SCABIES WITH SECONDARY BACTERIAL INFECTION IN A BOARDING SCHOOL STUDENT: A CASE REPORT

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Abstract

Scabies is a contagious parasitic skin disease caused by *Sarcoptes scabiei* var. *hominis*. A 14-year-old male student residing in an Islamic boarding school presented to a public health centre with a long-standing history of scab-like skin lesions. The patient had sought treatment for more than one month without clinical improvement. He complained of intense nocturnal pruritus affecting the interdigital spaces and palms, accompanied by erythematous lesions, excoriations, vesicles, purulent discharge, swelling, pain, and fever. He also reported pain in the axillary and inguinal regions. Physical examination revealed multiple discrete erythematous papules and vesicles on the interdigital spaces and palms, accompanied by crusts, excoriations, and purulent discharge. Enlarged and tender axillary lymph nodes were also noted. Based on clinical findings, the patient was diagnosed with scabies complicated by secondary bacterial infection. Non-pharmacological management included patient and family education regarding the disease, personal hygiene, environmental sanitation, and a visit to the boarding school to prevent further transmission. Pharmacological therapy consisted of oral antibiotics, analgesics, antihistamines, and anti-inflammatory agents. Topical treatment included anti-scabietic therapy and a combination of topical antibiotic and anti-inflammatory agents. Scabies may be complicated by secondary bacterial infection due to delayed diagnosis and treatment, persistent scratching, and poor personal and environmental hygiene. Overcrowded living conditions, such as those in boarding schools, facilitate transmission and increase the risk of complications. A family-centred and community-based approach, particularly involving boarding school environments, plays a crucial role in controlling transmission and improving outcomes in patients with scabies complicated by secondary infection.

Keywords: *Scabies; Secondary Bacterial Infection; Islamic Boarding School.*

A. INTRODUCTION

Scabies is a contagious skin disease caused by infestation with the mite *Sarcoptes scabiei* var. *hominis*. It affects individuals of all races worldwide and has been reported in nearly every country, with varying prevalence rates. In several developing countries, the prevalence of scabies ranges from 6% to 27% of the general population, with the highest incidence observed among school-aged children and adolescents (Widaty et al., 2023).

Scabies is a global public health problem, with an estimated more than 300 million cases occurring annually worldwide. The prevalence and severity of scabies are higher in tropical countries, where approximately 10% of the population is affected, and nearly 50% of cases occur in children. Scabies often becomes endemic among school-aged children and is

particularly common in rural areas of developing countries. Although scabies can affect individuals of all ages, children are more frequently infested than adults (Gunardi et al., 2022).

In Indonesia, scabies ranks as the third most common skin disease among the twelve most frequently reported dermatological conditions and remains a significant communicable disease (Siddig & Hay, 2022). In 2017, scabies was officially classified as a Neglected Tropical Disease (NTD) (Widaty et al., 2025). High-risk transmission settings include Islamic boarding schools (pesantren), where overcrowding and close physical contact facilitate disease spread. A study by Rihatmadja et al. reported a scabies prevalence of 76.9% in a boarding school in Bogor (Widaty et al., 2019). Another study conducted by Ina Ratna in 2013 found that 27.21% of students were affected by scabies within one year at Sukahideng Islamic Boarding School, Tasikmalaya Regency, while Nurfitrica reported a prevalence of 45.45% among boarding school students in East Bandung in 2015 (May et al., 2019).

According to the Indonesian Ministry of Health, the prevalence of scabies in public health centers nationwide ranges from 4.6% to 12.95% (Siddig & Hay, 2022). Primary health care services play a crucial role in the early diagnosis, appropriate treatment, and community education for scabies prevention, particularly because the disease is highly contagious in densely populated settings. Transmission primarily occurs through prolonged direct skin-to-skin contact, especially among individuals who live or sleep together (WHO, 2008).

