

SKIN IMMUNOFLOURESCENCE PATTERNS IN S L E PATIENTS IN SINGAPORE

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SYNOPSIS

The presence of the lupus band is examined in 35 cases of untreated Systemic Lupus Erythematosus (SLE) seen in Middle Road Hospital. 77% of the patients were found to have a positive lupus band test in the lesional skin whilst 28.5% had positive lupus band test in normal skin. The commonest immunoreactant found was C1q which occurred in 71% of lesional skin and 28% of normal skin examined. 42% of the patients had more than an immunoreactant present.

The ANA was present in 78% of the patients, the titres varying from neat to 1/640. The commonest pattern was the peripheral pattern. These findings are compared with studies published elsewhere.

INTRODUCTION

The use of direct and indirect immunofluorescence is now recognised as an important investigative tool in patients with SLE. The lupus band test for both lesional and normal skin has been helpful in diagnosing and differentiating DLE from SLE (1). It is regretted that this test is not included in the ARA revised criteria for the diagnosis of SLE.

The antinuclear titre and patterns have replaced LE cells as one of the more important and sensitive indicator of the disease. The object of this paper is to analyse the local patterns of the LE band and ANF and compare it to similar work done elsewhere.

IMMUNOFLOURESCENCE OF LESIONAL SKIN
TAKEN FROM A PATIENT WITH SLE
[Magnification 20x]



The photograph shows a linear band of granular deposit at the dermo-epidermal junction. There is accompanying vasculitis.

MATERIALS AND METHODS

35 cases of untreated SLE were randomly selected. All of them satisfied the ARA revised criteria for the diagnosis of SLE (2).

On initial diagnosis, the patient's normal exposed skin at the dorsum of the wrist and lesional skin was biopsied and prepared for direct immunoflourescence in the manner described.

The 4 μ frozen sections of skin was layered with flourescin isothiocyanate conjugated anti IgH, A, M, Clq, C₃ and fibrinogen and incubated for half an hour. The tissue was washed and viewed with an Olympus flourescence light microscope. Sera of the patients were analysed with respect to the titre and pattern of antinuclear antibodies using rat's liver as substrate.

A positive LE band with accompanying vasculitis is shown in photograph 1.

RESULTS

**TABLE 1
INCIDENCE OF LBT IN SLE PATIENTS**

	Number	Percentage
Total Number of Patients	35	100
Positive LBT (lesional)	27	77
Positive LBT (normal skin)	10	28.5

The incidence of positive lupus band test (LBT) in the 35 patients is shown in Table 1. 77% of patients had a positive LBT in lesional skin whilst 28.5% had positive LBT in normal skin.

**TABLE 2
FREQUENCY OF IMMUNOREACTANTS IN LUPUS BAND**

Immunoreactant	Lesional Skin	Normal Skin
Clq	71%	28%
IgM	43%	15%
IgG	29%	7%
IgA	14%	7%
Fibrinogen	7%	7%

Table 2 shows the frequency of immunoreactants in the lupus band. Clq was the commonest immunoreactant found. 42% of patients had more than 1 immunoreactant present in lesional skin.

**TABLE 3
FREQUENCY OF ANA PATTERNS IN SLE PATIENTS**

ANA Patterns	Percentage
Peripheral	35%
Homogenous	29%
Pasticulate	29%

The antinuclear factor was present in 78% of patients and the titres varied from neat to 1/640. The frequency of the ANA pattern is shown in Table 3. The commonest pattern was the peripheral pattern. In a few cases, a mixture of patterns occurred.

DISCUSSION

The lupus band was first described by Burnham et al in 1963 (10). He classified the band into 3 subtypes (1). A solid well demarcated band was seen in chronic or hyperkeratotic lesions. A thready band was found in oedematous erythematous plaques whilst clinically normal skin produced a stippled band. No attempt was made in this study to determine the morphology of the band as it appears difficult to easily differentiate these 3 patterns.

Following the initial work by Burnham et al, Cormane and other investigators demonstrated the deposition of immunoglobulin and complement in clinically normal skin of patients with SLE (3, 8, 10). This was not found in patients with DLE. The immunoglobulin and complement were present in 3 areas — the dermo-epidermal junction, the blood vessel wall and the connective tissue of the subepidermal papillae. Positive LBT in uninvolved skin is suggestive for SLE whilst deposits in blood vessel walls and subepidermal papillae are less so.

The incidence of positive LBT in involved skin in our patients was 77% whilst the incidence in uninvolved skin was 28.5%. Incidence in other studies done by Burnham, Gilliam and Provost is shown in Table 4.

Although the overall incidence of positive LBT in the involved skin is similar to that found in these studies, the lower incidence in normal skin is surprising.

It is now established that the presence of the lupus band is dependent on several factors. These include:

- (a) the age of the lesion — the incidence of positive lupus band increases with increasing age of the lesion (1);
- (b) the type of lesion;
- (c) the site of the biopsy, ie whether sun-protected or sun-exposed skin is biopsied (1, 7, 10);
- (d) sampling error;
- (e) disease activity. — The presence or absence of immunoreactant deposits in repeated biopsies reflect changing disease activity (5, 6, 9).
- (f) whether treatment has been given (1, 10). Following successful therapy the lupus band test frequently becomes negative although this may take months.

As our patients in Singapore are constantly exposed to UV light throughout the year, one would expect the incidence of LBT in normal sunexposed skin to be higher. There may be other causes which could account for this observation and these need to be investigated.

The 3 major classes of immunoglobins IgG, IgM and IgA are found in basement membrane deposits. In addition, complement components (C₁, C₄, C₃, C₅) properdin and properdin factor B can also be found (10). That Clq is the commonest immunoreactant found is surprising as other workers have found IgG and IgM far more frequently than complement components (3, 5, 6, 10).

The commonest antinuclear pattern was the peripheral pattern. Interestingly there was no correlation between the presence of ANA and patterns with the type or extent of immunoreactants in the lupus band. This is similar to work published elsewhere (4).

CONCLUSIONS

The lupus band and antinuclear titres and patterns were studied in small series of 35 patients with SLE as defined by the revised ARA criteria. 77% had positive LBT in lesional skin. 28.5% had a positive LBT in clinically normal skin. Clq was the most frequent immunoreactant found. 77% of patients had positive ANA with titres ranging from neat to 1/640. There was no correlation between the presence of ANA or antinuclear patterns with the type or extent of immunoreactants in the lupus band.

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