



Scabies: Treatment, Complication, and Prognosis

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ABSTRACT

Scabies is a skin infestation caused by *Sarcoptes scabiei* mite. In 2017, WHO included scabies in the list of neglected tropical diseases. Treatment of scabies is currently still problematic due to late diagnosis and not adequately managed complications.

Keywords: Complications, prognosis, scabies, treatment

ABSTRAK

Skabies adalah penyakit kulit yang disebabkan oleh tungau *Sarcoptes scabiei*. Pada tahun 2017, WHO menggolongkan skabies dalam daftar penyakit tropis yang terabaikan. Pengobatan skabies saat ini masih bermasalah karena keterlambatan diagnosis. Komplikasinya pun tidak ditangani dengan baik. **Reggi First Trasia. Skabies: Terapi, Komplikasi dan Prognosis**

Kata kunci: Komplikasi, pengobatan, prognosis, skabies

INTRODUCTION

In 2017, WHO included scabies in the list of neglected tropical diseases.¹ Its world incidence is more than 300 million each year, varying from country to country.² In Indonesia, scabies is one of the most common skin diseases; the prevalence of scabies in public health centers throughout Indonesia in 2018 was 5.6-12.9% and is the third most common skin disease. The 2018 surveys in various slum settlements such as in landfills and flats in Jakarta showed a prevalence of scabies of 6.2%, Boyolali 7.4%, Pasuruan 8.2%, and Semarang 5.8%.³

The relatively low level of hygiene, sanitation, and socio-economic conditions are factors that trigger the outbreak of this disease. Lack of water supply or body cleansing facilities and crowded living facilitate scabies transmission. Scabies can attack all socio-economic groups.⁴ Scabies has a long incubation period, so people usually do not realize it before clinical lesions arise. In healthy young people, scabies is considered a more annoying disorder due to intense itching. Scabies is often undiagnosed in the elderly or people with low immunity because the lesions resemble other diseases. Scabies is often diagnosed late, treatment is inadequate or wrong, and the follow-up is insufficient. It often causes outbreaks and endemic endeavors in areas with a high-risk

factor for scabies infestation.⁵

The diagnosis can be confirmed when *S. scabiei* is found by removing the mites from the skin, skin scraping, or biopsy. The differential diagnosis of scabies is prurigo which has the same predilection. Mites are difficult to find in laboratory examination because of minimal infestation; only 10% eggs were hatched. In addition, scratching can mechanically remove the mites and pus from secondary infection can kill the mites because pus is acaricide.¹¹

TREATMENT

The principle of scabies treatment is topical treatment accompanied by a clean and healthy lifestyle, both for the patient and the environment. The ideal scabicide is effective

against all stages of mites, non-toxic or non-irritating, odorless, and does not damage or dye clothes, and accessible. Cost of treatment should be low because scabies are generally affect economically poor people.⁴

Topical applications are generally for 8-12 hours; they may need to be used for up to five consecutive days, depending on the type of scabicide. Drug absorption is higher in infants and young children; application on warm or wet skin after bathing is not recommended. Secondary bacteria infection may first need topical or oral antibiotics as indicated, but drug interactions should be considered.⁷

In general, a single application of topical scabicide is sufficient to cure scabies. The

Table. The Choice on Scabies Treatment⁶

Medication	Practice
Permethrin cream 5%	Synthetic pyrethroids disrupt sodium channels, resulting in a delay in repolarization of the mite cell wall, which can kill parasites.
Sulfur precipitatum	Concentrations above 5% in vaseline have often been applied as scabicides.
Gamma hexachloride benzene	First choice it can kill larvae, eggs, mites, and nymphs, is safe from irritation and easy to use.
Benzyl benzoate	This group is also called benzyl alcohol and benzoic acid esters, obtained from Tolu and Peru balsams, available in the form of lotions or emulsions with 20% concentration.
Chrotamiton	A fairly effective scabicide drug. Available in lotion or cream preparations with a concentration of 10%.
Ivermectin	Semisynthetic macrolide derivative; can inhibit GABA (gamma-aminobutyric-acid) neurotransmitter, causing mite paralysis.

