International Journal of
Science Inventions Today
www.ijsit.com
ISSN 2319-5436
Review Article

AN APPROACH IN THE MANAGEMENT OF SCABIES

Dr. Simant Ankit[1*] and Prof. Dr. Tongxiang Zeng[1]

[1]*Department of Dermatology & Venereology, Jingzhou Central Hospital, Yangtze University, Jingzhou, Hubei, China*

ABSTRACT

Scabies is a common skin infestation globally, particularly in the developing world. Scabies is an intensely pruritic disorder induced by an immune allergic response to infestation of the skin by the mite Sarcoptes scabiei. With the launch of the International Alliance for the Control of Scabies (IACS) in 2012, this review aims to present the clinical aspects and diagnosis of scabies infestations as well as the treatment of choice with 5 % permethrin dermal cream and the use of scabicides based on other chemical substances.

Keywords: scabies, treatment, permethrin, crotamiton, sulphur, benzyl benzoate, ivermectin.

INTRODUCTION

Scabies is a common, highly pruritic infestation of the skin caused by Sarcoptes scabiei var. Hominis[1]. It is a very contagious parasitosis with specific lesions, such as burrows, and nonspecific lesions, such as papules, vesicles and excoriations. Transmission of the mite generally occurs by skin-to-skin contact, but with crusted scabies it may also occur through fomites, such as infected clothing or bedding[2]. Scabies signs and symptoms include Itching, often severe and usually worse at night. Thin, irregular burrow tracks made up of tiny blisters or bumps on skin. The burrows or tracks typically appear in folds of skin. Though almost any part of the body may be involved. In adults and older children scabies[3] is most often found between fingers, armpits, waist, inner elbow, soles, breast, genital area, buttocks, knees, shoulder blades. In infants and young children[3], common sites include the scalp, face, neck, palms of the hands and soles of the feet. Some immunocompromised, elderly, disabled, or debilitated persons are at risk for a severe form of scabies called crusted, or Norwegian scabies[4]. Persons with crusted scabies have thick crusts of skin that contain large numbers of scabies mites and eggs. The mites in crusted scabies are not more virulent than in non-crusted scabies; however, they are much more numerous (up to 2 million per patient). Because they are infested with such large numbers of mites, persons with crusted scabies are very contagious to other persons. In addition to spreading scabies through brief direct skin-to-skin contact, persons with crusted scabies can transmit scabies indirectly by shedding mites that contaminate items such as their clothing, bedding, and furniture[5]. Persons with crusted scabies should receive quick and aggressive medical treatment for their infestation to prevent outbreaks of scabies.

Diagnosis:

A dermatologist can often diagnose scabies [6]by the history and visually examining a patient's skin from head to toe as well as on the history of the family and close contacts. Classic manifestations of scabies include generalized and intense itching, usually sparing the face and head. Pruritus is worse at night. Definitive diagnosis[7] relies on the identification of mites, eggs, eggshell fragments, or mite pellets. Multiple superficial skin samples should be obtained from characteristic lesions specifically, burrows or papules and vesicles in the site of burrows by scraping laterally across the skin with a blade, taking care to avoid bleeding. The specimens can be examined with a light microscope under low power. Potassium hydroxide should not be used, because it can dissolve mite pellets. Since the number of mites is low in cases of classic scabies, this technique is highly operator dependent. Failure to find mites is common and does not rule out scabies. New techniques for diagnosis include the use of the epiluminiscence microscopy[5]. In atypical cases or when direct examination is not possible, a skin biopsy may potentially confirm the diagnosis. However, mites or other diagnostic findings are frequently absent, and the histologic examination usually shows a nonspecific, delayed hypersensitivity reaction[8]. Despite the relatively low sensitivity of diagnostic testing, empirical treatment is not recommended for patients with generalized itching and should be reserved

for patients with a history of exposure, a typical eruption, or both.

