).

The other clinical features and laboratory findings like photosensitivity, malar rash, annular lesions of sub acute cutaneous LE, arthralgia, oral ulcer, livedo reticularis, anaemia, proteinuria, elevated ESR, and lupus nephritis were also recorded in DLE patients (Table 7).

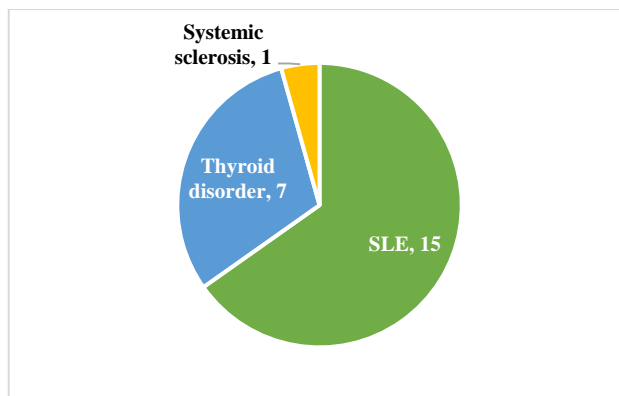


Figure 3: Systemic associations of DLE.

Table 7: Other LE features.

Other LE features	No. of patients	Percentage (%)
Photosensitivity	42	82
Malar rash	2	3.9
SCLE	2	3.9
Oral ulcer	2	3.9
Arthralgia	20	39
Telangiectasia	1	1.9
Anaemia	8	15.6
Proteinuria	3	5.8
Lupus nephritis	1	1.9

Complications and sequelae

Squamous cell carcinoma developed on lesions over exposed sites such as lower back, elbow and arm in 3.9% of study group (n=2). Both of them were disseminated DLE patients of middle aged group. Duration of the disease was about 13 and 4 years in one male and one female respectively.

Ulceration of DLE lesion was observed in about 5.8% (n=3) cases, on the leg in 2 cases and over lupus panniculitis in one case. Scarring was observed in 35% of study group (n=18) and pigmentary alterations in 15% (n=8) of cases respectively.

Interesting observation

One patient with disseminated DLE developed herpes zoster in thoracic segment. After resolution of zoster she developed DLE lesion over the healed scar. The histopathological findings showed features consistent with DLE.

DISCUSSION

Incidence

In our study, the incidence of DLE was 4.79 per 10000 cases among patients attending the skin OPD. Whereas

the incidence of DLE in the study by Durosaro et al it was 3.56 per 100 000 persons.²

Age distribution

The age of the patients ranged from 15 to 70 years. The mean age at onset of the disease was 38.56 when compared to 36 and 31.4 years in other studies done by Insawang et al and Bajaj et al.^{3,4} The peak distribution was in the age group of 31-40 years- 37.25% (n=19).

Sex distribution

Female to male ratio in our study was 4.1:1. Similarly several studies show female predominance ranging from 2:1 to 5:1.^{3,5,6} Female to male ratio in localized and disseminated type were 9:1 and 2:1 respectively. Localized type was observed more commonly among female patients compared to males in our study. Among the male patients, disseminated type (7 of 10) was found in higher proportion. However equal ratio and male predominance were reported in few studies.^{7,8}

Familial incidence

Systemic lupus erythematosus (SLE) with malar and maculopapular rash was seen in a daughter of male patient with Disseminated DLE. This indicates early age at onset with much more severity of the disease in the offspring. Familial discoid lupus erythematosus among siblings have been reported in the literature.^{8,9}

Inducing factors

UV exposure, viral infection, drugs and smoking reported as inducing factors of LE were observed in our patients and was in concordance with the literature.^{10,11} Smoking was observed in 8 out of 10 male patients (80%) in the study group.

Types of DLE

Localized DLE was found in 30 patients (58.82%), Disseminated DLE in 21 patients (41.17%). This proportion was similar to the study by Insawang et al.³ Localized type of DLE was the commonest type in our study of which 9.8% of study group had limited lesion on areas other than head and neck region.

Distribution of skin lesions

Face (76%) was the most commonly involved site which is in concordance with other studies done by Callen et al and Insawang et al.^{3,6} Ear involvement in the form of Shuster's sign was seen in 35% in our study.

Lesions over forehead, nose, and cheek were 25%, 29% and 39% in our study. Whereas it was 65%, 76% and 78% in the study by Sandipan et al.¹² Involvement of scalp, trunk and upper limb were seen in 50%, 41% and 37% in

this study. In Sandipan et al study it was 40%, 27% and 19% respectively. Thus the involvement of forehead, nose, cheek and concha were lower and the scalp, trunk and upper limb involvement were higher in our study when compared to Sandipan et al study. Lower limb involvement was seen in 15% in our study which was 11% recorded near similarly to Sandipan et al study. The decreased distribution of lesion on face in our study when compared to the study by Sandipan et al done in north India might be due to the difference in Fitzpatrick skin type between north and south Indians.

