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Case Report

Crusted Scabies in Multibacillary Leprosy: A Rare Case Report

MJ Bya[1], AC Tanto[2], FO Manongga[3]

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Crusted scabies is a rare, severe form of *Sarcoptes scabiei* infestation, typically affecting immunocompromised individuals, including patients with leprosy. A 42-year-old male construction worker diagnosed with multibacillary (MB) leprosy discontinued multidrug therapy (MDT) after five months due to extensive lesions and severe nocturnal pruritus. He was admitted with thick, scaly skin, hyperpigmented lesions with brownish-black crusts, leonine facies, and sensory loss. Skin scraping with 10% KOH confirmed the presence of *Sarcoptes scabiei*. Treatment included topical permethrin 5%, albendazole for lack of ivermectin, supportive skin care, and temporary MDT suspension due to gastrointestinal side effects. Significant clinical improvement occurred within three days. He was discharged after one week and resumed MDT with supportive gastrointestinal medication. Bacillary index showed decreased leprosy activity. Co-infection of crusted scabies in MB leprosy poses diagnostic and therapeutic challenges, especially in resource-limited settings. Early recognition, aggressive antiparasitic treatment, skin care, gastrointestinal management, and treatment of family contacts are essential to optimize outcomes and prevent reinfestation.

Keywords: Crusted Scabies, Multibacillary Leprosy, Multidrug Therapy, Neglected Tropical Diseases

Introduction

Scabies is a skin disease caused by the infestation of *Sarcoptes scabiei* var· *hominis*, recognized by the World Health Organization (WHO) as a Neglected Tropical Disease (NTD) due to its high global burden, especially in resource-limited settings (WHO 2025). It affects over 200 million people at any time, accounting for more than 400 million cases annually (Romani et al 2015). The disease is highly prevalent in tropical regions with limited healthcare access, and prevalence ranges from 5–50% among children and the elderly (Engelman et al 2019).

A severe form of scabies is crusted scabies, previously termed Norwegian scabies, and is characterized by diffuse hyperkeratosis, thick crusting, and an exceptionally high mite burden (Walton & Currie 2007). Crusted scabies is highly contagious and can lead to serious complications such as secondary bacterial infections, sepsis, and even mortality if left untreated (Bernigaud et al 2020). The disease poses significant public health concerns due to its potential for rapid spread through direct skin-to-skin contact or

[1] MJ Bya, MD, Dermatology and Venereology Specialist, Department of Dermatology and Venereology, Prof Dr. W.Z. Johannes General Hospital, Kupang, Indonesia

[2] AC Tanto, MD, Faculty of Medicine and Veterinary Medicine, Nusa Cendana University, Indonesia

[3] FO Manongga, Specialist in Clinical Microbiology, Clinical Microbiology Laboratory, Prof Dr. W.Z. Johannes General Hospital, Kupang, Indonesia

Corresponding Author: Dr Margareth Juniawati Bya, **Email**: margarethbya@gmail.com

Fig. 1 : Upper extremities of the patient after treatment: (a) Claw-hand deformity visible on the right hand due to chronic peripheral neuropathy associated with MB leprosy, (b) Round hypopigmented macules of lenticular size, discretely arranged and scattered bilaterally on both hands.

contaminated fomites such as bedding and clothing (Engelman et al 2020). It primarily affects immunocompromised individuals, including those with prolonged immunosuppressive treatment, HIV/AIDS, or Hansen's disease (leprosy) (Walton & Currie 2007).

Leprosy is a chronic infection caused by *Mycobacterium leprae*, primarily affecting the peripheral nerves, skin, and upper respiratory tract mucosa, resulting in progressive disabilities (Scollard et al 2006). Indonesia remains a major contributor to the global leprosy burden, accounting for over 16% of new cases reported worldwide in 2019 (WHO 2021). Despite declining incidence, challenges persist due to delayed diagnosis and social stigma (Dharmawan et al 2022). According to WHO, leprosy is classified as paucibacillary (PB) or multibacillary (MB), with MB being the more severe form. MB leprosy also impairs cell-mediated immunity, increasing susceptibility to opportunistic infections, including crusted scabies (Scollard et al 2006).

The coexistence of crusted scabies and MB leprosy is rare but presents significant clinical challenges. Delayed diagnosis and suboptimal treatment can result in high morbidity and

Fig. 2 : Clinical presentation of the patient after treatment: (a) Visible deformity of the left ear, (b) Presence of bilateral madarosis, saddle nose, and leonine facies – typical manifestations of advanced MB leprosy, (c) Visible deformity of the right ear.

mortality, particularly due to secondary infections (Engelman et al 2020). Here, we present a case of crusted scabies in a patient with MB leprosy from Kupang, East Nusa Tenggara, Indonesia, emphasizing the importance of early recognition and integrated management strategies in such complex comorbidities.

