


Scabies and Treatment

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SCABIES

Scabies, defined as the first human disease, date back to 2500 years. Scabies seen worldwide, the causative agent is *Sarcoptes scabiei* var. *Hominis* is a common skin disease. The words scope and scabies are derived from the word sarx (meat), captain (cutter) scabere (itch).^[1] Although the disease has been accepted by numerous cultures over several periods, the cause of the disease has not been clearly identified. Later, in 1687, Giovanni Cosimo Bonomo discovered scabies as the cause of itching.^[2] Scabies can be seen in everyone regardless of age, sex, race, socioeconomic status. However, it is more common in crowded environments and in common hygiene areas because of the higher likelihood of contamination. Scabies was declared a skin disease which was neglected by WHO in 2009.^[3]

EPIDEMIOLOGY

Scabies are seen all over the world, including all ethnic and socioeconomic levels. All scabies cases worldwide is estimated at 300 million each year. Scabies are endemic in many tropical and subtropical regions such as Egypt, Africa, Central and South America, the Caribbean islands, India, Australia and Southeast Asia.^[2] It was determined that the

ABSTRACT

Scabies is an itchy skin infection caused by *Sarcoptes scabiei* var. *hominis*. It be seen this in all societies, regardless of race, sex, age and socio-economic status. It is estimated that there are approximately 300 million cases per year. As they can live longer in cold environments, they are seen more frequently in winter and overcrowded environments and the probability of transmission increases. The disease is transmitted from person to person through close contact. The most important characteristic of scabies is severe itching, especially at night and after a hot bath. Itching occurs especially between the fingers, wrists, elbows, umbilical circumference and genital area. There are several treatment options for scabies. The most commonly used treatment is topical treatment. Permethrin is the preferred treatment in topical treatment. Personal hygiene needs special attention and simultaneous treatment with the infected person and their family members. Keep in mind that even after successful treatment, symptoms may persist for 2-6 weeks.

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prevalence of scabies was not affected by age, gender, race or socioeconomic level. Predisposing factors in scabies include poor hygiene, poor nutrition, crowded living conditions, and poverty. In autumn and winter rather than hot summer months, the frequency increases in crowded environments due to the prolonged survival of sarcoptes in cold environments and susceptibility to antimicrobial peptides in sweat in summer.^[4] The reason for the increase in the winter months is the presence of more in crowded environments and the prolonged survival of sarcoptes in cold environments.^[4]

ETIOLOGY

Sarcoptes scabiei var. *hominis* is the causative agent of human scabies. Scabies are an eight-legged parasite with a small round body that is barely visible to the human eye. The female is larger than the male.

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The adult female is approximately 0.3 to 0.5 mm long and 0.3 mm wide, and the male is 0.25 mm long and slightly smaller than 0.2 mm wide.^[2] The female acaruses, nests just below the surface of the skin, and they lay two to three eggs to stratum corneum a day for six weeks and embossed papules form on the surface of the skin. The larvae emerge from the eggs within 3-4 days and become adulthood for 10-14 days^[5] Approximately 1% of the eggs can become an adult. Female scabies can dig a 0.5-5 mm tunnel and feed into the tunnel. At the end of about 1-2 months, they die at the end of the tunnel. This will continue the cycle. *Sarcoptes* can live longer in cool and humid environments. Most commonly located the wrists and between the fingers.^[3]

SYMPTOM-RESULTS

The diagnosis of scabies is usually made by recognizing the history and distribution of the lesions. It is especially important in the diagnosis that itching exacerbated at night, similar complaints in close contact persons, tunnel detection and typical distribution of nonspecific lesions. Scabies transmits by long and close contact with the infected person, in particular, it is transmitted by skin cleansing, which usually lasts 15-20 minutes.^[2] It is therefore common among family members and is often seen in crowded environments. Sexual contact between adults is also one of the ways of transmission.^[6] As with other ways of transmission, it is possible to get involved in short-term contacts such as dancing and shaking hands, as well as sleeping naked. The probability of transmission from the infected person to the healthy individual is directly proportional to the number of *sarcoptes* in the infected individual and the duration of contact.^[7]

Clinical symptoms

Itching; It occurs as a result of a type 4 hypersensitivity reaction to the *sarcoptes* itself, its feces or its eggs.^[8] Symptoms occur 3 to 6 weeks after transmission. In people who have previously experienced scabies, the onset of symptoms usually occurs within 1 day, 3 days due to previous sensitization.^[6,9] Because of type 4 hypersensitivity to *sarcoptes*, clinical symptoms are beginning to become insidious and patients are therefore unable to clearly indicate the time of onset of symptoms.^[6,9]