Tirtayasa Public Health Center is a rural primary health care facility covering 14 villages, including a remote area, Wargasara Village (Pulau Tunda). The service area is densely populated, with a total population of 50,937. In the 2023 health center report, scabies ranked third among the ten most common diagnoses. The Tirtayasa area includes several Islamic boarding schools, which represent high-risk environments for scabies transmission. Clinically, scabies manifestations vary widely, ranging from asymptomatic infestation to erythematous papules, nodules, and crusted lesions. Diagnosis can be challenging due to atypical presentations or minimal skin lesions. Complications may arise from secondary bacterial infection, often resulting from delayed treatment, repeated scratching, and poor personal hygiene. Management requires appropriate therapy, including oral and/or topical antibiotics depending on disease severity. This report presents a case of scabies complicated by secondary bacterial infection in a boarding school student within the Tirtayasa Public Health Centre area.

B. METHOD

This study employed a descriptive observational design in the form of a case report, aiming to describe the clinical presentation, diagnosis, management, and outcome of scabies complicated by secondary bacterial infection in a boarding school student. The subject of this report was a 14-year-old male student residing in an Islamic boarding school who presented to a public health centre with persistent pruritic skin lesions and systemic symptoms. The case was selected due to its clinical significance, delayed presentation, and the presence of secondary bacterial infection in a high-risk communal living environment.

Clinical data were collected through comprehensive anamnesis, physical dermatological examination, and assessment of systemic findings, including lymph node evaluation. Supporting information was obtained from the patient's medical records and follow-up visits. Data collected included clinical symptoms, lesion morphology and distribution, duration of illness, risk factors, treatment history, therapeutic interventions, and clinical response to treatment.

The diagnosis of scabies complicated by secondary bacterial infection was established based on clinical criteria, including nocturnal pruritus, typical lesion distribution in interdigital spaces and palms, presence of inflammatory signs, purulent discharge, fever, and regional lymphadenopathy. The diagnosis was supported by epidemiological factors such as residence in an overcrowded boarding school environment.

Management consisted of both pharmacological and non-pharmacological interventions. Pharmacological therapy included systemic antibiotics, analgesics, antihistamines, anti-inflammatory agents, topical anti-scabietic therapy, and topical antibiotic–anti-inflammatory combinations. Non-pharmacological measures included patient and family education on personal hygiene, environmental sanitation, and preventive strategies. Follow-up was conducted to assess clinical improvement and treatment response.

Data were analyzed using a descriptive qualitative approach, focusing on the clinical course, therapeutic response, and preventive strategies. Findings were compared with current literature and existing clinical guidelines related to scabies and its complications. Written informed consent was obtained from the patient's guardian for publication of this case report and accompanying clinical information. Patient anonymity was maintained throughout the manuscript, and no identifying information was disclosed.

