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Skin Scraping and Personal Hygiene in Scabies Cases

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Abstract

Scabies is also known as mange caused by Sarcoptes scabiei (var hominis), which is a group of parasites. Scabies infestation is correlated with skin damage, in the form of lesions and excessive nocturnal pruritus. Scabies disease is easily transmitted quickly due to infestation and sensitization of mites, through direct skin-to-skin contact, or objects contaminated with scabies. The prevalence of scabies is still relatively high, because this disease is often ignored. The main causes of scabies include personal hygiene and environmental sanitation. This study aims to determine the correlation between skin scraping and personal hygiene in the incidence of scabies. The conclusion of this study shows that skin scraping can visualize the presence of mites through microscopic examination in scabies patients who have a history of signs and symptoms of scabies. Other factors causing scabies are low personal hygiene and environmental sanitation.

Keywords: *Skin Scraping, Sarcoptes Scabiei, Personal Hygiene, Scabies*

Introduction

Scabies is caused by the parasite *Sarcoptes scabiei* (var *hominis)*,(1) namely a type of mite (lice or mites).(2) Skin lesions and frequent itching are often indications of this mite infestation.(3) Secondary infestation may be complicated by bacterial infection.(4) Scabies is

transmitted quickly due to infestation and sensitization of mites, transmission can occur through direct contact with sufferers,(5) through intense skin-to-skin contact with the sufferer. Indirectly through contact with contaminated objects, but this is rare.(2)

This skin disease can be transmitted through contact, either directly or indirectly. Direct contact is direct contact with a person with a skin disease, such as sleeping together, shaking hands, and having sex, while indirect transmission can occur through sleeping equipment. The prevalence of scabies in the world continues to increase every year,(1) prevalence in Indonesia is high in children, the elderly, people with immune disorders and endemic populations.(3) The prevalence of scabies data in Indonesia is 8.46% (2012), 9% (2013), in 2016 it was around 4.60%-12.95%, and in 2019 it showed no decline, ranging from 4.95-6.95%, and the prevalence in 14 provinces is above the national prevalence, one of which is Nangroe Aceh Darussalam.(6) Even though the incidence of Scabies is high, this disease is a neglected disease.(4)

Scabies is a disease that can be prevented by healthy living movements such as improving healthy environmental practices,(7) care about water-related diseases, improve healthy living behavior or personal hygiene.(8) Personal hygiene factors including bathing habits, clothing cleanliness, hand and nail cleanliness, and room cleanliness will also accelerate the occurrence of scabies in boarding schools.(9) There are indicators of healthy living that have not been achieved in schools,(10) and poor personal hygiene increases the risk of scabies three times over.(8) Therefore, improving the level of public health through healthy behavior and good personal hygiene can be increased by providing healthy living education in schools,(11) improving personal hygiene will have an impact on reducing mite reinfestation.(12) Regular health checks in schools can reduce and suppress the spread of scabies.

Methodology

This article is a comprehensive review for the purpose of a preliminary study in collecting references of a study on the correlation of skin scraping and personal hygiene in scabies patients. The methodology used involved a systematic approach to identify, analyze, and synthesize findings from peer-reviewed publications.

Literature Search Strategy

A comprehensive literature search was conducted in various scientific databases to identify studies that investigated the correlation between skin scraping and personal hygiene in scabies patients and parasite findings through microscopic examination of Sarcoptes scabiei skin scrapings. Keywords and phrases used in various combinations included: "skin scraping", "scabies," 'cell cytology," "Sarcoptes scabiei," personal hygiene," "clinical and pathological correlation," The search was primarily focused on studies published in English, without a specific date limit to capture a broad spectrum of research in this field.

Inclusion and Exclusion Criteria Studies were included in this review if:

1. Detection of scabies by physical examination and symptoms.
2. Includes scabies examination from skin scraping
3. Original research articles, review articles, or detailed scabies case series

Studies were excluded if:

1. Did not perform physical examination of symptoms caused by scabies
2. Did not include scabies examination from skin scraping
3. Was not a research article, review article or scabies case series.

