

Could it be scabies?

Scabies can present in atypical ways, making the diagnosis challenging. This article describes the various forms of presentation and discusses treatment options.

NINA WINES

BSc, MB BS, DRACOG

STEVEN SHUMACK

MB BS(Hons), FACD

Dr Wines is Sexual Health Registrar, Royal North Shore Hospital, St Leonards, NSW; Dr Shumack is a Consultant Dermatologist in private practice, Sydney, NSW.

Sometimes referred to as the great masquerader, *Sarcoptes scabiei* is an obligate parasite that presents in a variety of ways, making diagnosis challenging. The organism tunnels into the epidermis, depositing faeces as it proceeds. The female mite lays eggs which hatch within three to five days, developing into adult mites seven to 14 days later.¹

Transmission is by skin to skin contact and is proportional to the number of mites found on the host. In the classic form of scabies, 10 to 12 mites are found on the host; whereas in the crusted variety, up to 4500 mites have been counted in skin shed from affected individuals,^{2,3} making transmission significantly more likely. Infestation of a new host requires the passage of just one recently fertilised female mite.¹

How does it present?

Cutaneous lesions are commonly pruritic, papular and eczematous; however, in some sites they may be nodular, crusted or lichenified.⁴ The immune response to the mite is an important determinant in the presentation of scabies. Both immediate and delayed hypersensitivity are implicated in the development of cutaneous reaction,³ thus explaining the unusual presentation of scabies in the elderly, infants and certain immunodeficient populations.

For a first infection, an incubation period of two to three weeks before onset of pruritus is normal. In contrast, reinfection leads to cutaneous symptoms and signs in just one to three days.^{3,5,6} The most obvious clue to infection with scabies is the presence of generalised pruritus, with exacerbations at night or after a hot shower.

Burrows are pathognomonic, and if identified they are typically present at the onset of infestation.¹ They are slightly raised, brown and tortuous lesions.⁵ The point of entry is scaly and a vesicle may be visible at the distal end.⁵ In classic cases, lesions are commonly identified in the interdigital web spaces of the hands (Figure 1), flexor surfaces of the wrists, elbows, male genitalia, inner thighs and other intertriginous areas.^{3,7} Lesions may be obscured by good hygiene, use of topical agents and excoriations. Secondary lesions, such as impetigo and eczema, are common in patients with scabies (Figure 2).

There are special forms of scabies where the presentation is not classic, is often confusing and, as a consequence, is frequently misdiagnosed. These are summarised in Table 1 (see also Figures 3 to 5). Scabies can also mimic other skin diseases such as impetigo, folliculitis, bullous pemphigoid, systemic lupus erythematosus, dermatitis herpetiformis, eczema, contact dermatitis and psoriasis.

IN SUMMARY

- The scabies mite is an obligate human parasite transmitted by skin to skin contact or by contact with contaminated objects.
- Consider the diagnosis in any patient who has generalised pruritus with nocturnal exacerbations.
- The presentation is variable and is influenced by age, immune status, hygiene and previous treatment.
- Permethrin, applied topically, is the first line therapy.
- The itch can persist for two to three weeks after treatment.
- Oral ivermectin is currently approved to treat special forms of scabies only.



Close contact with dogs, and less often with cats and horses, can lead to transient infestation by scabies mites. These mites are unable to propagate on the human host and cannot produce burrows.⁸ Infestation with zoonotic scabies does lead to a transient pruritic papulovesicular rash, which is self-limited.

How is it diagnosed?

Major diagnostic criteria (presence of one confirms the diagnosis) are:⁹

- an identifiable typical burrow particularly associated with an itchy rash

- positive skin scrapings showing mites, faeces or eggs.

Minor criteria are:⁹

- a typical itchy rash
- the sudden onset of an unexplainable itchy rash
- contact with a scabetic person
- papules on penis.

A hand lens may be used to identify burrows, which can be made obvious by rubbing ink on the affected area.⁴

The diagnosis is definitively made by microscopic identification of mites, faeces or eggs. A scalpel blade can be used to obtain skin scrapings.

continued



Figure 1. Burrow in the interdigital web space.



Figure 2. Secondary excoriations, impetigo and eczema in a patient with longstanding scabies.