General Guidelines for Treatment:

It is important to remember that the first time a person gets scabies they usually have no symptoms during the first 2 to 6 weeks they are infested; however, they can still spread scabies during this time[9]. In addition to the infested person, treatment also is recommended for household members and sexual contacts, particularly those who have had prolonged direct skin-to-skin contact with the infested person. Both sexual and close personal contacts who have had direct prolonged skin-to-skin contact with an infected person within the preceding month should be examined and treated. All persons should be treated at the same time to prevent re -infestation. Scabies may sometimes be sexually-acquired in adults, but is rarely sexually-acquired in children. Bedding, clothing, and towels used by infested persons or their household, sexual, and close contacts (as defined above) anytime during the three days before treatment should be decontaminated by washing in hot water and drying in a hot dryer, by dry-cleaning, or by sealing in a plastic bag for at least 72 hours[10]. Scabies mites generally do not survive more than 2 to 3 days away from human skin. Use of insecticide sprays and fumigants is not recommended. Scabicidal drugs can be broadly divided into topical agents and oral agents. The various topical and oral agents that are used in the treatment of scabies are summarized in table 1.

Drug name	**Dose**	**Side effect or contraindication**
TROPICAL TREATMENT		
1.Benzyl benzoate	10% or 25% lotion, Rinsed off after 24 hour	Burning and stinging when applied to excoriated skin, pruritic cutaneous xerosis, or eczematous lesions post-treatment
2.Malathion	0.5% lotion or cream, Rinsed off after 24 hours.	Skin irritation but major side effect rare.
3. Permethrin	5% cream , Rinsed off after 8-14 hours.	Itching and stinging on application, May be used in infant and nursing mothers, Skin rash, diarrhoea and rarely convulsion and death
4.Crotamiton	10% cream Applied to nodules for 24 hours, rinsed off and reapplied for an additional 24 hours.	Skin rash

ORAL TREATMENT 1. Ivermectin	Single dose of200µg/kg of body weight, Repeated in 2 weeks	Excess risk of death for elderly patients not confirmed

Table 1: CURRENT MEDICATION OF SCABIES[10-12]

Scabies can be classified as Classic scabies and Crusted scabies(Norwegian).

In classic scabies one or more of the following may be used:

1. Permethrin cream: 5%Permethrin is approved by the US Food and Drug Administration (FDA) for the treatment of scabies in persons who are at least 2 months of age[12]. Permethrin is a synthetic pyrethroid similar to naturally occurring pyrethrins which are extracts from the chrysanthemum flower. Permethrin is safe and effective when used as directed. Permethrin kills the scabies mite and eggs. Permethrin is the drug of choice for the treatment of scabies. Two (or more) applications, each about a week apart, may be necessary to eliminate all mites[13]. It has virtually no allergic side effects and cosmetically it is highly acceptable. Several studies have shown that permethrin has a higher clearance rate than lindane and crotamiton[13, 14]. The limiting factor in the use of permethrin is its cost as it is the most expensive of all the topical scabicides.

2. Crotamiton lotion 10% and Crotamiton cream 10%: Crotamiton(crotanyl-N-ethyl-o-toluidine) is approved by the US Food and Drug Administration (FDA) for the treatment of scabies in adults[11]; it is considered safe when used as directed. Crotamiton is not FDA-approved for use in children. Frequent treatment failure has been reported with crotamiton. The success rate varies between 50% and 70%. The best results have been obtained when applied twice daily for five consecutive days after bathing and changing clothes [15]. However, much stress has been put on its antipiruritic properties but recent studies have not revealed any specific antipruritic effects. Some authors do not recommend crotamiton because of the lack of efficacy and toxicity data[16] .

3. Sulfur (5%-10%) ointment: Sulfur in an ointment base is safe for topical use in children, including infants under 2 months of age[17]. The odor and cosmetic quality may make it unpleasant to use. In one of the study[18], treatment with single applications of sulfur 10% ointment was effective in 45.2% of patients at the 2-week follow-up, which increased to 59.5% at the 4-week follow-up after this treatment was repeated.

4. Lindane lotion 1%: Lindane (Gamma benzene hexachloride) is an organochloride. Although FDA-

approved for the treatment of scabies, lindane is not recommended as a first-line therapy[3]. Overuse, misuse, or accidentally swallowing lindane can be toxic to the brain and other parts of the nervous system; its use should be restricted to patients who have failed treatment with or cannot tolerate other medications that pose less risk[19]. Lindane should not be used to treat[20] premature infants, persons with a seizure disorder, women who are pregnant or breast-feeding, persons who have very irritated skin or sores where the lindane will be applied, infants, children, the elderly, and persons who weigh less than 110 pounds[21].