Literature Review

Sarcoptes scabiei

Scabies is caused by mites or mites which are a type of parasite that cannot fly or jump but crawl at a speed of 2.5 cm per minute on warm skin. Scabies mites can survive for 2-6 hours at room temperature and are still able to penetrate. Scabies is a disease caused by infestation and sensitization of Sarcoptes scabies mites.(13) The position of scabies (Sarcoptes scabiei) based on taxonomic classification is included in the Animalia kingdom, Arthropoda phylum, Arachnida class, Acari subclass (Acarina), Astigmata order, Sarcoptiformes suborder, Sarcoptidae family, Sarcoptes genus and Sarcoptes scabiei species.(14)

Sarcoptes scabiei mites can live on the skin layer as a place to lay female mite eggs, with the number of eggs ranging from one or more in a period of 1 month. The body shape of Sarcoptes scabiei is oval and flat, dirty white, translucent with a back that is more oval than the stomach, and colorless. Female mites have a body length of between 300-350 microns, while males have a body length of between 150-200 microns. The adult Sarcoptes scabiei stage has 4 pairs of legs, 2 pairs are the front legs and the other 2 pairs are the back legs. Female mites have whips on the 3rd and 4th pairs of legs, while in male mites the whip hairs are only found on the 3rd pair of legs.(15)

The life cycle of scabies starts from eggs to adults, this cycle lasts for one month. The female mite after 4-5 days of being fertilized will lay 4-5 eggs in the skin tunnel made by the mite. The larvae that have 6 legs will hatch in 3-5 days. Some of the larvae will leave the tunnel and walk on the surface of the sufferer's skin, while others will remain in the tunnel or pockets next to the tunnel. The larvae will turn into first stage nymphs, then into second stage nymphs in the skin tunnel.(16) Next, the

nymph will develop into an adult mite. The development of mites from egg to adult takes about 17 days. The mites will live no more than 3-4 weeks and will spread through direct contact between the sufferer and the people around them. This mite is a type of parasite that cannot fly or jump but crawls at a speed of 2.5 cm per minute on warm skin. Scabies mites can survive for 2-6 hours at room temperature and are still able to penetrate.(16,17)

Skin scraping

Physical examination can support the diagnosis of scabies, in the form of skin lesions and frequent itching, especially at night,(3) This event is known as nocturnal pruritus.(17) The trigger for this itchy and rash incident is due to mites that enter the stratum corneum or stratum granulosum skin layer, then lay eggs. This mite infestation will form a tunnel (cuniculus) which will trigger severe itching and rashes.(18) Accompanied by the presence of papules (pimples), pustules (pus-filled pimples), and excoriation (scratch marks). Papules generally occur between the fingers, groin, and thigh folds, followed by watery blisters on the skin.(1,19)

Laboratory examination for detection and identification of Sarcoptes scabiei parasites on the skin can be confirmed with certainty (microscopically),(17) by finding Sarcoptes scabiei mites on the skin.(20) The diagnosis of scabies is usually done based on the history of the disease and clinical findings in the individual. The diagnosis can be made if the presence of Sarcoptes scabiei mites is found in microscopic examination of skin scraping preparations from the skin that form cuniculi, papules, pustules and excoriations by taking skin scrapings from the infected area.(21,22) The examination can also be continued with histopathological methods and the use of dermoscopy tools.(23)

Personal hygiene

Efforts to improve a person's health are also known as personal hygiene. Personal hygiene is a derivative of health behavior that involves knowledge, attitudes and practices in implementing a healthy life to extend health. No exception for skin health which aims to fight the risk of infection.(24) The risk of infestation and sensitization from the cause of scabies will be minimal due to good personal hygiene, and environmental cleanliness such as the provision of clean water. However, these efforts must be followed by facilities, means and infrastructure that support changes in community behavior. (25)

As a neglected tropical disease with serious population health risks, schools are often areas in need of health care, or better control strategies would minimize the incidence of Scabies.(3) Through the PHBS school system, it can be an initial solution in breaking the chain of disease transmission. PHBS is also known as clean and healthy living behavior, such as personal hygiene. School is an activity to empower students, teachers and the school community to adopt a healthy lifestyle. (26). This behavior is basically all public health behaviors that are carried out on personal awareness with the aim of increasing public awareness in living a clean and healthy life. Thus, the public can prevent and overcome certain health problems, including Scabies.(27) Effective treatment of scabies is with topical and oral medications such as permethrin.(28)

