

A Case Report of Erythema Induratum of Bazin's Disease

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Abstract

Introduction: Erythema induratum remains one of the rarely encountered tuberculid although tuberculosis is known to be endemic in the developing countries. We report a case of erythema induratum recently encountered in our centre. **Clinical Feature:** Clinically, erythema induratum typically manifests as ulcerative and indurated lesions on the lower limbs, especially the calves. **Treatment Outcome:** The patient responded well to a course of anti-tuberculous therapy with marked resolution of the lesions, suggesting the aetiological role of Mycobacterium tuberculosis in this condition. **Conclusion:** A short review of the distinguishing features of erythema induratum, the associated classical histological spectrum and the usefulness of polymerase chain reaction in the diagnosis of erythema induratum is given. A search for active foci of tuberculosis is advocated in all cases.

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Introduction

There are many dermatological manifestations of tuberculosis, ranging from distinct entities such as tuberculosis verrucosa cutis, lupus vulgaris, scrofuloderma, to tuberculides. The term tuberculide is applied to any of a group of eruptions which arise in response to an internal focus of tuberculosis and clear with anti-tuberculosis therapy. One such tuberculid is erythema induratum of Bazin.

Erythema induratum is reported to be rare in developed countries and is seen more commonly in developing countries where tuberculosis is endemic. We report an interesting and classical case of erythema induratum which was recently encountered in our centre.

Case Report

LKC, a 58-year-old Chinese male taxi-driver, was referred by his attending physician in October 1999 for the problem of bilateral painful lower limb nodules of 6 months' duration. The skin nodules were associated with ulcerations and serous discharges. The patient did not have any symptoms of fever, night sweats, loss of weight or joint pain. He gave no prior history of any trauma to the affected limbs. There was no significant recent travel history.

His diabetes mellitus was well controlled with glibenclamide. Other than a past history of ischaemic heart disease, he did not have any other significant medical

history or any previous history of tuberculosis.

On examination, there were multiple erythematous and tender nodules ranging from 2 to 3 cm in diameter on both his lower legs involving the dorsal as well as ventral surfaces. The skin surrounding the nodules was inflamed in appearance and indurated. The epidermis overlying several of the lesions were necrotic and the ulcerated nodules exuded a slightly haemoserous discharge (Fig.1). The regional lymph nodes were not enlarged. He was afebrile and his vital signs were normal (pulse rate: 80 beats/min, blood pressure 120/70 mmHg). Examination of the cardiovascular, respiratory and abdominal systems were unremarkable.

Investigations revealed a strongly positive Mantoux of 21 mm as well as an elevated erythrocyte sedimentation rate (ESR) of 57 mmHr. The chest X-ray did not reveal any significant abnormalities. The full blood count (FBC) and the liver function test (LFT) were normal with the following results:

FBC—total white count $5.98 \times 10^9/L$, haemoglobin 13.3 g/dL, platelet $338 \times 10^9/L$, neutrophil 62.7%, lymphocyte 31.8%, monocyte 11.9%, eosinophil 2.8%;

LFT—total protein 80 g/L, albumin 42 g/L, bilirubin 15 $\mu\text{mol/L}$, alkaline phosphatase 128 u/L, alanine aminotransferase 8 u/L, aspartate aminotransferase 18 u/L.

A skin biopsy revealed areas of caseous necrosis, abscesses in the lower dermis extending into the subcutis.

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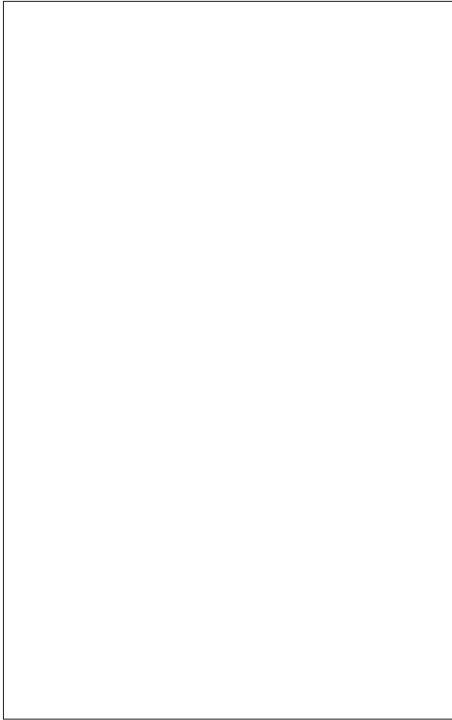


Fig.1. Inflamed and ulcerative nodules on the patient's calves.



Fig.2. Histology showing granulomatous inflammation with multinucleated giant cells within the subcutis, scarring and small vessel vasculitis with luminal occlusion by fibrin thrombus (magnification x200).

A zone of granulomatous inflammation with multinucleated giant cells with perivascular infiltrate of lymphocytes and histiocytes was present (Fig. 2). The fat septae was thickened by scar tissue. A few small blood vessels showed fibrin thrombi with infiltration of vessel walls by lymphocytes. The histological features were compatible with erythema induratum. Acid-fast bacilli were not demonstrated and tissue cultures were negative for *Mycobacterium tuberculosis*. Mycobacterial DNA was also not detected by a polymerase chain reaction assay targeting the IS6110 of *Mycobacterium tuberculosis*.

Both the clinical presentation and histological finding were consistent with erythema induratum and the patient had since been started on multidrug therapy comprising of rifampicin, isoniazid and ethambutol. Within 6 weeks of starting therapy, he showed rapid improvement with resolution of the lesions.