Case Report

A 42-year-old male construction worker from Kupang, East Nusa Tenggara, Indonesia, presented with one month of generalized nocturnal pruritus and diffuse hyperkeratotic, scaly skin lesions. Initial symptoms appeared as hypoesthetic patches on the dorsal feet and progressively involved the hands, face, and ears, leading to facial disfigurement and bilateral foot oedema. Neurological examination revealed loss of tactile, pain, and temperature sensation with claw hand deformity (Fig. 1).

The patient was diagnosed with MB leprosy in March 2024 and had taken MDT for five months. However, he discontinued MDT for one month due to the worsening of widespread skin lesions. The patient lived with his mother and wife, both experiencing similar nocturnal pruritus, suggesting household transmission.

Physical Examination

- Facial findings: Leonine facies, ear infiltration, nasal deformity (Fig. 2)
- Skin findings: Hyperkeratotic plaques with brownish-black crusting, hyperpigmented macules, and excoriations of the entire body (Figs. 1 and 3)
- Nail changes: Onycholysis, hyperkeratosis, and nail discoloration (Figs. 4 and 5)
- Peripheral nerve involvement: Decreased tactile, pain, and temperature sensation in affected areas, accompanied by foot muscle weakness.

Diagnostic Findings

A skin scraping test with 10% KOH confirmed the presence of *Sarcoptes scabiei* under x100 magnification (Fig. 6).

Fig. 3 : Lower extremities of the patient after treatment: (a-b) Irregularly shaped, well-defined hypopigmented macules (2–3 cm in size), discretely arranged and bilaterally scattered on both legs, accompanied by hyperpigmented plaques and erosion.

The initial bacillary index (BI) and morphological index (MI) results could not be retrieved, as the slit skin smear was performed at the referring primary healthcare facility and the results were not transferred to our hospital's medical record system. Follow-up slit skin smears were conducted twice using Reitz staining technique from bilateral earlobes, skin lesions, and nasal swabs in June and September 2024. All results were negative. No solid *Mycobacterium leprae* was detected in 100 fields of examination.

Treatment and Management

The patient was hospitalized and received anti-parasitic therapy, including permethrin 5% cream twice weekly for two weeks and oral Albendazole 400 mg daily for three days (due to unavailability of ivermectin).

Supportive therapy was administered, including gentamicin ointment (twice daily) for infection prophylaxis, desoximetasone cream for hyperkeratotic areas, moisturization with virgin coconut oil (VCO) (twice daily), cetirizine 10 mg twice daily for pruritus, vitamin D3, iron supplements, and zinc. No specific pharmacological treatment was initiated for the claw hand deformity. The patient was advised to undergo physiotherapy to maintain hand mobility.

During hospitalization, MDT was temporarily discontinued due to worsening skin lesions and gastrointestinal complaints (nausea, vomiting, epigastric pain). MDT was restarted on day 7 of hospitalization after improvement of

Fig. 4 : Clinical presentation of the patient before treatment: (a-d) On the extremities, multiple confluent erythematous macules of variable size with indistinct borders were observed, accompanied by diffuse hyperkeratosis. (c-d) Some areas showed erosions with thick, brownish-black crusts and scaling characteristic of crusted scabies.

gastrointestinal symptoms. The patient was able to tolerate the regimen without further adverse effects.

Clinical Outcome

After three days of treatment, crusting and itching significantly improved. He was discharged after

Fig. 5 : Lower extremities of the patient on admission: (a) Visible edema in both legs, (b) Onycholysis was present on the nails of digits 2, 3, 4, and 5.

Fig. 6 : Sarcoptes scabiei var. hominis in 10% KOH examination (x100 magnification).

one week and resumed MDT with supportive gastrointestinal medication. A follow-up bacillary index showed fragmented bacilli, indicating reduced leprosy activity. Ongoing monitoring is planned to ensure MDT adherence and to detect potential reinfestation. At one-month follow-up after discharge, the patient showed sustained clinical improvement with no recurrence of crusting or severe pruritus.

Discussion

Crusted scabies, also known as Norwegian scabies, is a rare but severe form of *Sarcoptes scabiei* infestation, commonly associated with immunocompromised states such as leprosy (Arlian & Morgan 2017). In this case, the patient, diagnosed with MB leprosy, developed crusted scabies after five months of multi-drug therapy (MDT), highlighting a possible immunological relationship between leprosy and susceptibility

to severe parasitic infections (Scollard et al 2006).