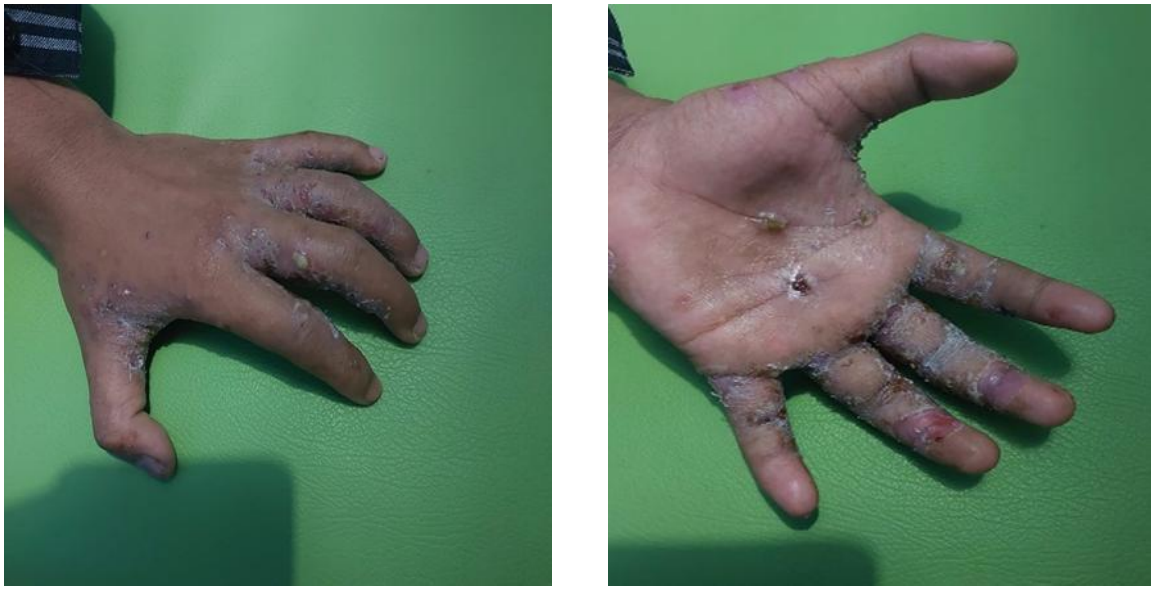
C. RESULTS AND DISCUSSION

A 14-year-old male student residing in an Islamic boarding school presented to the general outpatient clinic of a public health center with long-standing crusted skin lesions. The patient had received treatment for more than one month without clinical improvement. He complained of intense nocturnal pruritus involving the interdigital spaces and palms, accompanied by erythematous macules, papules, vesicles, purulent discharge, swelling, pain, excoriations due to scratching, and fever (body temperature 38.1°C). He also reported pain in the axillary region.

Physical examination of the interdigital spaces and bilateral palms revealed multiple discrete erythematous papules and vesicles accompanied by reddish crusts, excoriations, and purulent discharge. Axillary lymphadenopathy was also noted. Based on the clinical findings, the patient was diagnosed with scabies complicated by secondary bacterial infection. Microscopic examination was not performed due to financial constraints.

Non-pharmacological management included education of the patient and family regarding the etiology of the disease, personal hygiene, and preventive measures, as well as home and boarding school visits to control transmission. Pharmacological treatment consisted of both oral and topical therapies. Oral medications included amoxicillin 500 mg three times daily, paracetamol 500 mg three times daily, cetirizine 10 mg twice daily, and methylprednisolone 4 mg three times daily.

Topical management included normal saline (NaCl) compresses, which were applied and allowed to dry prior to topical treatment. Antiscabietic therapy with permethrin 5% cream was administered for 8 hours once weekly. A combination of topical antibiotic and anti-inflammatory agents, consisting of mupirocin calcium 2% and clobetasol propionate 0.05%, was applied twice daily. Treatment was continued for two weeks, resulting in significant clinical improvement.



A **B**

Figure 1. (A, B)

Clinical appearance of the patient before treatment. Vesicular lesions and multiple discrete erythematous papules are observed on the volar and palmar aspects of the left hand, accompanied by reddish crusts, excoriations, and purulent discharge. Axillary lymphadenopathy was also noted.