Most of the patients had lesions on sun exposed [98%]. The unexposed/covered site involvement in addition was seen in disseminated DLE [61.9%]. Ocular features observed in our study include discoid lesion on eyelid, blepharitis, conjunctivitis, proptosis and periorbital edema. These features have been reported in literature.¹³

Variants

Mucosal DLE was seen in 49% (n=25/51) out of which 12 patients were of localized type and 13 were of disseminated type. The lower lip (84%) was the most common site involved in the oral mucosa and discoid lesion (84%) involving the exposed part of lip was the most common pattern in our study. Both the lips were involved in 36% of cases. Sandipan et al in their study reported oral mucosal involvement in 7.84% and lip lesions in 31%.¹² Two patients (3.9%) who showed features of SLE had palatal erosion. Verrucous or hypertrophic DLE was observed in 7.8% (n=4) which was higher when compared to the study by Insawang et al. i.e. 1.5%.³

Lupus panniculitis was observed in 2 patients (3.9%) in our study which was lower when compared to the study by Bajaj et al (9.1%).⁴ But was higher when compared to Insawang et al study (2.3%).³

Tumid LE was the presentation in 3.9% (n=2) of study group. The site involved in our patients was face namely the nose and malar region (sun exposed region) was in concordance with the other studies, but the reporting of tumid LE varies from 0.8 to 18.2% in various other studies.^{3,4,14}

Palms and soles involvement

The proportion of Disseminated DLE patients with palmoplantar lesions constituting 5.8% was higher in our study compared to that ranging from 0.98% to 2.27% in other studies.^{12,15} Verrucous lesion and ulceration of DLE lesion over legs was observed in patients with palmoplantar involvement.

Alopecia in DLE

Disfiguring scarring alopecia was found in 39.21% (n=20) cases in our study, similar (34%) to that observed

by Wilson et al.¹⁶ Diffuse non-scarring alopecia was observed in 3 patients which was one of the clinical criteria in diagnosis of SLE by SLICC group.¹⁷

Histopathology

Correlation of histopathological findings with clinical diagnosis was 100% in our study similar to the observation by David-Bajar et al.¹⁸

Anti nuclear antibodies

ANA positivity in our study was 73% (22/30) and it was 68.5% in Insawang et al study.³ The speckled/granular pattern was the most common pattern followed by homogenous, nucleolar and nuclear dots pattern similar to the study by Insawang et al.³

Direct immunofluorescence

DIF has a significant value in the evaluation of active cutaneous connective tissue disease. The intensity of the deposits of immunoreactants along the basement membrane correlates with the degree of interface/lichenoid dermatitis/mucositis. In DLE, the most common immunoreactants visualized is Ig M.¹⁹ In this study, DIF was done for 5 patients, 2 of them showed positive lupus band test.

Course of DLE and its association with SLE

According to literature nearly 5 percent of patients with isolated localized DLE subsequently developed SLE and the risk is higher in patients with disseminated DLE (22%). In our study 5.8% of localized disease and 17.6% with disseminated disease satisfied ARA criteria for SLE. The specific anti ds-DNA was positive in all these patients. Renal and hematological systems were commonly involved in our study.

According to SLICC criteria 2012, 15 cases had SLE which indicates a higher sensitivity when compared to ARA criteria which detected only 12 cases in this study. Other autoimmune associations observed in this study were systemic sclerosis, thyroid dysfunction (in the form of thyroiditis, hypothyroidism, hyperthyroidism and goiter) and vitiligo that have been reported in literature.²⁰ DLE with PLE, vitiligo and primary localized cutaneous amyloidosis in lupus erythematosus have been previously reported in literature.²¹⁻²³

Complications and sequelae

Squamous cell carcinoma reported in this study group was 3.9% which was higher than the study by Sandipan et al where only 1 in 120 patients (0.83%) developed squamous cell carcinoma.¹² In our study squamous cell carcinoma was recorded only among disseminated DLE constituting about 9.52% of DDLE (2 of 21 patients).

The malignant transformation documented were in the sun exposed regions of upper limb and back. Squamous cell and less frequently basal cell carcinomas have been reported in the scars of DLE, particularly on the scalp, ears, lips and nose.²⁴ Occurrence of DLE over healed herpes zoster scar was observed in 2 patients. Similar observation has been reported as an isomorphic phenomenon though there was confusion in labelling it as an isomorphic or isotopic phenomenon.^{25,26}

CONCLUSION

The incidence of DLE was 4.79 per 10000 cases attending dermatology OPD. Majority of our patients had disease onset at 3rd to 5th decade. Females outnumbered males in our study. Among males disseminated type was found more frequent than localized type. LE in parents portends early onset and severe disease among offspring. Majority of patient with lower limb and palmoplantar involvement had complications like ulceration. The granular pattern was the frequently observed pattern in ANA by IFA method in our study. Serious morbidity like lupus nephritis was observed only in 1.9% and this reflects the benign nature of the disease. Malignant transformation was documented in 3.9% of the study group all of whom had disseminated disease. Malignant transformation can be reduced in future by complete photo protection in disseminated DLE patients. The occurrence of DLE over the healed herpes zoster site, recognized as an isomorphic phenomenon is an interesting observation.

Limitation of the study

Immunological study was not done in all patients due to financial constraints.

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Ethical approval: The study was approved by the institutional ethics committee

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