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need for repeat scabies therapy depends on the actions of the drugs used: whether ovicide (kills eggs) and scabicide (kills mites) or only scabicide in nature. It is also necessary to pay attention to the timing of initial therapy, the progress of healing during treatment, and to relate to the life cycle of mites.⁸

If the therapy is only scabicides and not ovicides, the eggs produced before treatment will hatch and re-infest after the third day. If the treatment is scabicial and ovicidal, it will effectively kill all stages of mites, including eggs, larvae, nymphs, and adult mites. However, because of a clinical latency period, scabicide application needs to be repeated on the third or fourth day to kill mites from the newly hatched eggs that have not been eradicated in the first therapy. All topical scabicides have the same principles of use and must be complied with by sufferers and health professionals. Patients and caregivers need to be reminded to read the treatment guidelines before using them. The principle is that the patient himself should make drug applications; other people can help if the location is difficult to reach, for instance, in the back or buttocks. Anyone who assists must wear gloves before application and wash hands thoroughly with soap after application.⁹

The patient should take a shower using soap before the application of scabicides. Soap is applied to all body parts, not just the hands, face, armpits, and genitals; then rinse thoroughly. The body must be thoroughly dried with a towel before scabicide is applied to all skin surfaces from the neck to the tips of the toes. Particular attention is paid to lesions at the site of predilection, for instance, between the fingers, palms, wrists, buttocks, and genitals. If the medicine is erased prematurely due to ablution or washing, it must be reapplied. After a full day, the drug is cleansed thoroughly from all over the body by bathing with soap. After bathing, rub the body with a clean and dry towel, then put the towel under the sun to dry.¹⁰

In infants, children under five years of age, elderly, and immunocompromised hosts, scabicide application to the head should cover the forehead, eyebrows, scalp, and the area behind the ear. The scalp should not be spared, especially if initial therapy has failed or in case of crusted scabies. People with

scabies should always keep their fingernails and toenails short and clean. Scabicide is applied to the skin under the nail after the cut. Clothing and bedding should be changed every three days during and after therapy, as well as decontamination.¹¹

It is necessary to calculate the amount of scabicide to be applied. Topical scabicide is usually cream in tubes of 30 and 60 grams. The surface area of an adult's skin is estimated on the principle that one palm area is equal to 1% body surface area; 0.5 grams of cream (2 cm length) can be used on skin areas as large as two palms. Infants and toddlers may need adjustment as their body proportions are different, but the principle remains the same. The surface area of the skin and the amount of cream needed for one application should be calculated, and the prescribed cream should be sufficient for one treatment to the entire body surface.⁵

The disadvantage of topical drugs is that they are uncomfortable because they are sticky and have side effects (such as burning sensation), reducing medication adherence. Marine⁶ states that the unsuccessful treatment for scabies is related to the misuse of the drug, which is only used on the lesions and not applied to the entire body from the neck to the feet. In classical scabies, therapy targets the patient and everyone in close contact even though they have no symptoms. Treatment for scabies sufferers needs to be done with other family members because a clinical latency period can last up to 6 weeks.

Scabies sufferers must adopt a clean and healthy lifestyle, especially bathing with regular or antiseptic soap twice a day. Bathing with soap helps remove scabies, mites, and eggs from the skin surface. Regular soap can mechanically remove pathogens but cannot kill them. Antiseptic soap usually has the active ingredient triclosan 0.1% and 0.45% w/v. Triclosan is effective against bacteria and fungi but not against viruses. In laboratory experiments, high concentration triclosan can better reduce the bacteria compared to ordinary soap. A substance similar to triclosan, namely triclocarban, is used as bar-shaped antiseptic soap.¹⁰