5. Ivermectin: Ivermectin is an oral antiparasitic agent approved for the treatment of worm infestations. Evidence suggests that oral ivermectin may be a safe and effective treatment for scabies[22]; however, ivermectin is not FDA-approved for this use. Oral ivermectin should be considered for patients who have failed treatment with or who cannot tolerate FDA-approved topical medications for the treatment of scabies[23]. If used for classic scabies, two doses of oral ivermectin (200μg/kg/dose) should be taken with food, each approximately one week apart[24]. The safety of ivermectin in children weighing less than 15 kg and in pregnant women has not been established. Note that although ivermectin guidelines recommend taking on an empty stomach, scabies experts recommend taking with a meal to increase bioavailability (CITE NEJM Currie article).

In Crusted scabies both oral and topical agents should be used.

1. Ivermectin: For crusted scabies, ivermectin should be administered together with a topical agent. Oral ivermectin (200μg/kg/dose) should be taken with food. Depending on infection severity, ivermectin should be taken in three doses (approximately days 1, 2, and 8), five doses (approximately days 1, 2, 8, 9, and 15), or seven doses (approximately days 1, 2, 8, 9, 15, 22, and 29)[23].

2. Permethrin cream 5%: Permethrin is safe and effective when used as directed. Permethrin kills the scabies mite and eggs. Permethrin is the drug of choice for the treatment of scabies. Topical permethrin should be administered every 2-3 days for 1-2 weeks to treat crusted scabies[25].

3. Benzyl benzoate 25% (with or without tea tree oil): Benzyl benzoate may be used as an alternative topical agent to permethrin[26]. However, this agent may cause immediate skin irritation. Lower concentrations may be used in children (10% or 12.5%).

4. Keratolytic cream: Keratolytic cream consists of 3 percent salicylic acid to uproot skin develop because of scabies on the skin. It gives you relief from itching and redness while washing away the skin. A topical keratolytic cream may also be used to help reduce the crusting of the skin and aid in the absorption of the topical permethrin or benzyl benzoate[27].

CONCLUSION

Scabies is a common condition found worldwide; it affects people of all races and social classes. Scabies can spread easily under crowded conditions where close body and skin contact is common. Institutions such as doctors, nursing homes, extended-care facilities, and prisons are often sites of scabies outbreaks. Child care facilities also are a common sight of scabies infestations. Diagnosis is usually clinical. The most common topical treatments for scabies include lindane and permethrin. Permethrin provides a greater margin of tolerability because of its low inherent toxicity and low percutaneous absorption. Oral ivermectin is the most recently developed treatment for scabies. A single oral dose of ivermectin 200 microg/kg of bodyweight is a well-tolerated and very effective treatment. It is especially indicated in crusted scabies, scabies in immunocompromised hosts and infestations in crowded communities. It is also useful as a simple treatment in the prophylaxis of close contacts. Persons with crusted scabies and their close contacts, including household members, should be treated rapidly and aggressively to avoid outbreaks. Institutional outbreaks can be difficult to control and require a rapid, aggressive, and sustained response. Hygienic measures should be taken after treatment is completed. Patients should be followed to confirm cure, including resolution of itching, which may take up to 4 weeks or longer.

Conflict of Interest:

There are no conflicts of interest.

Acknowledgement:

This work was supported by National Natural Science Foundation of China (81401677 to Sun Yi), and Hubei Province Health and Family Planning Scientific Research Project (WJ2015MB281 to Sun Yi).