Here are some personal hygiene to avoid the contagious disease of scabies, including, bathing regularly using soap, washing clothes, sheets, pillow cases, blankets, and others regularly at least 2 times a week, drying mattresses and pillows at least once every 2 weeks, not exchanging clothes and towels with other people, avoiding contact with people or fabrics and clothes suspected of being infected with scabies mites and maintaining a clean house (adequate ventilation).(29)

Maintaining personal hygiene as a form of personal hygiene is very important to protect the skin from parasite infestation. A person's cleanliness can minimize the incidence of this disease, considering that parasites are easily transmitted to the skin. Although this disease is only a common skin disease, and is not life-threatening, this disease is very disruptive to daily life. If the treatment has been carried out completely, it does not guarantee freedom from re-infection, this is because the infection can recur, so actions to reduce the transmission of scabies by paying attention to indirect contact through contaminated objects, such as washing combs, hairbrushes, and hair jewelry by soaking them in antiseptic liquid, washing all towels, clothes, bed sheets in warm soapy water and using a hot iron to kill all the eggs, or dry cleaning, drying clean caps, headscarves and jackets, and avoiding sharing combs, prayer equipment, bathing equipment(30,31)

Result

The results of a comprehensive review of the search results show research results that aim to explore the relationship between skin scraping and the incidence of scabies and the relationship between personal hygiene and the incidence of scabies. The findings consistently show the important role of laboratory scabies examination for the establishment of scabies, and the relationship between personal hygiene and the incidence of scabies.

Clinical diagnosis

Making a diagnosis of scabies with anamnesis, physical examination, and diagnostic aids, characterized by the presence of cuniculus, papules and pustules, excoriation and nocturnal pruritus at night. Lesions are large, thick, yellow to brown, crusty, and gray-cream skin scales. Lesions are usually found on the hands, feet, neck, scalp, face, chest, and legs. Differential diagnoses

for crustacean scabies are psoriasis, seborrheic dermatitis, atopic dermatitis, hyperkeratotic eczema, dyshidrotic eczema, palmoplantar keratoderma, erythrodermic mycosis fungoides, and Sézary syndrome. (28,33,34,37,38)

Skin scraping

Determining the certainty of scabies by conducting laboratory-based supporting diagnoses, namely by microscopic examination of scabies through manual skin scraping, or using dermoscopy support. Microscopic examination with the discovery of Sarcoptes scabiei, eggs, or schibala in the skin smear preparation of scabies patients who have a history of anamnesis.(36)

Personal hygiene

Significant risk factors include personal hygiene, followed by age, gender, environmental sanitation and risky habits, such as sharing personal items.(39)

Discussion

In general, a physical examination can be performed initially to proceed to a supporting diagnosis of skin scraping. From the research data that has been obtained, it shows that scabies can be identified by signs and symptoms that appear on the skin. Among them, the presence of papules, pustules, rashes, scolariasis. It can be in the form of thick crusts and the presence of yellow-brown scales containing millions of mites so that it is very contagious. (33)

The most common skin areas where invisible lesions occur are the groin area and under clothing. Unlike classic scabies, skin lesions usually spread throughout the body, including the scalp, behind the ears, palms of the hands, soles of the feet, and nails. Nail abnormalities can be in the form of subungual hyperkeratosis or nail dystrophy. Some patients may suffer from crusted scabies. (1,2)

Crusted scabies usually occurs in patients with immune disorders who suffer from diabetes mellitus, HIV, and the elderly. Crusted scabies clinically appears as hyperkeratotic dermatosis that usually affects the palms of the hands and soles of the feet, this incident is caused by the mite's high keratin production fluid when making tunnels in the stratum corneum. This causes excessive itching (pruritus), especially at night. This itchy hypersensitivity reaction is due to the activity of the mite laying eggs in the skin layer. Symptoms of scabies appear 3-6 weeks after primary infestation or 1-3 days in those who have previously been infected. (33)