Health care settings often use antimicrobial or antiseptic hand soap such as chlorhexidine

or high concentrations of triclosan. These products are effective at killing bacteria, fungi, and viruses. In addition, these antiseptics often have skin residual antimicrobial activity after handwashing. Antiseptic soap is expected to reduce secondary infection in scabies lesions, but it should be noted that antiseptic soap can reduce permethrin penetration into the skin.¹⁰

The effectiveness of treatment is influenced by various factors: diagnosis, the accuracy of topical therapy, scabicide dose, and timing of drug use. Patients need to be explained how to use drugs correctly because misuse can result in treatment failure. Itching persists after treatment even though the mites have died due to an ongoing hypersensitivity reaction to the mites and their products. This situation needs to be explained before therapy unless the patient thinks the treatment is failing.

The administration of scabicide must be limited to the lesions, accompanied by an explanation of persistent itching. Topical 30 grams preparations are usually sufficient for application all over the body of an adult. Antihistamines and anti-inflammatory agents can be given to treat pruritus.⁸

Treatment Failures

Treatment failure may result from inadequate use of scabicides. Keratotic, crusted, and lesions with secondary infection reduce the penetration of the scabicide into the skin and make therapy ineffective. Another factor is mite reinfestation after contact with untreated sufferers. Mite resistance to scabicide also complicates scabies therapy.¹⁰

People often do not understand the importance of treating all family members with scabies sufferers in the same house, even if they don't have symptoms. The treatment aims to break the chain of transmission. Treatment of close contacts, usually the family, is essential to prevent recurrent scabies infestations, especially mothers whose children or babies are infected with scabies.¹⁰

Lack of knowledge also reduces motivation to participate in the prevention and eradication of scabies in the community. Health workers are sometimes inexperienced in diagnosing scabies, so therapy is not appropriate or too late, which affects the quality of life of sufferers and increases transmission.



Decontamination

Scabies treatment needs to be followed by environmental decontamination to kill mites outside the host body because mites can live outside the host body for about three days. Arlian, *et al*,⁹ studied dust samples from the homes of people with scabies, 81% had moderate to severe infestations but did not develop hyperkeratosis (not crustous scabies sufferers). The results showed that 44% dust samples contained live mites. Mites are most common on the floor under beds, sofas, and chairs. Decontamination is very important in eradicating scabies and preventing reinfestation.

Environmental decontamination can be done using a vacuum cleaner. Carpets, mattresses, scraps, bolsters, sofas, furniture, and other hairy items need to be dried in the hot sun after vacuuming, then dried in the sun at least twice a week. Clothes, sheets, pillowcases and bolsters, mukenas, headscarves, and covers should be washed with hot water. After decontamination, these items should not be reused immediately because the mites can still live outside the host for approximately three days. Therefore, decontaminated items should only be reused after two days to 3 weeks.⁹

Efforts need to be made to allow sunlight into the house, and air circulation needs to be improved to reduce humidity. Installing glass tiles can allow sunlight to enter the room.

COMPLICATION

According to WHO, scabies is currently included in the list of neglected tropical diseases because of the lack of awareness about the impact of morbidity, even though scabies reduces sufferers' quality of life of sufferers.¹ In areas where scabies is endemic, scabies infestation is considered a common thing. It has become a part of life so that the greater the prevalence in an area, the less incentive to seek treatment.²

Severe itching disturbs sleep so the patient will feel drowsy, dizzy, and other complaints due to lack of sleep. Scabies lesions also reduce self-confidence in most sufferers. Female sufferers felt ashamed of their condition, and 30% withdrew from social activities.¹¹

The complication of scabies is a secondary bacterial infection in the excoriated skin. Bacteria can also come from the mites themselves; *Staphylococcus aureus* and Group A *Streptococci* can be isolated from mites and mite feces.¹²