Patients with MB leprosy, particularly those with extensive nerve involvement, exhibit impaired cell-mediated immunity, limiting their ability to control parasitic infestations like scabies (Scollard et al 2006). Studies show crusted scabies patients exhibit a predominant Th2 response, characterized by elevated interleukin-4 (IL-4) and reduced interferon-gamma (IFN-γ). A similar imbalance occurs in MB leprosy, where Th1-mediated suppression responses exacerbate susceptibility to chronic infections (Walton & Currie 2007).

Clinical Features and Predilection Sites

This patient exhibited thick, hyperkeratotic scaly lesions and severe nocturnal pruritus, typical of crusted scabies. Dark brownish-black crusts, leonine facies, and diffuse skin infiltration also suggested secondary complications of leprosy, necessitating further evaluation.

In classic scabies, burrows (tunnels) appear as white or grayish serpiginous lines (~1 cm), usually ending in a papule or vesicle. These burrows are commonly found in areas with thin stratum corneum, including interdigital spaces, wrists, elbows, axillae, areolae, genitalia, and lower abdomen (Engelman et al 2020). However, in this case, burrows were obscured by extensive crusting, and diagnosis was confirmed by potassium hydroxide (KOH 10%) skin scraping, which revealed numerous *Sarcoptes scabiei*. According to the 2020 International Alliance for the Control of Scabies (IACS), the case fulfilled Category A1 (confirmed scabies) (Engelman et al 2020).

Managing crusted scabies in MB leprosy requires a multidisciplinary approach targeting both parasitic infection and leprosy-induced immune dysfunction. Permethrin 5% cream served as the first-line topical agent, proving effective in this case. The main challenge was the unavailability of ivermectin, the recommended systemic therapy, noted for penetrating hyperkeratotic lesions and eradicating deeply embedded mites (Bernigaud et al 2020, Strong & Johnstone 2007). In this case, albendazole 400 mg daily for three days was given. Albendazole is an antiprotozoal agent with larvicidal effect; therefore, it can be used as an alternative treatment of crusted scabies when oral ivermectin is unavailable, along with 5% permethrin (Gunawan et al 2022).

Supportive Treatment and MDT Challenges

Supportive therapy played a crucial role in facilitating recovery. We treated the patient with gentamicin ointment to prevent secondary bacterial infections. Desoximetasone cream was initially applied to reduce inflammation in hyperkeratotic areas before the diagnosis of crusted scabies was confirmed. Once the diagnosis was confirmed, topical corticosteroids were discontinued, as corticosteroid use is a recognized risk factor for the development and worsening of crusted scabies; therefore, it is advisable to avoid steroids as anti-inflammatory agents in such cases (Armega-Anghelesc et al 2025). Keratolytic agents can enhance the penetration of topical scabicides (Armega-Anghelesc et al 2025). However, due to the limited availability of 3% salicylic acid in our setting, keratolytic care was provided using virgin coconut oil (VCO) as an emollient and gentle mechanical debridement. Oral antihistamine (cetirizine 10 mg twice daily) was given to relieve pruritus.

During hospitalization, MDT was temporarily discontinued due to worsening skin lesions and gastrointestinal complaints. MDT, which consists of rifampicin, clofazimine, and dapsone, is the gold standard for leprosy treatment, requiring strict adherence for at least 12 months (Scollard et al 2006). However, adverse gastrointestinal

effects (epigastric pain, nausea, and vomiting) were significant barriers to compliance, necessitating adjunctive therapy with antacids or gastroprotective agents to ensure continuation of MDT.

Prevention of Reinfestation

Given the highly contagious nature of crusted scabies, preventing reinfestation was a key management goal. Household members reported experiencing nocturnal pruritus, raising concerns about potential transmission. WHO advises treating all close contacts, even if asymptomatic, to interrupt the spread. Accordingly, family members received permethrin 5%, while environmental measures such as hot-water laundering of clothes and bedding were implemented (Engelman et al 2020).

Prognosis and Long-Term Monitoring

After three days of treatment, the patient showed marked improvement with reduced crusting and pruritus. Re-evaluation of smears revealed 100% fragmented bacilli, indicating decreased leprosy activity after five months of MDT. However, long-term monitoring is vital to detect relapse or scabies reinfestation. Evidence shows early combination therapy improves outcomes in leprosy with secondary infections (Engelman et al 2020). Public health measures, including active case detection and contact tracing, are essential to reduce the burden of leprosy-related complications.

Conclusion

The coexistence of MB leprosy and crusted scabies is a rare but clinically significant presentation. This case highlights the diagnostic complexity and therapeutic challenges in resource-limited settings where optimal agents such as ivermectin and keratolytic agents may not be available. Early recognition, comprehensive management, and strengthened public health measures are crucial for reducing morbidity and interrupting transmission in endemic communities.

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