

A Man with a Hyperkeratotic Plaque

Dr. M. H. Ho

Date:	12 December, 2001
Venue:	Yaumatei Dermatology Clinic
Organizer:	HKSDV; Clinico-pathological Seminar

CASE SUMMARY

History

A 74-year-old man presented with a 10-year history of itching skin eruption on his right forearm. It was treated with topical 0.05% clobetasol propionate cream prescribed by private practitioner. There was no photosensitivity or polyarthralgia. He did not have any constitutional symptoms. His past health was good. There was no history of pulmonary tuberculosis. He is allergic to penicillin.

Physical examination

There was an erythematous to violaceous hyperkeratotic plaque on the right forearm (Figure 1). Cutaneous atrophy with multiple ecchymotic patches were present. There were atrophic lesions and scars on his face and scalp and scaling at his groins.

Differential diagnosis

The differential diagnoses include hypertrophic lichen planus, cutaneous lupus erythematosus, necrobiosis lipoidica, granulomatous dermatosis of infective origin, cutaneous tuberculosis and cutaneous malignancies.

Investigations

Complete blood count showed reduced platelet count of $99 \times 10^9/L$. The erythrocyte sedimentation rate was elevated to 99 mm/hr. The liver and renal function tests were normal except low serum albumin of 30 g/L. Glucose-6-phosphate dehydrogenase (G6PD) level was normal. Anti-nuclear factor was positive with a titre of 1/1280, speckled pattern. Anti-DNA was negative. Anti-

Ro was positive. C3 was normal; C4 was reduced to 4 mg/dl (normal: 9-59 mg/dl). Urine analysis and culture were negative.

Chest X-ray showed minimal haziness near the costophrenic angles over both lower zones. The findings suggested that an infective process should be excluded. The left hilum appeared slightly prominent.

Skin scrapping from groin for fungal study was negative.

Skin biopsy was performed twice. The first biopsy showed sparse lymphocytic infiltrate in the dermis and



Figure 1: Erythematous to violaceous hyperkeratotic plaque on the right forearm. Ecchymotic patch and cutaneous atrophy were present

mild lymphocytic exocytosis. The most striking feature is the process of marked solar elastosis with abundant siderophages. There was no granuloma. Staining for fungus was negative. It was consistent with senile purpura. Tissue culture for *Mycobacterium tuberculosis*, atypical mycobacterium and deep fungus were all negative.

The second biopsy revealed moderate acanthosis, hyperkeratosis and patchy parakeratosis. Foci of interface infiltrate with colloid bodies are noted at the bottom of the elongated rete ridges. The infiltrate consisted of plasma cells, lymphocytes and neutrophils. There was focal deep periadnexal plasmacytic infiltrate. Periodic acid-Schiff (PAS) stain revealed mildly thickened basement membrane and some fungal hyphae in the epidermis. Direct immunofluorescence was negative. Review of previous biopsy showed less hypertrophic epidermis and no fungal hyphae was identified. It was commented that the presence of thickened basement membrane and dense inflammatory infiltrate with plasma cells raised the possibility of pre-existing hypertrophic lupus erythematosus. But increase in mucin was not evident. Cultures for *Mycobacterium tuberculosis* and atypical mycobacterium were negative. Fungal culture yielded *Trichophyton rubrum*.

Diagnosis

The diagnosis was hypertrophic lupus erythematosus (LE) with superimposed dermatophyte infection.

Treatment and progress

He was advised on sun protection and to stop using 0.05% clobetasol propionate cream. He was treated with topical isoconazole nitrate cream for dermatophyte infection, 0.05% betamethasone dipropionate and 3% salicylic acid ointment for the plaque lesion, 10% cetrimide shampoo and 0.025% fluocinolone acetonide cream for the scalp lesions. The plaque persisted but scaling reduced.

Scaling of right palm was noticed in the follow-up. Skin scrapping from right palm for fungal study grew *Trichophyton rubrum*. He was started on oral terbinafine for fungal infection and oral isotretinoin 30 mg/d for hypertrophic LE (~0.6 mg/kg/d). Tinea

manuum resolved. LE responded in three weeks with decrease in thickness. He has been put on isotretinoin 30 mg/d for three months with good response.

Repeated complete blood count was normal. The erythrocyte sedimentation rate was still elevated at 97 mm/hr. He was referred to chest clinic for abnormal Chest X-ray findings and referred to medical unit for follow-up of raised ANF titre and reduced platelet count.

REVIEW ON HYPERTROPHIC LUPUS ERYTHEMATOSUS

Hypertrophic LE is an uncommon variant of chronic cutaneous LE. It was first described by Bechet in 1940.¹

Clinical features

Hypertrophic LE is characterized by elevated, erythematous hyperkeratotic plaque and papulonodular lesions. They are usually located on the face, scalp and upper extremities. It is rarely manifested as keratoacanthoma-like, or hypertrophic lichen planus-like lesions on the upper limbs.² It is well known for its recalcitrance to treatment. It may occur with pre-existing or co-existing typical DLE²⁻⁴ or SLE.⁵

Differential diagnoses

The differential diagnoses are hypertrophic lichen planus (LP), keratoacanthoma (KA) and squamous cell carcinoma.

Histology⁶

The histology is characterized by marked hyperkeratosis, hypergranulosis and irregular acanthosis with papillomatosis. There is liquefactive degeneration of basal cells. Cytoid bodies are conspicuous in the lower epidermis. It may be indistinguishable from hypertrophic lichen planus.