Complications of secondary bacterial infection must be considered, especially in tropical climates. If a bacterial infection is suspected, topical or systemic antibacterial administration should be given immediately because pyoderma due to bacterial infection can be widespread, invasive, and even fatal.³ Lymphangitis, lymphadenitis, cellulitis, and even sepsis can occur.⁴ In Gambia, there is a report of an association between fatal septicemia in infants caused by *S.aureus* and a skin rash suspected of scabies.¹³

Studies in Australian Aboriginal communities showed that 80% of pyoderma culture results among scabies are group A *Streptococci*.⁵ Romani, *et al*, in Fiji found that scabies was strongly associated with impetigo. The research was carried out in urban and rural areas covering 75 communities; there is 93.1% population at risk, and scabies is a risk for impetigo. Children are the most vulnerable to scabies and impetigo, especially in the 5-9 year age range. No age group is free from scabies and impetigo. Scabies and impetigo have a high prevalence in every geographic area, gender, and ethnic group in Fiji.¹⁴

Secondary infections can lead to serious systemic complications such as kidney disease and rheumatic heart disease. About 50% of cases of acute glomerulonephritis after *Streptococcus* infection are due to skin infections.⁷ Outbreaks of acute glomerulonephritis after *Streptococcus* infection usually coincides with outbreaks of scabies.⁸ Asymptomatic acute kidney disease also often co-occurs with scabies outbreaks.⁹ Injury to the kidneys in childhood can lead to chronic kidney disease in adulthood. Prevention of scabies in the community can reduce the incidence of skin infections by *Streptococcus* and also haematuria.¹⁰

Post-streptococcal acute glomerulonephritis can develop into chronic kidney disease. A retrospective cohort study conducted in Taiwan¹¹ suggested an increased risk of chronic kidney disease in people with scabies.

In that study, 5071 scabies sufferers were followed for five years. The results show that CKD incidence is 9.66 per 1000 people per year, with a hazard ratio of 1.34. CKD increases the risk of hospitalization, morbidity, and mortality.¹² CKD sufferers can develop the end-stage renal disease (ESRD), which causes a heavy burden requiring routine dialysis or a kidney transplant.¹⁰

Another complication is hyperpigmentation or hypopigmentation due to inflammation. Post-scabies pruritus can also occur several days to several weeks after the primary infestation due to hypersensitivity to mites and mite products. Clinicians must be able to distinguish post-scabies pruritus from the failure of therapy to avoid excessive scabicide administration. Post-scabies pruritus can be treated with oral antihistamines or corticosteroids; phototherapy can be tried in resistant cases.¹³ A scabies infestation can cause severe emotional stress, including feelings of shame, guilt, and persistent delusions of parasitosis.¹⁰

PROGNOSIS

The psychosocial consequences of chronic skin disease have a direct effect on the patients. It is important to be attended. It is advisable to wear clothes to cover the lesions. The Northeastern region of Brazil has a hot and dry climate, so residents prefer revealing clothing. Men and women often wear sleeveless shirts, shorts, and open sandals, even though the parts of the body are often the site of scabies lesions. Informal activities are disrupted because wearing closed clothes will attract attention.¹⁰

Research¹⁴ shows that people with scabies are often excluded, resulting in irritability and depression. Nearly a quarter of people with scabies experience a stigma that feels ashamed and isolated from society. The best way to prevent these complications is to educate sufferers to reduce anxiety and increase treatment compliance for faster recovery.¹⁰ Complications of scabies are related to infection and household economic losses, especially for the less fortunate. Scabies in adverse environments is a potential morbidity problem and a source of financial burden.¹³

The prognosis is very good with



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prompt diagnosis and therapy, but in immunocompromised patients or patients in orphanages or dormitories, the incidence of reinfestation is high, especially in patients who returned to their still infested home environment.

CONCLUSION

The principle of scabies treatment is topical agents, followed by a clean and healthy lifestyle for both the patient and the environment. Treatment failure can be caused by inadequate use of scabicides.

Scabies treatment needs to be followed by environmental decontamination. The complications of scabies are uncomfortable feelings and sleepless nights due to itching, but a secondary bacterial infection can occur.

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