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Erythema induratum

A hypersensitivity reaction to *Mycobacterium tuberculosis*

Erythema induratum (also known as Bazin disease, tuberculom, tuberculosis cutis indurativa and nodose tuberculid) is a rare condition that produces painful, firm, and sometimes ulcerated nodules on the lower legs. Distinctive and diagnostic histopathology comprises a septolobular panniculitis, necrosis, granulomatous inflammation and vasculitis.

Case study

An Indian woman, 27 years of age, who had recently moved to Australia, presented with painful, recurrent, ulcerating nodules on the anterior aspect of her calves over the preceding 2 months. She was afebrile and otherwise well. Diagnoses initially considered were atypical erythema nodosum, lupus panniculitis, erythema induratum, furunculosis and large vessel vasculitis (Table 1).

A wound swab grew group B streptococci and mixed coliforms. As the patient refused a skin biopsy, a course of oral dicloxacillin and ibuprofen was commenced and the patient was advised to rest and elevate her legs. Blood investigations showed iron deficiency anaemia that responded well to iron supplementation (the patient is a strict vegetarian with no history of gastrointestinal symptoms). However, liver function, electrolyte, antinuclear antibody (ANA) and antineutrophil cytoplasmic antibody (ANCA) tests were normal.

As there was no response to conservative treatment, the patient agreed to a skin biopsy that showed severe lobular panniculitis with granulomata and vascular necrosis. No acid fast bacilli or fungal elements were identified. The histopathology supported a clinical diagnosis of erythema induratum and was not consistent with the alternative diagnoses. Further, the presence of vascular changes virtually excluded the presence of cutaneous tuberculosis and other infectious agents.

Erythema induratum is thought to be a hypersensitivity response to *Mycobacterium tuberculosis* as the cause. On chest X-ray no evidence of pulmonary tuberculosis was found. The patient's origin increased her likelihood of tuberculosis exposure and a tuberculin skin test (TST) was strongly positive (35 mm). As a child, she had been vaccinated with BCG and a positive test was expected, but not to this degree.

Full antituberculosis therapy was recommended despite the absence of mycobacteria in the biopsy, using both routine histology and DNA amplification by polymerase chain reaction (PCR). The patient was commenced on isoniazid, rifampicin, pyrazinamide and ethambutol three times per week; and from that time no new lesions developed and the existing lesions began to dry up. Therapy was well tolerated. The regimen was reduced to isoniazid and rifampicin after 2 months, and continued to complete 6 months of treatment. At the end of the treatment, the ulcerated lesions had all healed and the nodules had resolved with only severe hyperpigmentation remaining. Three months following cessation of therapy no new lesions had occurred and the patient remained well.

Discussion

Erythema induratum is thought to be an immunologic

Table 1. Causes of painful nodules on the leg

Erythema nodosum
Lupus panniculitis
Pancreatic panniculitis/ α_1 -Antitrypsin deficiency
Trauma
Chemical/foreign body
Infection (including tuberculosis)
Factitial panniculitis
Vasculitis (including erythema induratum)

response to *M. tuberculosis*. The host's immune system may prevent clinical tuberculosis from developing. In some cases the organism is not identified, even by PCR. Hence, the diagnosis of erythema induratum can be made on the basis of:

- characteristic clinical morphology
- a strongly positive TST
- circumstantial evidence of tuberculosis exposure, and
- supportive histopathologic findings.

Response to antituberculosis therapy confirms the diagnosis, as untreated lesions persist for years. The clinical evidence and histopathology were persuasive enough to proceed with full antituberculosis therapy in this case and this proved to be the right decision. With the exception of rifampicin at high concentrations,¹ the prescribed medications are not known to exhibit any anti-inflammatory effect.

The clinical relevance of the detection of *M. tuberculosis* DNA by PCR is under debate,²⁻⁴ and improvements in PCR technology may increase the rate of detection. In this case, the diagnosis was a challenge because the PCR

result was negative.

Previous BCG makes interpretation of the TST less informative, but it was more reactive than would be accounted for by previous BCG vaccination. Skin tests can be extremely florid under these circumstances and a 2 unit rather than 10 unit TST could have been used to avoid such a possibility. A positive result with a very low inoculum level would indicate a higher likelihood of erythema induratum.

Conclusion

Erythema induratum remains a rarely encountered tuberculid, but with the revival of tuberculosis and possible advent of new cases of erythema induratum, it is important that the medical practitioner is familiar with this entity in order to offer appropriate referral and management.⁵

Conflict of interest: none declared.

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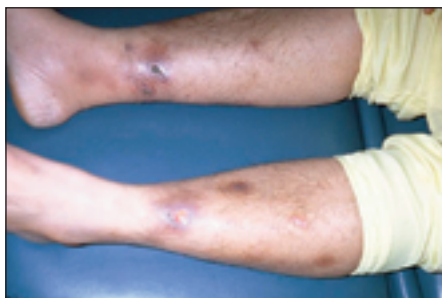


Figure 1. Multiple pigmented nodules on the lower legs, some with ulceration

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