Discussion

Erythema induratum was first described by Bazin in 1861 in association with tuberculosis. It represents a chronic, persistent or recurrent nodular eruption occurring secondary to tuberculosis elsewhere in the body. Clinically, it presents as an indolent eruption of ill-defined nodules affecting the lower legs, predominantly the calves. The lesions may also occur on the thighs, feet, buttocks and forearms. The nodules may at first regress during warm weather and eventually persist and ulcerate. The ulcers are ragged,

irregular and shallow, with a bluish edge.¹ Our patient illustrated the classical presentation with ulcerative nodules over the calves and shins.

It has never been easy to separate and subclassify the inflammatory nodular lesions including erythema nodosum, nodular vasculitis and erythema induratum from one another. They have certain clinical features in common that often make absolute diagnosis difficult or impossible based on clinical grounds alone.

However, a few clinical features may be helpful to distinguish erythema induratum from erythema nodosum. Erythema induratum tends to have a chronic, recurrent course and the lesions involve not only the shins but also the calves, mainly concentrated in the lower third of the legs. The nodules also heal with ulcerations or depressed scar. A skin biopsy would further differentiate the two conditions.

On the other hand, nodular vasculitis was once proposed for cases not associated with tuberculosis while those cases that have been associated with tuberculosis have been designated erythema induratum. However, most authorities now regard both nodular vasculitis and erythema induratum as within the same spectrum of diseases and use the terms interchangeably.

Histologically, we would prefer to use the term "nodular vasculitis" for those cases that demonstrate extensive and severe vascular changes in medium-sized blood vessels.

The main histology, however, in erythema induratum is characterised by a granulomatous, tuberculoid infiltrate, vascular changes and areas of caseous necrosis. The variation in the histologic spectrum of erythema induratum had been well described in previous publications. In a study conducted by Cho et al,² the diagnosis of erythema induratum was supported on histologic grounds in 21 out of 31 cases and most revealed lobular or septolobular panniculitis with varying combinations of granulomatous inflammation, primary vasculitis and necrosis.

In another study by Schneider and Jordaan,³ two major histopathologic groups have been identified from patients with well-documented erythema induratum of Bazin. One group showed focal septolobular panniculitis in close association with a single muscular artery or vessel with primary neutrophilic vasculitis. The other group revealed a more diffuse septolobular panniculitis with primary neutrophilic vasculitis of either large or smaller vessels. In general, both may show predominant acute suppurative or granulomatous panniculitis. Our patient's histology showed features of diffuse granulomatous panniculitis and caseous necrosis, thus corresponding to the second pattern as described.

A tuberculous cause may play a crucial role in the development of erythema induratum, which has also been known to be associated with nasopharyngeal, renal and even endometrial tuberculosis and a search should be made for active tuberculosis. In tuberculous associated panniculitis, most of the cases had constitutional symptoms (66.6%), abnormal chest radiographs (83.3%) and elevated erythrocyte sedimentation rates which would alert the clinician to active tuberculous foci.⁴

The detection of mycobacteria in tuberculous skin lesions can be difficult. Traditional culture techniques typically yield low positive results. Recent demonstration of mycobacterial DNA in lesional skin by polymerase chain reaction (PCR) has strengthened the association between erythema induratum and tuberculosis. In a study carried out by Margall in assessing the usefulness of polymerase chain reaction (PCR) for the diagnosis of erythema induratum, mycobacterial DNA was detected in 12 of the 17 samples (70.5%) taken from 14 patients with clinical erythema induratum.⁵ In PCR, specific fragments of mycobacterial DNA can be amplified and so detected even when present only in tiny amounts. In another study conducted by Baselga et al⁶ in the detection of mycobacterial DNA in lobular granulomatous panniculitis, PCR amplification was positive in 77% of the skin biopsy specimens. In our local experience, out of 26 cases of erythema induratum tested by a standard PCR assay targeting IS6110, 54% were PCR-positive and correlated with a documented response to anti-tuberculous treatment

in 36% (personal communication—Tan S H et al). Therefore, the clinical decision to initiate anti-tuberculous therapy in suspected erythema induratum should not be based on PCR results.

Erythema induratum is believed to represent a tuberculid that arises in response to an internal focus of tuberculosis and can be regarded as a hypersensitivity reaction to mycobacterium tuberculosis. The point in favour of a hypersensitivity reaction was shown in immuno-histochemical labelling, which has revealed preponderance of T lymphocytes, monocyte-macrophages and Langerhans cells, indicative of a Type IV cell-mediated immune response.² Moreover, results of a Mantoux test were strongly positive usually in most cases of erythema induratum as also demonstrated by our patient.

The rapid resolution of lesions upon starting anti-tuberculous therapy with rifampicin, isoniazid and ethambutol is further confirmatory of the diagnosis of erythema induratum in this patient.

The skin lesions usually heal with scarring and residual hyperpigmentation. Relapses have been encountered in previous reports but more so in patients who received mono-antituberculous therapy.² There is also a need for combination therapy given for a sufficiently long period. Clearance of the skin lesions was quicker in patients treated with combination therapy.⁷

In conclusion, erythema induratum has distinct clinical, histopathologic and immunochemical features and a tuberculous focus of infection should be searched for in all patients. In countries where tuberculosis is endemic, a therapeutic trial of multi-drug anti-tuberculous therapy should be considered in an attempt to eradicate possible focus of mycobacterial infection.

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