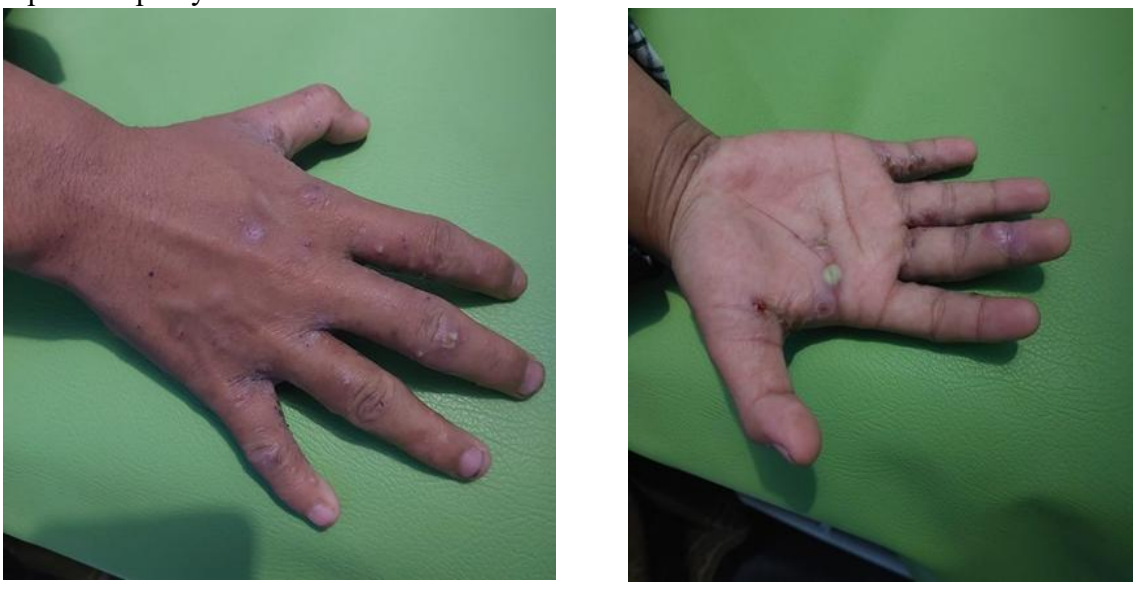


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Figure 2. (A, B)

Clinical appearance of the patient before treatment. Multiple discrete erythematous papules and vesicles are observed on the volar and palmar aspects of the right hand, accompanied by reddish crusts, excoriations, and purulent discharge. Axillary lymphadenopathy was also noted.

