Clinical management of scabies with secondary infection: a case report

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ABSTRACT

Introduction: Scabies is a parasitic infectious disease that is still a public health problem in the world, including Indonesia.

Case Presentation: An 18-year-old male patient who presented with scabies which was accompanied by a secondary infection.

Discussion: Scabies is primarily transmitted through direct and indirect contact, with higher prevalence among children, densely populated communities, and areas with inadequate sanitation and hygiene facilities. The pruritic nature of scabies lesions leads to patient scratching, consequently giving rise to secondary infections, notably by Group A Streptococcus and Staphylococcus aureus bacteria. The potential escalation of these secondary infections to deeper tissues and systemic spread can result in severe complications, thereby posing a risk to life.

Conclusion: In order to avert subsequent complications, a holistic approach encompassing both pharmacological and non-pharmacological interventions should be expeditiously employed for scabies patients exhibiting secondary infections.

INTRODUCTION

Scabies is a parasite infection caused by female Sarcoptes scabiei var. hominis which attacks the superficial part of the skin. Scabies can be transmitted through direct or indirect contact with an average incubation time of two months (2-6 weeks). The most common symptoms are skin lesions in a form of papules, vesicles, pustules, or nodules with itchiness during the night (nocturnal pruritus). The pathognomonic sign of scabies is tunnel or canaliculi (Sungkar, 2016).

According to World Health Organization (WHO), it is estimated that more than 200 million people are affected by scabies (WHO, 2020). Scabies is endemic in tropical and subtropical regions such as Africa, Egypt, Central America, South America, North Australia, Central Australia, Caribbean Isles, India, and South East Asia. WHO stated that scabies is one of the six epidermal parasitic skin diseases with the highest incidence in the world (Sweileh, 2018).

Scabies is a skin infection disease that is still a public health problem in the world. Globally, scabies prevalence is between 0.2% to 71%, mostly in developing countries such as Indonesia (Engelman et al., 2019). In Indonesia, scabies is the most common skin disease encountered in primary healthcare with a prevalence of 9%, and is in third place among the 12 most common skin diseases encountered (Kementerian Kesehatan RI, 2018). Scabies often attacks young and...
old age groups in a community that live in tropical climates, low-income communities, and densely populated settlements (Mitchell et al., 2020).

Scabies lesions cause discomfort because they are very itchy so patients often scratch and resulting in secondary infections, especially by Group A *Streptococcus* and *Staphylococcus aureus* bacteria (Swe, Reynolds and Fischer, 2014). This secondary infection can cause serious complications if it spreads to deeper tissues and becomes systemic, thus life-threatening. In addition, the infection can be complicated by the presence of drug-resistant strains. Previously it was reported that a strain of *Methicillin-resistant Staphylococcus aureus* (MRSA) was isolated from the skin lesions of scabies patients (Whitehall et al., 2013).

This case report study was created to examine the diagnosis and management of pharmacological and non-pharmacological treatment of scabies patients with secondary infection. The uniqueness of this case was its recurrent nature. The fact that the patient had experienced similar symptoms that resolved spontaneously but recurred could indicate potential challenges in eradicating scabies in communal living environments. Thus emphasizes the importance of a holistic approach in managing these special cases. Moreover, it could give a possible insight into scabies epidemiology in similar communal living. This information is very important because it can be used to create the best interventional approach to end the disease transmission.

**CASE PRESENTATION**

An 18 years-old man came to the Dermato-venereology Clinic of PKU Muhammadiyah Hospital with a chief complaint of itching between the fingers of both hands for the last week. Itching accompanied by red spots between the fingers. Itching is felt especially at night so that it disturbs sleep. When scratched, itching decreases, but then itching reappears. Itching is not affected by the weather or the food consumed.

![Figure 1. The patient’s clinical picture pre-treatment](image-url)
Initially, visible spots appear between the fingers of the right and left hands then nodules gradually appear between the fingers. Due to frequent scratching, these nodules burst. Over time, yellowish pus appears in the area that has been scratched. The patient has experienced something like this, but the patient’s complaints got better on their own but then reappeared with complaints that got worse therefore he came for treatment. The patient’s family did not experience anything similar. The patient is studying in a boarding school where there are 26 people in one room and there are several friends who experience the same thing. There was no history of drug or food allergies in the patient. On dermatological examination, erythematous papules, pustules, and erosions were found on the palms and back of the patient's hands.

The patient was diagnosed with a differential diagnosis of scabies with secondary infection, insect bite with secondary infection, and prurigo with secondary infection. The working diagnosis of scabies with secondary infection was established. The patient was given treatments of doxycycline, cetirizine, 0.9% NaCl for wound compressing, mupirocin, and 5% permethrin. The patient's family is also given education, such as drying the mattress in the hot sun, dousing clothes, bed linen, and towels with hot water, and recommending the patient’s family and friends to seek treatment too.

After completing the treatment regimen plan, the patient was followed up for residual symptoms. It showed that after three months, the patient’s skin has been returned to normal condition.