Many studies have stated that personal hygiene is the main finding of scabies cases. Lack of personal hygiene in scabies sufferers has been studied and shows that many sufferers still have low personal hygiene. Like the majority (73%) still share personal items, such as clothes (57%), toiletries (soap, toothbrush, and towels), 43% wear clothes for more than a day, 47% of children rarely take a shower after activities/sports and almost all students (90%) dry clothes in their rooms.(39)

Laboratory diagnosis can be established after a physical examination of scabies patients. This examination as a support ensures to identify the presence of Sarcoptes scabiei mites, which can be seen under a microscope. Examination of scabies with a microscope is still relatively simple and inexpensive compared to the use of dermoscopy which is much more modern and can solve problems in a larger population. However, this microscopic examination requires precision and has the right skills to obtain a smear of the skin layer that has scabies. The success of this diagnosis can be done periodically to reduce the spread of scabies much wider, or to confirm the occurrence of scabies so as not to infect other healthy people.

Finding mites is a definite diagnosis, with microscopic examination helping with accuracy, detection and identification of Sarcoptes scabiei parasite infestation on the skin to support the diagnosis of Scabies.[12] The diagnosis of scabies is usually done based on the history of the disease and clinical findings in the individual. The diagnosis can be made if the presence of Sarcoptes scabiei mites is found in the examination of cell scraping through skin scrapings,(6,13) histopathological examination, and dermoscopy.(8)

The occurrence of scabies is at risk of various factors, including personal hygiene. According to the results found, the determinants of the occurrence of scabies are caused by several factors, including personal hygiene, education level, sanitation, gender and age factors, density, and nutritional status. According to the results of the study, environmental sanitation, personal hygiene and the physical condition of clean water most dominantly influence the occurrence of scabies.(42)

Personal hygiene or individual healthy habits greatly determine a person's health status, which includes bathing habits, skin and nail care, hand washing behavior with soap, clothing cleanliness, sharing towels with other people or personal items alternately, even to the habit of using bed sheets for children who live in boarding schools. This personal hygiene behavior significantly influences the incidence of scabies.(18) A person's cleanliness will cause health manifestations that have an impact on the occurrence of disease, especially infectious skin diseases caused by Sarcoptes scabiei (scabies). Poor environmental sanitation will facilitate the spread of scabies, plus the physical condition of the water.

Sarcoptes scabiei mites as the cause of scabies can survive through the physical conditions of unclean water, the use of unclean water in long and continuous frequencies will have an impact on the incidence of scabies in users of the same water. Scabies generally occurs in school age, namely children who cause relatively high morbidity. Because of its complications,

scabies must be handled properly and with proper treatment, so that it does not spread and become a wider chain of transmission in a particular community, (Kazeminejad et al., 2018) a definitive diagnosis can be made by microscopic examination of the presence of mites. (41)

The incidence of scabies can be prevented preventively by reducing direct contact with sufferers, especially in children who live together. This will reduce transmission to the general public or wider spread. As is known, scabies is quickly transmitted through direct contact with sufferers, so this disease is also known as an environmental or community-based disease. (44) Personal hygiene behavior is basically public health behavior that is carried out on personal awareness in living a clean and healthy life. Thus, the community can prevent and overcome certain health problems, including Scabies.[22]

Crusted scabies is a rare variant of classic scabies, characterized by massive mite infestation. The main complications caused by crusted scabies are delayed diagnosis, ineffective treatment, secondary infections associated with death, recurrent infections, and outbreaks due to its hyperinfestation, making it highly contagious. Therefore, effective and appropriate medical diagnosis and management are needed, which include both the patient and the health care setting. In addition, prevention before the onset of scabies or crusted scabies, such as anti-mite vaccines, is needed, although additional research to develop an effective vaccine is still needed. (34)

CONCLUSION

Scabies disease can be identified through signs and symptoms on the skin surface marked by the presence of cuniculus, which causes papules or vesicles, pustules and if secondary infection will cause polymorph (leukocyte bubbles). Other signs are nocturnal pruritus, excoriation and hyposensitization. Finding Sarcoptes scabiei mites can be done with diaCauses of scabies can be caused by poor personal hygiene and environmental sanitation. Finding mites is a definite diagnosis with skin scraping.

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