Studies demonstrated that there were two patterns in verrucous LE, keratoacanthoma-like and lichen planus-like.^{2,7} Table 1 compares the features of hypertrophic LE against discoid LE.

Table 1. Histological features of hypertrophic LE and discoid LE

Hypertrophic LE	Discoid LE
KA-like pattern: focal acanthosis with deep dermal projections; a sparse lichenoid cellular infiltrate; cytoid bodies	Liquefactive degeneration of basal cells; thickened basement membrane; perivascular and periadnexal infiltrates of lymphocytes and histiocytes; increase in mucin deposit in dermis
LP-like pattern: acanthosis, hyperkeratosis, hypergranulosis; dense band-like mononuclear cell infiltrate; cytoid bodies; resembling hypertrophic LP	
Both types show focally thickened basement membrane; many elastic fibres and elastic material penetrating the lower layers of epidermis	
Direct Immunofluorescence: granular deposits of IgG along the basement membrane; globular IgM deposits at the dermo-epidermal junction	Ig G,A,M and complement at the dermo-epidermal junction homogeneous, granular or thready patterns

Electron microscopy shows features of lichenoid tissue reaction.⁷ Keratinocytes with various degrees of cellular changes are noted in the epidermis. The prominent changes occurred at the dermo-epidermal junction. There is basal lamina reduplication. There are mixed cellular infiltrates (lymphocytes and macrophages) and degenerating keratinocytes in the dermis, and abundant elastic fibres in the dermis. Reduplication of basal lamina occurs in dermal vessels. Tubuloreticular inclusions are found in the endothelial cells of dermal blood vessels. This is a characteristic, but not diagnostic, finding in LE. These suggest that hypertrophic LE is a distinct variant of discoid LE.

Management

The general measure includes avoidance of sun exposure. Specific treatment options include topical steroid, intralesional steroid injection, antimalarials, retinoids and thalidomide.

Retinoids

Systemic retinoid can be used alone or in combination with antimalarials. Acitretin,⁸

isotretinoin⁵ and combination therapy of isotretinoin with hydro-xychloroquine³ have been reported successful in treating resistant hypertrophic LE.

There were two case reports of using isotretinoin in the management of hypertrophic LE. The dosage employed was 0.8-1 mg/kg/day. There was rapid response and dramatic improvement after three weeks of isotretinoin monotherapy; and complete resolution with scarring after nine weeks.⁵ A total of 11 weeks of isotretinoin was given and the patient remained symptom free for nine months. Isotretinoin and hydroxychloroquine combination therapy resulted in 80% improvement after seven weeks.³ A lower maintenance dosage of both drugs is required.

The mechanisms of isotretinoin in the management of hypertrophic LE are speculative.⁹ They include inhibition of mononuclear cells, alteration of epidermal antigens and non-immunologic direct effect on epidermal cell differentiation. Isotretinoin stimulates Langerhans' cells and macrophages which might aid in processing or eliminating inciting factors.

Thalidomide⁴

Thalidomide had been used in hypertrophic LE which failed to respond to topical steroid and oral antimalarials. The starting dose of 200 mg/d for 10 days and then 100 mg/d for 4 weeks was used. Improvement was observed in two weeks. There was no recurrence during one year follow-up without maintenance.

The mechanisms of action are not clear. They include anti-inflammatory, immunosuppressive and immunomodulating effects.

Learning Points

Hypertrophic lupus erythematosus is well-known for its recalcitrance to treatment. Oral retinoid alone or in combination with hydroxychloroquine are effective therapeutic modalities.

References

1. Behcet PE. Hypertrophic lupus erythematosus. Arch Dermatol Syphil 1940;42:211.
2. Uitto J, Santa-Cruz DJ, Eisen AZ, Leone P. Verrucous lesions in patients with discoid lupus erythematosus. Clinical, histopathological and immunofluorescence studies. Br J Dermatol 1978;98:507-20.
3. Rubenstein DJ, Huntley AC. Keratotic lupus erythematosus: treatment with isotretinoin. J Am Acad Dermatol 1986;14(5 Pt 2):910-4.
4. Georgala S, Katoulis AC, Hasapi V, Koumantaki-Mathioudaki E. Thalidomide treatment for hypertrophic lupus erythematosus. Clin Exp Dermatol 1998;23:141.
5. Green SG, Piette WW. Successful treatment of hypertrophic lupus erythematosus with isotretinoin. J Am Acad Dermatol 1987;17(2 Pt 2):364-8.
6. Mckee PH. Lupus erythematosus. In: Mckee PH, editor. Pathology of the Skin, 2nd ed., London: Mosby-Wolfe, 1996: 11.1-11.14.
7. Santa Cruz DJ, Uitto J, Eisen AZ, Prioleau PG. Verrucous lupus erythematosus: ultrastructural studies on a distinct variant of chronic discoid lupus erythematosus. J Am Acad Dermatol 1983;9:82-90.
8. Ruzicka T, Meurer M, Bieber T. Efficiency of acitretin in the treatment of cutaneous lupus erythematosus. Arch Dermatol 1988;124:897-902.
9. Newton RC, Jorizzo JL, Solomon AR Jr, et al. Mechanism-oriented assessment of isotretinoin in chronic or subacute cutaneous lupus erythematosus. Arch Dermatol 1986;122:170-6.