**Figure 2.** The patient’s clinical picture post-treatment

**DISCUSSION**

Scabies is a skin disease caused by infestation and sensitization of *Sarcoptes scabiei var hominis* and its product. This disease is highly contagious and very itchy, especially at night. The influencing factor is poor hygiene. In this patient, the diagnosis of scabies was made based on history and physical examination. Based on anamnesis, the patient’s chief complaint was itching and reddish spots appearing between the fingers of both hands. The symptoms have been felt since a week ago. Complaints of itching are felt to be very disturbing, especially at night, to the point that sometimes it disturbs his sleep. Currently, the patient lives in a boarding school where there are 23 people in one room and there are friends who also experience the same thing.

Nocturnal pruritus is caused by the waste product of scabies infestation, *scabella*, which contain the Protease Activated Receptor 2 (PAR-2) enzyme which acts as a pruritus receptor on the skin. Whereas, the increased intensity of itchiness during the night is caused by mite activity
that is more active during the night (Kim et al., 2021). Criteria for a clinical diagnosis of scabies can be established with a presumptive diagnosis as follows: (1) Skin lesions in areas of predilection with skin lesions in the form of tunnels (straight or winding lines), white or grey with the ends of papules or vesicles. If secondary infection occurs, the end of tunnel changed into pustules or nodules; (2) Itching especially at night (nocturnal pruritus); (3) There is a history of similar illnesses in one household/contact.

Definitive diagnosis of scabies if mites, larvae, eggs, or excrement are found through supporting examination (microscopic) (Sungkar, 2016). From the physical examination, the general status was within normal limits. Dermatological status of the location in the area between the fingers found efflorescence of erythematous papules, round in shape, well-demarcated, discrete, and multiple distributions. The lesions seen in this patient are following those described in the literature review which states that skin disorders can resemble dermatitis with the discovery of papules, vesicles, urtica, and others. With scratching can occur erosion, excoriation, crust, and secondary infection. Suggestions for supporting examinations for scabies include the burrow ink test, topical tetracycline test, skin scraping test, and dermoscopy (Leung and Miller, 2011). The topical tetracycline test is a colourless method for identifying scabies and can detect large areas of the skin. Tetracycline is applied to the affected skin and then cleaned with alcohol. Using Wood's lamp, the tunnel will appear green (Cheng et al., 2020).

From the differential diagnosis above, it was decided that the working diagnosis was scabies. Due to the patient's subjective complaints and objective signs found to point to scabies. In addition, the patient had no history of atopy. This patient was not examined for mites because the history and physical examination alone could establish the diagnosis. According to literatures, to establish the diagnosis of scabies itself, there are at least two of the four cardinal signs of scabies, namely: nocturnal pruritus, skin lesions in predilected areas (such as interdigital, wrist, elbow, axilla, inguinal, feet, or scalp), living with people with the same condition, and finding mites through supporting examination (Yulfi, Zulkhair and Yosi, 2022). The differential diagnosis of insect bites can be ruled out because in insect bites the lesions are usually just papules and easily disappear. Differential diagnosis of prurigo hebra can be ruled out because in prurigo hebra the lesions are in the form of dome-shaped papules and are very itchy, easier to touch than to see, especially in the extensor extremities.

The principle of scabies management is to break the chain of transmission. Non-medical management consists of maintaining personal and environmental hygiene by not using items together; decontamination of clothing and bedding by washing them at 60 °C or storing them in a closed plastic bag for several days; all the carpets, couches, mattresses, blankets, and pillows out in the sun; return consultation if the complaint does not improve within the day; and provide therapy to all family members (Ong and Vasanwala, 2018; Ogbuefi and Kenner-Bell, 2021).

The recommended anti-scabies for these patients is 5% Permethrin cream applied for 8 hours and repeated after 1-2 weeks. Permethrin is an effective anti-scabies at all stages (PERDOSKI, 2017). Antihistamines can be used to treat itching in scabies. The use of broad-spectrum antibiotics, namely fluclaxacillin/dicloxacillin or first-generation cephalosporins (Cephadroxil, Cephazolin, Cephalexin) can be given if there is suspicion of a secondary infection (Streptococcus hemolytic group A and Staphylococcus aureus) (Thompson, Westbury and Slape, 2021).

The patient was given anti-scabies treatment in the form of 5% permethrin which was applied all over the body for ± 8 hours. Permethrin 5% has strong insecticidal activity, working by interfering with the inflow of sodium into the mite cell membrane, causing neurological paralysis and mite keratin. Management of this patient apart from anti-scabies treatment is giving antibiotics to treat secondary infections in the form of oral antibiotics, namely doxycycline. The
patient received cetirizine to treat itching, 5% permethrin ointment to eradicate the mites, and 0.9% NaCl for wound compression.

Education for patients and their families is an important component in the management of scabies. This education includes drying the mattresses in the hot sun, dousing clothes, bed linen, and towels with hot water, and recommending that their families and friends also take part in the treatment. Because disease transmission can occur by direct contact from one person to another, scabies treatment must also be carried out for all infected family members, household members, and sexual partners. In addition, mites can also contaminate certain objects that can become intermediaries for transmission, such as clothing, bedding, and toiletries, therefore they must be soaked/washed in hot water and dried with hot air.

CONCLUSION

This case describes a patient with scabies symptoms. Patients were diagnosed based on history and physical examination status. Other diagnostic workups were not carried out on this patient because they already met the clinical diagnostic criteria for scabies.

REFERENCES


