

## Black Dots and Broken Hairs in Leprosy Unveiled by Dermoscopy

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Leprosy, caused by *Mycobacterium leprae*, is a chronic infectious disease which presents with varied clinical manifestations primarily affecting the skin and peripheral nerves. This study reports a 15-year-old female with light-colored skin lesions, sensory loss, and hair loss on the shins. Clinical examination revealed multiple hypopigmented patches with sensory deficits. Dermoscopic evaluation showed reduced white dot density, scaling, broken hairs, and black dots against a yellowish background. Dermoscopy appears to be useful in the diagnosis of leprosy and its timely identification for appropriate management. Further research is needed to establish standardized dermoscopic criteria for leprosy diagnosis and to assess its sensitivity and specificity in a larger patient population.

**Keywords:** Leprosy, Dermoscopy, Black Dots, Broken Hair

### Introduction

Leprosy is a chronic granulomatous infection caused by *Mycobacterium leprae* with varied clinical presentations spanning across the spectrum of the disease. It is diagnosed based on cardinal features of hypoaesthetic light-colored skin patches, thickened peripheral nerves and presence of acid fast lepra bacilli in slit skin smear samples which is classified into spectrum of clinical types as per the IAL classification (1982) and clinic-immunopathological spectrum described by Ridley & Jopling (1966).

During the last decade there are several reports showing that Dermoscopy aids in the rapid diagnosis of various skin diseases including granulomatous diseases like leprosy (Micali

et al 2011, Miteva & Tosti 2012, Errichetti & Stinco 2016, Ankad & Sakhare 2018, Vinay et al 2019). We report our experience about the application of dermoscopy in investigating a case of indeterminate leprosy.

### Case Report

A 15-year-old female presented to the dermatology OPD with complaints of light coloured skin lesions with loss of sensation and hairs over bilateral shins for 45 days.

On examination, the patient had multiple well-to ill-defined hypopigmented patches with satellite lesions (Fig. 1), loss of sensation to touch, pin prick and loss of hair over the bilateral shins for which no treatment was taken previously. Video dermoscopic features of the lesions showed reduced density of white

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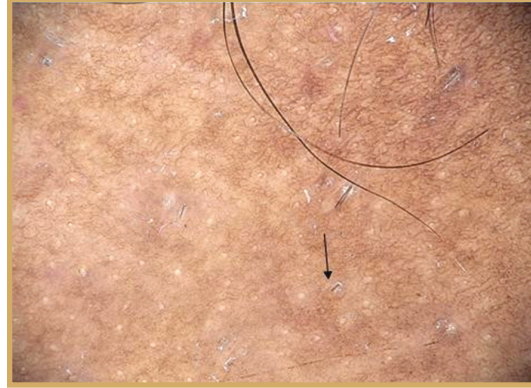
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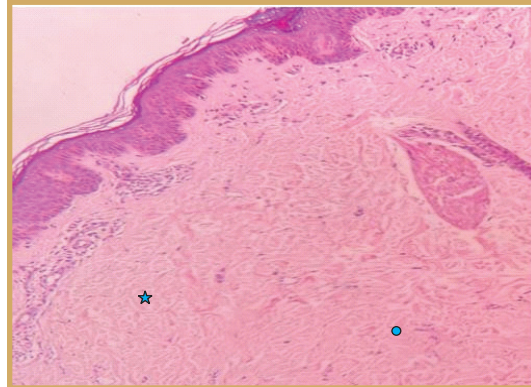
**Fig. 1 : Skin manifestation in the patient: Multiple well to ill-defined hypopigmented patches on bilateral shins.**



**Fig. 2 : Dermoscopy findings: Black arrow showing broken hair.**



**Fig. 3 : Dermoscopy findings: Blue arrow showing scaling, green arrow showing decreased follicular and eccrine opening, yellow arrow showing black dots.**



**Fig 4 : H and E 10x section showing thinned out epidermis, dermis shows few scattered macrophages and scant inflammatory cell infiltrates (blue star) with areas of fibrosis (blue dot) and decrease in adnexal structures.**

dots indicating decreased eccrine and follicular openings, occasional scaling, broken hairs (Fig. 2) and black dots with yellow background (Fig. 3). Skin biopsy from the lesion showed thinned out epidermis, dermis shows few scattered macrophages and scant inflammatory cell infiltrates with areas of fibrosis and decrease in adnexal structures (Fig. 4).

Based on above mentioned history, clinical examination and histopathology, the final diagnosis of indeterminate leprosy was made for which she was started on capsule rifampicin 450 mg once a month and tablet dapsone 100mg on alternate days. The patient responded well to the treatment and was followed up monthly for one year.

## Discussion

Leprosy is known as a persistent infectious ailment primarily impacting the skin and peripheral nerves, transmitted mainly through *Mycobacterium leprae* via droplets in the nasal mucosa (Lockwood 2016). The disease's clinical manifestations and progression hinge on factors such as the host's immune response specific to leprosy bacillus and bacterial load. Accurate diagnosis and classification are paramount for guiding treatment decisions, assessing complication risks, and predicting prognosis. The IAL classification (1982) identifies five variants, including tuberculoid to lepromatous and pure neuritic forms.

Dermoscopy, a non-invasive tool widely employed in dermatology for diverse skin conditions, has recently been utilized to establish correlation between dermoscopic features and the clinical as well as histopathologic characteristics of different leprosy forms. Clinical features of this case prompted suspicions of leprosy, warranting a dermoscopic examination. Video dermoscopy revealed unique features in this case, including diminished white dot density, sporadic scaling, broken hairs (Fig. 2), and the presence of black dots against a yellowish background (Fig. 3). The presence of black dots in our case is indicative of broken hairs at the skin surface which aligns with the results reported by Ankad & Sakhare (2018). It is worth highlighting that, within the scope of our research, black dots and broken hairs emerged as the novel observation. Further investigation and analysis may be required to elucidate the potential implications, underlying factors contributing to this observed discrepancy in black dot prevalence across various studies. The presence of broken hairs, a phenomenon consistently observed in our study, underscores their significance as a

valuable clinical marker for assessing disease activity and severity. This observation implies that the degree of hair breakage can serve as an informative indicator, allowing clinicians to gauge the overall health and progression of the underlying condition. As such, further investigations into the mechanisms underlying hair breakage and its specific associations with disease processes are warranted, which may lead to improved diagnostic and therapeutic approaches in the future. Clinical features, slit skin smears for acid fast bacilli and histopathological characteristics have been the mainstay of diagnosis and classification of leprosy (Agarwal et al 1990, IAL 1982, Ridley & Jopling 1966, Mathur et al 2017). Dermoscopy shows the potential to be an additional tool for this purpose.

## Conclusion and way forward

In conclusion, this case report demonstrates the potential utility of dermoscopy as a valuable adjunctive tool for aiding in the diagnosis of leprosy in ambiguous cases. Larger studies are required to validate dermoscopy findings in leprosy.

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