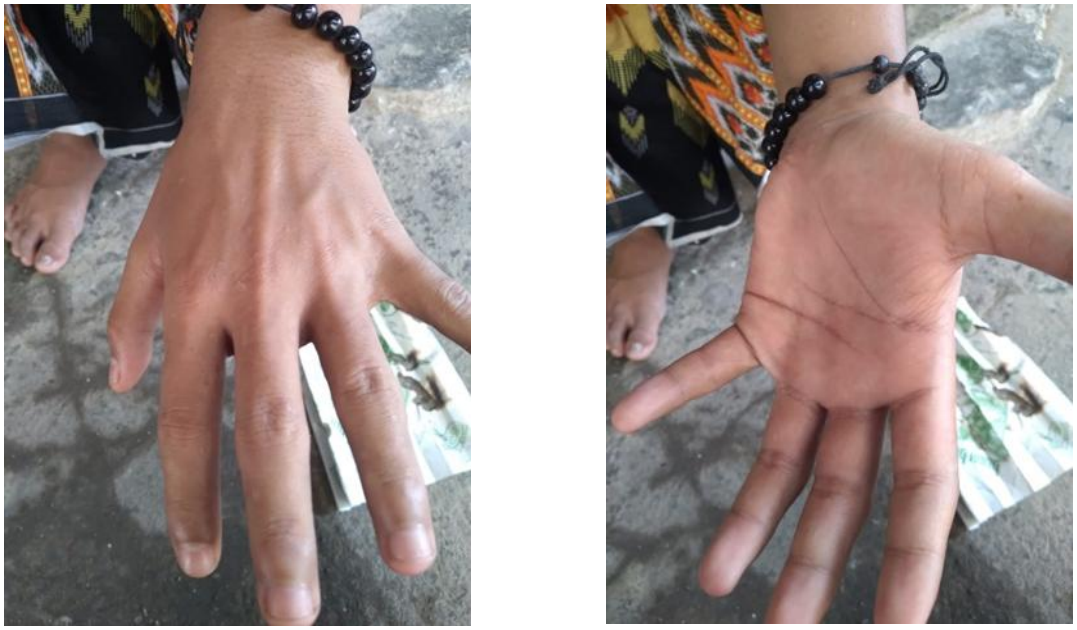

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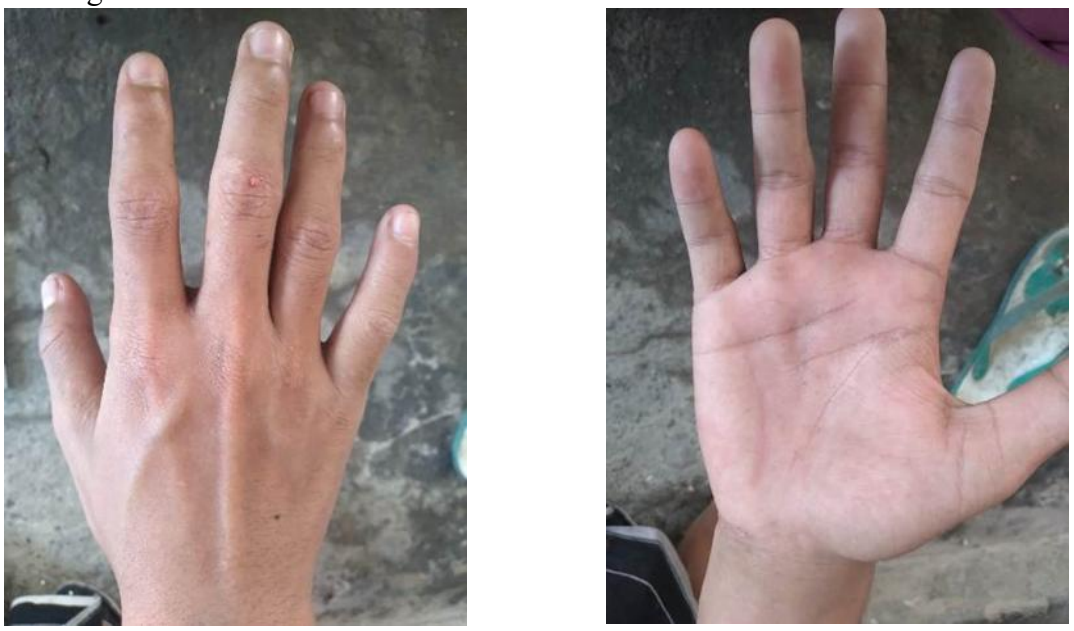
Figure 3. (A, B)

Clinical appearance of the patient after treatment. The volar and palmar aspects of the left hand show complete resolution of lesions, as documented during follow-up through home and boarding school visits.



A **B**

Figure 4. (A, B)

Clinical appearance of the patient after treatment. The volar and palmar aspects of the right hand show complete resolution of lesions, as documented during follow-up through home and boarding school visits.

Table 1. Clinical Improvement During Follow-up

Parameter	Day 1	Day 7	Day 14
Subjective findings			
Nocturnal pruritus	+++	+	−

Objective findings			
Body temperature (°C)	38.1	36.5	36.1
Vesicles	++	+	−
Multiple erythematous papules	++	−	−
Excoriations	+	−	−
Crusts	+	+	−
Purulent discharge	++	−	−
Axillary lymphadenopathy	+	−	−
Treatment			
Amoxicillin 500 mg three times daily	+	+	−
Paracetamol 500 mg three times daily	+	−	−
Cetirizine 10 mg twice daily	+	+	−
Methylprednisolone 4 mg three times daily	+	+	−
Normal saline (NaCl) compress	+	+	−
Permethrin 5% (8 hours, once weekly)	+	+	+
Mupirocin calcium 2% + clobetasol propionate 0.05% (twice daily)	+	+	−

Notes:
+++ = severe; ++ = moderate; + = mild; − = absent

Table 1 summarizes the clinical progression and treatment response of the patient during the 14-day follow-up period. On Day 1, the patient presented with severe nocturnal pruritus, fever (38.1°C), multiple vesicles and erythematous papules, excoriations, crust formation, purulent discharge, and axillary lymphadenopathy, indicating active scabies infestation complicated by secondary bacterial infection.

After seven days of combined pharmacological and non-pharmacological management, marked clinical improvement was observed. Nocturnal pruritus decreased from severe to mild, body temperature returned to normal (36.5°C), and signs of secondary infection—including purulent discharge and lymphadenopathy, had completely resolved. Vesicles and crusts showed significant reduction, while erythematous papules and excoriations were no longer observed. At this stage, systemic antibiotics and supportive therapies were continued as planned.

By Day 14, complete resolution of symptoms and skin lesions was achieved. No pruritus, vesicles, papules, excoriations, crusts, purulent discharge, or lymphadenopathy were detected, and body temperature remained normal (36.1°C). Systemic medications and topical antibiotic–anti-inflammatory therapy were discontinued, while antiscabietic treatment with permethrin 5% was completed according to protocol to prevent reinfestation.

