# Chapter 10
# Annular Erythematous Plaque on the Face in a Lady

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**Abstract** Leprosy is a chronic infectious disease caused by *Mycobacterium leprae* and is broadly divided into tuberculoid and lepromatous poles. Tuberculoid leprosy is characterized by a few well-defined hypopigmented macules or plaques with sensory loss. There may be adjacent nerve involvement. Presence of acid-fast bacilli in slit skin smear or tissue sample is confirmatory. Treatment is based on multidrug therapy (MDT). Here we report a case of tuberculoid leprosy in a 34-year-old woman.

**Keywords** *Mycobacterium leprae* · Tuberculoid leprosy

## Clinical Presentation

A 34-year-old woman presented with a well-defined reddish patchy eruption over her right cheek for 6 months. The lesion was increasing slowly. She also states that she has no sensation over the affected area. On cutaneous examination, an oval hypopigmented plaque of 8 × 6 cm diameter was seen on her right cheek (Fig. 10.1); the margin was well defined, erythematous, and raised; and the surface of the lesion was xerotic. There was decreased pin pricking sensation over the lesion comparable to the opposite side. The fine touch and temperature sensations were intact over the lesion. Superficial cutaneous nerves adjacent to the lesion like supraorbital, infraorbital, zygomatic branch of the facial nerve, supratrochlear, and greater auricular nerves were not palpable. There was no lymphadenopathy.

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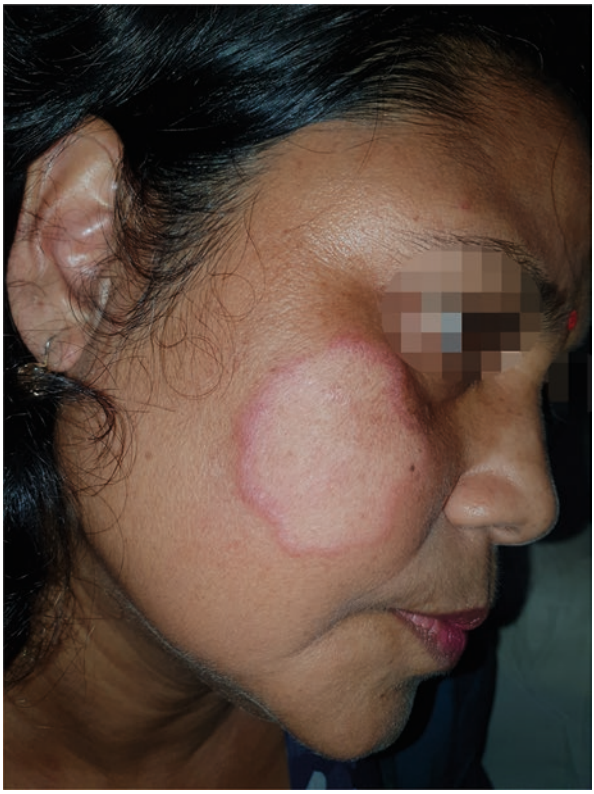

**Fig. 10.1** Well-defined annular plaque with raised erythematous border and central hypopigmentation

## What Is Your Diagnosis?

- Hansen's disease (TT).
- Granuloma annulare.
- Sarcoidosis.
- Lymphoma.

## Investigations

A slit skin smear done from both earlobes; eyebrows and the lesion did not yield any bacilli. A punch biopsy was taken from the lesion, and the histopathological examination showed epidermal thinning. There were numerous elongated granulomas in superficial and deep dermis. The granulomas were periadnexal and perivascular mainly. The granulomas consisted of epithelioid cells, Langhans giant cells, lymphocytes, and occasional polymorphonuclear cells (Fig. 10.2a, b). Result of Ziehl-Neelsen staining was negative.

