



Scabies management

Scabies has been a problem for humans since before the first millennium and was reported by the earliest writers who described mankind's health problems (1). It is caused by a mite, *Sarcoptes scabiei* var *hominis*, and is transmitted from person to person by skin-to-skin contact. The more parasites that are on a person, the greater the chance for spread. This also suggests that spread can occur from clothing and bed linen; however, the mites do not survive long once they are off the skin (2,3).

Burrowed into the epidermis, the mite, its feces and ova laid by females seem to cause the irritation that leads to itching and secondary infection from scratching (1,3). The itching is worse at night. Scabies can be a problem for all age groups and is often confused with other conditions such as impetigo or eczema, particularly in infants and young children (1).

It is estimated that there may be 300×10^6 cases of scabies worldwide each year. In some areas, scabies has a much higher prevalence than diarrhea or upper respiratory disease. It is particularly a problem in situations of overcrowding, and in less developed countries and communities. Noncompliance or a lack of adequate treatment can result in scabies as a public health problem. It can be a 'marker' disease for immunocompromised patients, and the crusted form of scabies is not only difficult to treat, but is also highly contagious and presents a risk to health care workers.

The incubation period for scabies is about three weeks, but reinfestation can occur much faster. The main symptom is itching, which is worse at night. In older children and adults, the main areas infested are the web spaces between the fingers, the flexor aspect of the wrists and elbows, the axillae, male genitalia and women's breasts. Skin scrapings are used to make a definitive diagnosis, if they are taken from the burrows or other lesions and examined under a low power microscope. Mites, feces or eggs can be seen on the microscope slide; however, the diagnosis is usually made clinically, rather than by microscope. The diagnosis of infants and children can be a problem because they often have atypical lesions that are generally distributed; however, the lesions usually are concentrated on the hands and feet, and in body folds. These lesions can be confused with impetigo or eczema, but if treatment is prescribed for impetigo or eczema, it does not cure the scabies. Lesions are often also seen on the scalps of infants and children.

The Aboriginal population in all countries (including Canada), and in both rural and urban areas is particularly at risk because of a number of factors:

- crowded housing, shared beds, and crowded schools and day care centres;
- a high paediatric population;
- failure to recognize an infestation;
- reduced access to medical or nursing care;
- faulty application of treatment regimens;
- failure to treat close contacts;
- failure to eradicate scabies from clothing and bed linen; and
- a lack of running water, which may predispose people to secondary skin infection.

COMMUNITY CONTROL OF SCABIES

There is no recent estimate of the extent and prevalence of endemic scabies in Aboriginal communities across Canada. As in other parts of the world, epidemics tend to follow a cyclical pattern, occurring every 15 to 30 years. For the most part, health care workers treat symptomatic cases and contacts as they present. This approach, while eradicating symptoms in patients, often does little to alter the overall prevalence of scabies infestation within a community. Only by introducing mass treatment programs for a whole community, within a short pe-

riod of time, may the prevalence of infestation be reduced. Studies have shown that this is possible by using either permethrin or ivermectin (ivermectin is not licensed for use in Canada). When properly applied, 5% permethrin (Kwellada-P Lotion, Reed & Carnick, Canada; Nix Dermal Creme, Glaxo Wellcome, Canada) has been found to be as effective as ivermectin. The advantage of ivermectin is that it is a one dose, oral medication (1,3,4).

TREATMENT OF SCABIES

The first-line drug for scabies is 5% permethrin cream. It has low toxicity and excellent results. It is at least as effective as lindane (Hexit, Odan Laboratories Ltd, Canada; PMS-Lindane, Pharmascience Inc, Canada) and more effective than crotamiton (not available in Canada). Permethrin should be washed off after 8 to 12 h.

Permethrin acts by disrupting the sodium channel current, resulting in delayed repolarization, paralysis and death of the parasite. It is effective during all stages of the life cycle of the parasite. It is not recommended for infants younger than two months of age, but has been used successfully and safely in a 23-day-old infant. It is also not recommended during pregnancy, but has been successfully and repeatedly used in pregnant women with crusted scabies (3,5,6).