The most prominent feature of scabies is itching. While itching is regional, it becomes widespread and flammable. Itching is severe and usually increases its intensity at night, increases with hot baths and

showers, with a more tolerable itching during the day. Itching is the area between the fingers, the wrists, the extensor region of the elbows, the axillary region, the umbilical circumference, the penis, the breast area, the ankles and the hips, and the body areas where itching and lesions can be seen.^[2,4,5-7,9] Due to low body defense resistance in infants, they can spread throughout the body, including the scalp and face.^[10-16] Papules, vesicles, blisters, scaling, crusting, pustules, nodules, and excoriations may be observed in areas where itching is intense.^[10,11,15]

TREATMENT

The clinical symptoms of scabies can be confused with infections caused by bacteria, fungi, parasites and viruses.^[13] The diagnosis of scabies is largely based on the clinical signs findings. Detection of itching, wrist and fingers between the wrists and fingers, and the presence of similar findings in the family is usually helpful to diagnose itching at night. In an itching patient, the definitive diagnosis is the determination of *sarcoptes*, eggs and feces by various methods.^[7]

There are various treatment options for scabies. However, in order for scabies be successful, people living with scabies must be treated at the same time. This increases the likelihood of treatment.

In order for scabies treatment to be successful;

- Accurately diagnosed
- Removal of *sarcoptes*
- Treatment of symptoms
- Infection Secondary infection, if any, should be removed.^[14]

Topical treatment is the main treatment method. Topical treatment plants; The skin should be cool and dry before the application, head hair, skin, pubic area, belly, external genital organs, hand and toe between the fingers, nail tips to cover all skin areas should be treated and the treatment should be done for 8-12 hours at night. A second application is recommended after 7-14 days. The same treatment should be applied simultaneously to all close contacts of the patient.^[12] Oral antihistamines can also be used to relieve itching.^[8]

Permethrin 5% cream

The first step is treatment. Its toxic effect is small and well tolerated. Permethrin was originally known and used as an insecticide. Later on, it was discovered

that its effect on scabies was used in the treatment of scabies.^[17]

Permethrin cream is applied to the body after washing and is washed after 8-10 hours.^[6] After applying the cream in sensitive and wounded areas, rarely burning and painful sensations may occur. The reason for this is delaying the closure of sodium channels in nerve cells.^[8] Total absorption of permethrin for 48 hours is 0.7% of the amount applied to the body.^[18] Two successive applications with permethrin increase efficiency. Treatment should be repeated 1-2 weeks after the first application.^[18]

Lindane (Gamma-benzene-hexachloride)

Lindane has been a topical drug widely used to treat scabies for more than 30 years. However, its reliability has been discussed recently. The absorption of Lindane in the body is more than permethrin. It may cause neurotoxicity especially when over-use and when applied to the injured area.^[3] Reported neurotoxic effects after administration of the drug include nausea and vomiting, disorientation, dizziness, restlessness, tremor and seizure.^[8,19] Therefore, the use of Lindane should be very careful. It is recommended to use other preparations as it may have side effects on the pregnant woman and the fetus.

Lindane should be applied on normal dry skin, no bath should be applied before application. Especially between the fingers, wrists, between the nails and curved areas should be applied to the entire body. After waiting for 6 hours in the body should be washed and clean clothes should be worn.^[8] Usually one use is sufficient. It should be explained that itching may increase in the first two days of treatment and itching may continue after 2-4 weeks of treatment. This would be useful to prevent the patient from using an extra Lindane.^[8]

Benzyl benzoate 10-25%

It is Peru balm indigenously. It is an inexpensive and effective method. It can be used in the treatment of adults, infants, children and nursing mothers. Sarcoptes can kill faster than Permethrin and are a useful alternative to Permethrin in severe crusted scabies.^[20] It should be applied to the skin for three consecutive nights or three times in total every two days.^[12] May cause skin and eye irritation. The drug may be administered two or three times in 24-hour periods or one week between each administration.^[21]

Crotamiton

Used in 10% cream or lotion. It is less effective than Permethrin and Lindane, so re-use is required. It is safe to use in infants and young children. After the hot bath, the whole body should be applied for 24 hours and applied again after 72-96 hours.^[8]

Sulfur 5-10%

It is known as the oldest scabies drug that is cheap and effective. The drug is applied to the entire body starting from the bottom of the chin to the tip of the toe for three consecutive nights. Bathing is done on the fourth day. It is not preferred in developed countries due to its bad smell, irritating properties, staining of clothing and possible side effects. However, it is still used in Africa and South America.^[22]