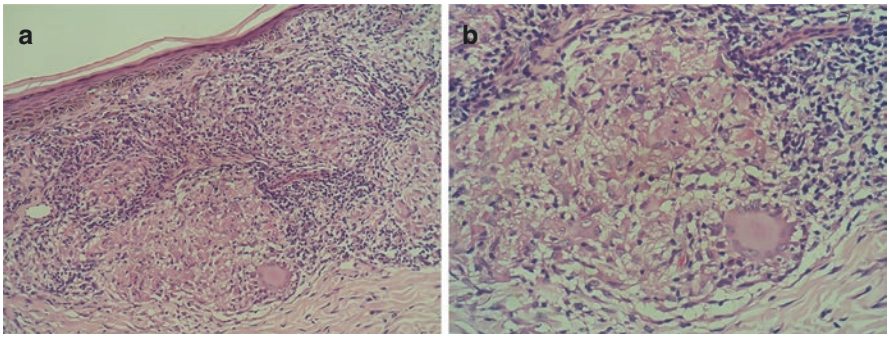


**Fig. 10.2** (**a**) Thinned epidermis and well-formed epithelioid granuloma in the upper dermis (H&E ×100). (**b**) Granuloma consisting of Langhans giant cell and epithelioid cells. Lymphocytes can be seen at the periphery of the granuloma (H&E ×400)

## Final Diagnosis

With the above clinical and histological findings, a diagnosis of tuberculoid leprosy was made.

## Discussion

Tuberculoid leprosy (TT) is characterized by five or less lesions. There may be well-defined, hypopigmented or erythematous macules or plaques. Sometimes the lesional margin may be elevated with inward sloping. There is sensory impairment over the lesion with decreased or absent pain, fine touch, and temperature sensation. Any body part may be affected, but uncovered body parts may be involved more frequently [1]. As the autonomic nerves may get involved, the surface of the lesions may be xerotic due to decreased sweating. There may be loss of hairs over the lesions. One or two adjacent nerves may get involved and may become thickened.

As the disease further progresses, a more unstable borderline (BB) appears with more lesions and nerve thickening. Towards lepromatous pole (LL), the bacilli are widely distributed with innumerable lesions and nerve involvement. The skin and peripheral nerves are widely infiltrated with the bacilli.

Slit skin smear (SSS) is usually positive in cases with high bacterial load as in lepromatous pole (LL). In a tuberculoid pole, the bacterial load is less so the chances of getting acid-fast bacilli (AFB) in smears are also grim. In TT, demonstration of bacilli is not possible due to low bacterial load [2].

Histopathologically, TT is characterized by non-caseating epithelioid cell granuloma. The granulomas are typically centered around cutaneous nerves. Sometimes the granuloma may be of serpentine shape as it follows the nerve. The epidermis may be normal, or atrophic. There is absence of the grenz zone. The granuloma may

involve the dermis and subcutaneous fat. The granulomas usually have Langhans giant cells with numerous lymphocytes. There is scarcity of bacilli in TT [3].

Histopathological examination usually helps to confirm doubtful cases and also helps to observe treatment outcome of the disease following therapy [4]. Sarcoidosis, granuloma annulare, and granulomatous rosacea may sometimes be confused histologically with TT leprosy. In sarcoidosis, there is naked granuloma as the lymphocytes are few. There may be mild dermal fibrosis. In granuloma annulare, there is palisading granuloma with necrobiosis and mucin deposition. In granulomatous rosacea, the granulomas are lymphocyte dominant and are centered around the pilosebaceous units, and there may be plasma cells.

Treatment of TT is based on MDT. As per WHO guidelines (2018), a three drug regimen consisting of rifampicin, dapsone, and clofazimine should be given for 6 months. Prognosis of TT is very good, and sometimes the lesion may heal itself without any medication. Chances of deformity are also very less [4].

## References

1. Imbiriba EB, , Hurtado-Guerrero, Garnelo L. Epidemiological profile of leprosy in children under 15 in Manaus (Northeren Brazil), 1998-2005. Rev Saude Publica 2008;42:1021–26.73.
2. Lucus SB, Ridley DS. The use of histopathology in leprosy diagnosis and research. Lepr Rev. 1989;60:257–62.
3. Kumar B, Dogra S. Case definition and clinical types of leprosy. In: Kumar B, Kumar KH, editors. IAL textbook of leprosy. 2nd ed. Jaypee Brothers Medical Publishers (P) Ltd; 2016. p. 236–53.
4. Guidelines for the diagnosis, treatment and prevention of leprosy. WHO; 2018. https://apps.who.int/iris/bitstream/handle/10665/274127/9789290226383-eng.pdf. Accessed 21 Oct 2021.