Erythema Induratum in a Migrant from the Caribbean: A Case Report and Mini-review of Cutaneous Tuberculosis

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Abstract

- Woman in her late 50s from Caribbean with prior *Mycobacerium tuberculosis* (MTB) exposure
- Presented with nodular ear helix and thigh lesions, with leprosy on the differential diagnosis
- Investigations: necrotizing granulomas, rare AFB; PCR/cultures negative
- Positive TST + response to TB therapy → erythema induratum (tuberculid)
- Highlights need to consider MTB in nodular skin lesions in migrants from endemic regions

Figure 1. Papulonecrotic Tuberculid[1]

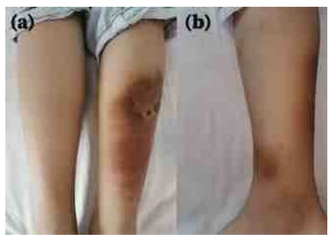

Figure 2. Erythema Induratum[2]

Figure 3. Lichen Scrofulosorum[3]

Introduction

Tuberculids

- Cutaneous hypersensitivity reactions to MTB[4]
- Primary clinical forms: papulonecrotic tuberculid, erythema induratum (Bazin's disease), and lichen scrofulosorum[5]
- Diagnostic challenges: paucibacillary lesions, negative cultures, and absence of acid-fast bacilli on histopathology.
- Treatment: multi-drug treatment regimens as recommended for pulmonary TB[6]

Case Presentation

- Woman in her late 50s, immigrated from a Caribbean country presented with erythematous nodular lesions on thigh and bilateral ear helices.
- History of significant pulmonary TB exposure
- Investigations:
  - Dermatoscopy
  - Biopsy of lesions
  - Ziehl-Neelsen and FITE staining
  - PCR and Tissue culture
  - Tuberculin skin test (TST)
  - Chest X-Ray
- Treatment: 12-month anti-tuberculosis therapy - rifampin, isoniazid, pyrazinamide

Results

- Biopsy: Necrotizing granulomas, lymphocytic and histiocytic infiltrates.
- PCR: Negative for MTB and M. leprae.
- TST: Positive
- Chest X-ray: Normal.
- Clinical course: Lesions largely resolved after 12 months of therapy.

Table 1. Tuberculosis Skin Manifestations

	Primary Cutaneous TB	Secondary Cutaneous TB	Tuberculid
	Tuberculosis verrucosa cutis	**Lupus vulgaris**	**Erythema induratum**
Mechanism	• Direct inoculation with prior sensitization to the organism	• Reactivation of Tb that reaches the skin via contagious spread, lymphatic or hematogenous spread	• Hypersensitivity reaction to TB
Appearance	• Painless brown-red warts that are indurated and can be anywhere from 1-5cm in diameter	• Red-brown papules and plaques • often a central clearing once the plaque becomes very large	• Painful, red subcutaneous nodules, symmetrical • May progress to draining ulcers.
Location (common)	• Digits or dorsum of hands and feet	• Head and neck (western countries) • Lower extremities and buttock (tropical and subtropical countries)	• Lower legs
Risk Factors	• Adults with occupational exposures • Children that play in contaminated areas	• None	• Children or young adults
Associated features	• No regional lymphadenopathy	• None	• Lower limb edema

Discussion

- **Pathophysiology -** type III and IV hypersensitivity to *M. tuberculosis* antigens, distinct from primary/secondary cutaneous TB.
- **Diagnosis -** integration of histopathology, immune testing (TST/IGRA), exposure history, and therapeutic response
- **Differential diagnosis -** Leprosy ruled out by epidemiology, absence of neuropathy, negative PCR, and lesion distribution

Cutaneous Manifestations of TB:

- **Primary cutaneous TB:** Results from direct inoculation; AFB often detectable.
- **Secondary cutaneous TB:** arises from hematogenous spread, contiguous extension, or autoinoculation in individuals previously sensitized to TB.
- **Tuberculids**: Hypersensitivity reaction, strongly positive TST, lesions non-transmissible.
- **Management:** Standard anti-TB therapy: rifampin, isoniazid, pyrazinamide ± ethambutol, typically results in lesion resolution within weeks to months.

Conclusions

- Nodular cutaneous lesions in persons from the tropics require a broad differential diagnosis.
- TB should remain the top consideration in patients with documented exposure and no prior treatment.
- TB is highly pleomorphic and can mimic other dermatologic conditions.
- Leprosy is an important mimic, but in Canada most cases occur in migrants from the Philippines, India, and Vietnam[7]
- Careful history, targeted investigations, and clinical response to therapy are essential to establish the diagnosis and guide management.

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