REFERENCES

1. Khatoon, N., et al., Report - Most common body parts infected with scabies in children and its control. Pak J Pharm Sci, 2016. 29(5): p. 1715-1717.
2. Fujimoto, K., et al., Treatment for crusted scabies: limitations and side effects of treatment with ivermectin. J Nippon Med Sch, 2014. 81(3): p. 157-63.
3. Hicks, M.I. and D.M. Elston, Scabies. Dermatol Ther, 2009. 22(4): p. 279-92.
4. Mumcuoglu, K.Y. and L. Gilead, Treatment of scabies infestations. Parasite, 2008. 15(3): p. 248-51.
5. Chouela, E., et al., Diagnosis and treatment of scabies: a practical guide. Am J Clin Dermatol, 2002. 3(1): p. 9-18.
6. Micali, G., et al., Scabies: Advances in Noninvasive Diagnosis. PLoS Neglected Tropical Diseases, 2016. 10(6): p. e0004691.
7. Walter, B., et al., Comparison of dermoscopy, skin scraping, and the adhesive tape test for the diagnosis of

scabies in a resource-poor setting. Arch Dermatol, 2011. 147(4): p. 468-73.

8. Arlian, L.G. and M.S. Morgan, A review of Sarcoptes scabiei: past, present and future. Parasites & Vectors, 2017. 10: p. 297.
9. Gilmore, S.J., Control Strategies for Endemic Childhood Scabies. PLoS ONE, 2011. 6(1): p. e15990.
10. Shimose, L. and L.S. Munoz-Price, Diagnosis, prevention, and treatment of scabies. Curr Infect Dis Rep, 2013. 15(5): p. 426-31.
11. Johnstone, P. and M. Stong, Scabies. Am Fam Physician, 2015. 92(10): p. 919-20.
12. Karthikeyan, K., Treatment of scabies: newer perspectives. Postgrad Med J, 2005. 81(951): p. 7-11.
13. Paasch, U. and U.F. Haustein, Management of endemic outbreaks of scabies with allethrin, permethrin, and ivermectin. Int J Dermatol, 2000. 39(6): p. 463-70.
14. Roos, T.C., et al., Pharmacotherapy of ectoparasitic infections. Drugs, 2001. 61(8): p. 1067-88.
15. Goldust, M., E. Rezaee, and R. Raghifar, Comparison of oral ivermectin versus crotamiton 10% cream in the treatment of scabies. Cutan Ocul Toxicol, 2014. 33(4): p. 333-6.
16. Dressler, C., et al., The Treatment of Scabies: A Systematic Review of Randomized Controlled Trials. Deutsches Ärzteblatt International, 2016. 113(45): p. 757-762.
17. Sharquie, K.E., et al., Treatment of scabies using 8% and 10% topical sulfur ointment in different regimens of application. J Drugs Dermatol, 2012. 11(3): p. 357-64.
18. Alipour, H. and M. Goldust, The efficacy of oral ivermectin vs. sulfur 10% ointment for the treatment of scabies. Ann Parasitol, 2015. 61(2): p. 79-84.
19. Rezaee, E., M. Goldust, and H. Alipour, Treatment of Scabies: Comparison of Lindane 1% vs Permethrin 5. Skinmed, 2015. 13(4): p. 283-6.
20. Ramabhatta, S., G.R. Sunilkumar, and C. Somashekhar, Lindane toxicity following accidental oral ingestion. Indian J Dermatol Venereol Leprol, 2014. 80(2): p. 181-2.
21. Mohebbipour, A., et al., Comparison of oral ivermectin vs. lindane lotion 1% for the treatment of scabies. Clin Exp Dermatol, 2013. 38(7): p. 719-23.
22. Becourt, C., et al., Treatment of scabies with oral ivermectin in 15 infants: a retrospective study on tolerance and efficacy. Br J Dermatol, 2013. 169(4): p. 931-3.
23. Fawcett, R.S., Ivermectin use in scabies. Am Fam Physician, 2003. 68(6): p. 1089-92.
24. Rosumeck, S., A. Nast, and C. Dressler, Ivermectin and permethrin for treating scabies. Cochrane Database Syst Rev, 2018. 4: p. Cd012994.
25. Salavastru, C.M., et al., European guideline for the management of scabies. J Eur Acad Dermatol Venereol, 2017. 31(8): p. 1248-1253.
26. Sule, H.M. and T.D. Thacher, Comparison of ivermectin and benzyl benzoate lotion for scabies in Nigerian patients. Am J Trop Med Hyg, 2007. 76(2): p. 392-5.
27. Chan, L.Y., et al., Crusted (Norwegian) scabies in two old-age home residents. Hong Kong Med J, 2000. 6(4): p. 428-30.