There is also a preparation of permethrin to treat head lice, which is a 1% solution (Kwellada-P Creme Rinse, Reed & Carnick; Nix Creme Rinse, Glaxo Wellcome) that is *not* effective in treating scabies. The two preparations should not be confused because they are not interchangeable.

Lindane cream or lotion is an alternative when 5% permethrin is not available. It should be washed off after 12 h and reapplied 24 h later. Lindane should be prescribed cautiously for infants younger than two years of age, and in pregnant and lactating women.

Precipitated sulphur (7%) in petroleum jelly is a safe alternative therapy for very young infants, and pregnant and lactating women. The pharmacist prepares it. It is applied on three consecutive days, left on for 24 h after application and washed off before the next application (1).

The infested patient, his or her family and any close contacts must be treated at the same time, regardless of whether they have symptoms. The reason for the treatment must be clearly and thoroughly discussed with the patient (if old enough to understand), as well as with the family and close contacts. Written instructions are helpful, particularly in a language understood by the family, eg, Syllabics and languages other than English or French. The prescribed treatment is applied after a tepid bath or shower and drying. The creme must be applied to the whole body, with particular attention being paid to skin folds, fingernails, toenails, behind the ears and the groin. The mite is found in all areas, even those without signs; therefore, the face and scalp must also be treated, particularly in young infants and children. Clothing should

be changed daily, and clothes and bed linen should be washed in hot water (60°C).

Patients should be advised that itching may last after the mites are dead due to a reaction to material still in the skin. The persistence of symptoms may be due to a reaction to the prescription, but is more frequently caused by an inadequate application of the treating agent and the inadequate treatment of contact cases, both in the family and in the community. An oral antihistamine may be used to control the itching, and skin infections can be treated with oral antibiotics.

CONTROL MEASURES

Prophylactic therapy is essential for all household members, especially because signs of scabies may not appear for two to three weeks after contact. The following control measures are recommended.

- To prevent reinfection, treat all household members at the same time as the patient is being treated.
- All bed linen (sheets, pillow cases, blankets) and clothing worn next to the skin (underwear, T-shirts, socks, pants) should be laundered in a hot cycle wash and hot drying cycle.
- If hot water is not available, place all linen and clothing into plastic bags and store it away from the family for five to seven days. The mite does not survive beyond four days without skin contact.
- Children may return to day care or school the day after treatment is completed.
- Health care workers who have close contact with scabies patients may require prophylactic treatment.
- Community education (ie, early recognition and awareness of scabies) is recommended.

In widespread scabies epidemics, prophylactic treatment of the whole community may be optimal (1,3).

FUTURE MEASURES

Ivermectin, a member of a family of macrolytic lactones, the avermectins, has broad spectrum activity against parasites. It binds to glutamate-gated chloride ion channels, which are present in invertebrate nerve and muscle cells, causing paralysis and the death of the parasite. It does not easily cross the blood-brain barrier in humans and has a low affinity for mammalian ligand-gated chloride channels. Ivermectin has been used for many years in veterinary medicine to control a wide variety of parasites in farm and domestic animals. Since 1987, it has been used to control onchocerciasis and strongyloidiasis. The United States Food and Drug Administration has licensed it for the treatment of these diseases, but not for the treatment of scabies. As noted above, ivermectin has not been licensed in Canada. However, since 1993, it has been successfully used in other countries to treat human scabies that is resistant to other treatment. The advantage of using ivermectin is that it is given orally as a single dose. It has been used as a public health measure to control widespread scabies in population groups.

Currently, any advantage of ivermectin over standard topical therapy is questionable. One study did not find any advantage over permethrin, which acts at all stages of the parasite's life cycle (6). Ivermectin acts only at certain stages of the life cycle of the parasite, as reported with onchocerciasis and strongyloidiasis (6-12).

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The recommendations in this statement do not indicate an exclusive course of treatment or procedure to be followed. Variations, taking into account individual circumstances, may be appropriate.