Ivermectin

It is considered by CDC as the first-line treatment of classical scabies. It is used orally. It disrupts the neuronal transmission and causes paralysis in the nervous system of sarcoptes. The drug is safe to use in humans since it does not cross the blood-brain barrier.^[23] It should not be used during pregnancy and in children under 15 kilos. The use of 2 doses at 200 µg/kg every two weeks is equivalent to the cure rate obtained by topical application of permethrin.^[8] Ivermectin cannot completely destroy the ova, so a new dose is needed.^[22]

In the treatment of scabies, it is very important in personal hygiene besides drug treatment. This will contribute to the positive outcome of the treatment. Among the applications that can be done; the infected person's sheets, clothes and other individuals' clothes and belongings must be washed and ironed at 75°C. It is sufficient to store the items that will not be washed in a bag with the mouth closed for three days.

It should be kept in mind that even after a successful treatment, the symptoms may persist for 2-6 weeks.

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REFERENCES

1. Hicks MI, Elston DM. Scabies. *Dermatol Ther* 2009;22:279-92.

2. Walton SF, Currie BJ. Problems in diagnosing scabies, a global disease in human and animal populations. *Clin Microbiol Rev* 2007;20:268-79.
3. Chandler DJ, Fuller LC. A review of scabies: An infestation more than skin deep. *Dermatology* 2019;235:79-90.
4. Downs AM, Harvey I, Kennedy CT. The epidemiology of head lice and scabies in the UK. *Epidemiol Infect* 1999;122:471-7.
5. Arlian LG, Runyan RA, Achar S, Estes SA. Survival and infectivity of *Sarcoptes scabiei* var. *canis* and var. *hominis*. *J Am Acad Dermatol* 1984;11:210-5.
6. Ong CY, Vasanwala FF. Infected with scabies again? Focus in management in long-term care facilities. *Diseases* 2018;7. pii: E3.
7. Spadoni S, Lamand V, Vonesch MA, Béranger C. Scabies: A world plague. *Med Sante Trop* 2014;24:41-8.
8. Hengge UR, Currie BJ, Jäger G, Lupi O, Schwartz RA. Scabies: a ubiquitous neglected skin disease. *Lancet Infect Dis* 2006;6:769-79.
9. Mellanby K. The development of symptoms, parasitic infection and immunity in human scabies. *Parasitology* 1944;35:197-206.
10. Heukelbach J, Feldmeier H. Scabies. *Lancet* 2006;367:1767-74.
11. Chouela E, Abeldaño A, Pellerano G, Hernández MI. Diagnosis and treatment of scabies: a practical guide. *Am J Clin Dermatol* 2002;3:9-18.
12. Salavastru CM, Chosidow O, Boffa MJ, Janier M, Tiplica GS. European guideline for the management of scabies. *J Eur Acad Dermatol Venereol* 2017;31:1248-53.
13. Anderson KL, Strowd LC. Epidemiology, Diagnosis, and Treatment of Scabies in a Dermatology Office. *J Am Board Fam Med* 2017;30:78-84.
14. Johnston G, Sladden M. Scabies: diagnosis and treatment. *BMJ* 2005;331:619-22.
15. Chosidow O. Scabies and pediculosis. *Lancet* 2000;355:819-26.
16. Chosidow O. Clinical practices. Scabies. *N Engl J Med* 2006;354:1718-27.
17. McCarthy JS, Kemp DJ, Walton SF, Currie BJ. Scabies: more than just an irritation. *Postgrad Med J* 2004;80:382-7.
18. Franz TJ, Lehman PA, Franz SF, Guin JD. Comparative percutaneous absorption of lindane and permethrin. *Arch Dermatol* 1996;132:901-5.
19. Nolan K, Kamrath J, Levitt J. Lindane toxicity: a comprehensive review of the medical literature. *Pediatr Dermatol* 2012;29:141-6.
20. Roberts LJ, Huffam SE, Walton SF, Currie BJ. Crusted scabies: clinical and immunological findings in seventy-eight patients and a review of the literature. *J Infect* 2005;50:375-81.
21. Burns DA. An outbreak of scabies in a residential home. *Br J Dermatol* 1987;117:359-61.
22. Gunning K, Pippitt K, Kiraly B, Sayler M. Pediculosis and scabies: treatment update. *Am Fam Physician* 2012;86:535-41.
23. Dourmishev AL, Dourmishev LA, Schwartz RA. Ivermectin: pharmacology and application in dermatology. *Int J Dermatol* 2005;44:981-8.