

# Erythema induratum

*Synonyms: Bazin's disease, nodular vasculitis, tuberculous erythema induratum, tuberculosum, tuberculosis cutis indurativa and nodose tuberculid*

Erythema induratum is a rare condition that classically produces painful, firm and sometimes ulcerated nodules on the lower legs in association with [tuberculosis \(TB\)](#).

## Classification

In 1945 the term *nodular vasculitis* was coined to describe chronic inflammatory nodules of the legs that showed histopathological changes similar to those of erythema induratum, but *without* an association with TB. The vasculitis is of the larger vessels with panniculitis – an inflammation involving subcutaneous fat and occasionally muscle, with or without vasculitis.

Erythema induratum and nodular vasculitis had been seen as the same disease for many years but nodular vasculitis is now considered to be a multifactorial syndrome of lobular panniculitis in which tuberculosis may or may not be one of the various aetiologies.

It is now classified as:

- Erythema induratum of Bazin type – associated with TB.
- Erythema induratum (or nodular vasculitis) of Whitfield type – no association with TB.

# Pathophysiology

The disease or diseases represent an inflammatory reaction. One antigen is *Mycobacterium tuberculosis*. Patients with erythema induratum have a strongly positive tuberculin skin test and a marked increase in their peripheral T-lymphocyte response to purified protein derivative (PPD) of tuberculin, which is a delayed (type IV) hypersensitivity reaction.

In cases of erythema induratum with a negative tuberculin test, the cause is often unknown but there have been case reports of an association of erythema induratum with infectious disorders caused by nocardia, *Pseudomonas* spp., *Fusarium* spp., hepatitis C, and hepatitis B. <sup>[1]</sup>

## How common is erythema induratum? (Epidemiology)

- The disease is still seen in countries where TB is rife but it is rarely seen in western societies. When it is, the type is more often Whitfield than Bazin. Erythema induratum is still prevalent in India, Hong Kong, and South Africa.
- There is a marked female preponderance.
- The most common presentation is in adolescent or perimenopausal women. <sup>[2]</sup>

## Erythema induratum symptoms (presentation)

- The clinical picture of erythema induratum is characterised by tender, violaceous nodules and plaques, most commonly affecting the posterior lower legs (usually the calves), with the shins involved less often.
- The trunk, buttocks, thighs, and arms can be involved but this is much rarer.
- The nodules are tender and erythematous.
- The nodules may ulcerate with bluish borders, and cold weather may be the precipitating factor. This produces irregular, shallow ulcers that may cause permanent scarring with hyperpigmentation of the lesions. They may run a chronic and recurrent course.

- The legs may be oedematous.
- About half of patients will give a past or present history of tuberculosis. This is most often pulmonary tuberculosis with cervical lymphadenopathy second.
- Erythema induratum often remains undiagnosed or misdiagnosed because it can masquerade as other types of chronic nodules of the lower extremities.

## Differential diagnosis

- Cold panniculitis.
- [Chilblain](#).
- Lymphoma.
- [Erythema nodosum leprosum](#).
- [Dermatitis artefacta](#).
- [Alpha-1-antitrypsin deficiency panniculitis](#).
- Lupus panniculitis.

## Investigations

- FBC and ESR.
- CXR.
- If a Mantoux test is performed it should be at a 1:10,000 dilution, as the response can be very marked. Unlike nodular vasculitis, erythema induratum is seen as a tuberculous disease and a strongly positive Mantoux response is regarded as an important diagnostic feature.
- The results of mycobacterial cultures are rarely positive, and the tuberculin skin test is of limited usefulness in populations exposed to bacillus Calmette-Guérin (BCG).<sup>[3]</sup>
- Interferon-gamma release assays (IGRAs) are alternatives to the tuberculin skin test and have high specificity, especially in those who have received a BCG vaccine.<sup>[4]</sup>

- A lesion may be biopsied and polymerase chain reaction (PCR) provides rapid and sensitive detection of *Mycobacterium tuberculosis* in a formalin-fixed, paraffin-embedded specimen. This can differentiate tuberculous disease from other aetiologies.<sup>[5]</sup>
- An excision biopsy is usually recommended, going down to an adequate level of subcutaneous fat. Stains for bacteria and fungi may be used and an attempt to culture the tubercle bacillus and other organisms.
- Histopathological examination demonstrates a predominant lobular panniculitis with granulomatous inflammation. A neutrophilic vasculitis is usually present and affects contiguous small- and medium-sized vessels. Necrosis of fat lobule adipocytes may also be present and palisading granulomas are occasionally formed.
- Specimens for culture must be sent to the laboratory without delay and they must not be placed in formalin.

## Erythema induratum treatment and management

- See also the separate [Tuberculosis article](#).
- Bed rest may be indicated.
- Steroids should be used with caution in old or active TB.

## Complications

If not properly treated, the lesions can be persistent and ulcerated, and cause scarring.

## Prognosis

- If TB is the cause, the lesions will disappear with appropriate TB treatment.
- Spontaneous resolution of lesions is common within a few months, leaving areas of postinflammatory hyperpigmentation and atrophic scarring.

- Erythema induratum usually runs a chronic, recurrent course in which lesions return every three to four months over the span of many years.<sup>[2]</sup>

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## Further reading

- [Fernandes NC, Hortencio AP](#); Erythema induratum of Bazin. Rev Soc Bras Med Trop. 2023 Feb 20;56:e0465. doi: 10.1590/0037-8682-0465-2022. eCollection 2023.
- [Irifune S, Yamamoto K, Ishijima S, et al](#); Erythema induratum of Bazin–A subcutaneous granulomatous vasculitis that caused difficulty in walking. Int J Infect Dis. 2021 May;106:183–184. doi: 10.1016/j.ijid.2021.03.077. Epub 2021 Mar 29.

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