The progressive clinical improvement demonstrated in Table 1 reflects the effectiveness of early recognition, appropriate combination therapy, and close follow-up. In addition, home and boarding school visits contributed to improved treatment adherence and environmental control, which are essential in preventing recurrence and interrupting transmission in institutional settings

Scabies is a highly contagious parasitic skin disease caused by infestation and hypersensitivity reactions to *Sarcoptes scabiei* var. *hominis* and its products. Intense pruritus, which typically worsens at night, is the hallmark symptom and results from a delayed type IV hypersensitivity reaction to mite antigens (Ong & Vasanwala, 2018). The disease is strongly associated with poor personal hygiene, overcrowded living conditions, and prolonged skin-to-

skin contact, making institutional settings such as boarding schools particularly vulnerable to outbreaks (Osti et al., 2019).

The distribution of lesions in scabies follows characteristic predilection sites, including the interdigital spaces, volar aspects of the wrists, axillae, areolae, periumbilical area, buttocks, genital region, palms, and soles (Puspitaet al., 2021). In this case, lesions predominantly affected the interdigital spaces and palms, which is consistent with classical scabies presentations described in the literature. The patient's symptoms of severe nocturnal pruritus, combined with similar complaints among close contacts in the boarding school, fulfilled two cardinal diagnostic criteria for scabies, supporting the diagnosis even in the absence of microscopic confirmation (van der Linden et al., 2019).

Diagnosis of scabies in primary health care settings is often clinical, as confirmatory tests such as skin scraping and microscopic examination may not be readily available due to limited resources (Ulya, 2023). Several studies have emphasized that clinical diagnosis based on cardinal signs remains reliable and practical, particularly in endemic areas (Ghifari et al., 2024). In the present case, the absence of visible burrows (*cuniculus*) may be explained by chronic scratching, secondary infection, and crust formation, which can obscure classical scabies features (Widaty et al., 2022).

Secondary bacterial infection is a well-recognized complication of scabies, especially in children. Persistent scratching disrupts the skin barrier, facilitating bacterial invasion, most commonly by *Streptococcus pyogenes* and *Staphylococcus aureus* (Wahdini et al., 2025). Studies have demonstrated that scabies mites can promote bacterial proliferation by producing complement inhibitors that enhance the survival of *S. pyogenes* within the skin (Oktarina et al., 2021). This interaction increases the risk of impetigo and may contribute to more serious sequelae such as post-streptococcal glomerulonephritis and rheumatic heart disease in endemic regions (Gupta et al., 2024).

In this patient, clinical signs of secondary infection, including purulent discharge, fever, and regional lymphadenopathy, necessitated systemic antibiotic therapy in addition to antiscabietic treatment (Engelman et al., 2020). Current guidelines recommend combined management using topical scabicides to eradicate mites and systemic or topical antibiotics when secondary infection is present (Walker et al., 2020). The favorable clinical response observed within two weeks supports the effectiveness of this integrated therapeutic approach (Tsoi et al., 2021).

Beyond pharmacological treatment, non-pharmacological interventions play a crucial role in preventing reinfestation and interrupting transmission (Matthewman et al., 2020). Health education focusing on personal hygiene, environmental sanitation, and treatment adherence is essential, particularly in communal living environments (Leung, Lam, & Leong, 2020). In this case, home visits facilitated family education, while boarding school visits enabled targeted community interventions, including early detection strategies and teacher-led screening programs.[23] Similar community-based approaches have been shown to significantly reduce scabies prevalence and recurrence rates in endemic settings (Al-Dabbagh, Younis, & Ismail, 2023).

This case highlights the pivotal role of primary health care services in managing scabies and its complications. Early clinical recognition, appropriate combination therapy, and community-based interventions are essential components of effective scabies control, especially in resource-limited and high-risk institutional environments such as Islamic boarding schools (Iyengar, Chong & Steer, 2024).

This case report has several limitations that Microscopic confirmation of *Sarcoptes scabiei* and bacteriological culture were not performed due to limited resources; therefore, the diagnosis and antibiotic therapy were based on clinical findings. In addition, this report describes a single case with short-term follow-up, which limits generalizability and assessment

of recurrence. Despite these limitations, the case highlights the importance of integrated clinical and community-based management of scabies in high-risk institutional settings.

D. CONCLUSION

This case highlights that effective management of scabies complicated by secondary infection requires not only appropriate pharmacological treatment but also family- and community-based interventions. Involvement of family members and boarding school authorities is essential to improve treatment adherence and to prevent ongoing transmission in high-risk settings.

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