Lesions should be scraped six to seven times to remove the top of the papule or burrow.⁶ Alternatively, skin scrapings can sometimes be found under the fingernails. The scraped material is placed on a slide, potassium hydroxide is applied,

Table 1. Presentations of scabies^{3,6}

Classic form

- Nocturnal itch
- Bilateral lesions, affecting the hands (finger webs), flexor surface of wrists, elbows, anterior axillary folds, genitals, areolas of female breasts
- Scalp involvement rare
- Vesicles uncommon

Forms where the presentation can be confusing

With good hygiene

- Lesions sparse
- Burrows difficult to see

Bullous scabies

- Can mimic bullous pemphigoid
- Generally in people over 65 years
- Burrows often present

Scabies incognito

- Corticosteroid treatment masking signs and symptoms

On the scalp

- Infants and children, immunodeficient or elderly people
- May simulate or be superimposed by seborrhoeic dermatitis

Crusted (Norwegian) scabies (Figure 3)

- Psoriasiform dermatosis of the hands and feet with dystrophy of the nails
- Erythematous scaling eruption (may be generalised)

- Pruritus can be mild
- Usually affects immunocompromised patients
- Can be localised and misleading (e.g. on scalp only)
- Bacteraemia may result (*Staphylococcus aureus*, group A streptococcus)

Nodular scabies (Figures 4 and 5)

- Axillae, groin, male genitalia
- Pruritic nodules

In infants and children

- Frequent involvement of face, scalp, hands, feet and body folds
- General distribution
- Vesicles, papules, nodules, vesiculopustules
- Secondary eczema and impetigo common
- Burrows difficult to find

In elderly people

- Inflammatory reaction often absent
- Often misdiagnosed as 'senile pruritus' or neurodermatitis
- Inappropriate long term use of topical steroids leads to crusted scabies
- Involvement of the back common

In patients with HIV/AIDS

- Affects 2 to 5% of HIV positive patients
- Crusted or atypical papular scabies
- Face and scalp involvement possible
- May be the first opportunistic infection

and the slide is examined at low power. If a microscope is not available, either use a magnifying lens to examine the skin scrapings for mites or send a specimen to pathology for diagnosis.

A punch biopsy of atypical lesions may be required to demonstrate mites or their eggs. Microscopic examination is not essential, or possible, in some cases. In cases where the mite cannot be

isolated, a response to treatment may be adequate enough to indicate a diagnosis of scabies.

How is it managed?

Prevention of spread

Sexual partners and close household and family contacts all must be treated to help prevent the spread of the disease and also to prevent reinfection. The patient is no

longer contagious 24 hours after treatment.¹

Scabies mites live less than 48 hours outside the body without host contact. Therefore, transmission by sharing contaminated bedding or clothing is uncommon.⁸ Regardless of this, bed linen, towels and clothing need to be washed in hot water (at least 60°C).³

In nursing homes, hospitals and other institutional settings where mite counts are often high, preventing spread of scabies is difficult.⁹ Small epidemics can occur in this setting if affected individuals are not managed adequately and contact tracing is not extensive.

Treatment

Topical agents

Topical scabicides are effective. The choice of an appropriate agent is based on potential toxicity, the patient's age and the presence of secondary eczema (Table 2).^{3,6} Permethrin 5% (Lyclear, Quellada Lotion) is first line therapy, followed by benzyl benzoate (Ascabiol).¹⁰

Lindane is more toxic; its overuse has been associated with seizures and aplastic anaemia. Its use is contraindicated in pregnant woman and infants.⁸ It is no longer available in Australia.

All topical antiscabietic agents are

Patient handout: treatment of scabies

- Apply treatment at night before going to bed.
- Correct application is important:
 1. Have a short shower or bath.
 2. Towel dry.
 3. Apply treatment using a sponge or a small paintbrush.
 4. Massage the agent into the skin from the head to the feet.
 5. Pay specific attention to the affected areas as well as the groin, underneath the arms, and between the buttocks.
 6. Use a nail brush to apply treatment to underneath the fingernails and toenails.
 7. Sometimes scalp treatment is required. Avoid contact with the eyes and apply treatment to scalp (not hair) paying attention to the region behind the ears.
 8. Leave treatment on overnight and wash off in the morning.
- Wash all sheets, pillowslips, towels and clothes in hot water (at least 60°C).
- Scabies is spread by skin to skin contact. Close contacts will need to be treated at the same time even if they don't have symptoms.
- The itch can continue for one to two weeks after treatment.

applied from the patient's chin down after a shower or bath and towel drying. Washing before treatment enhances percutaneous absorption. Thin application, with specific attention to the fingernails and toenails and postauricular, groin, interdigital, natal cleft and axillary regions, is required. Application to the face and scalp, avoiding mucocutaneous areas, may be required in some cases, such as in elderly bedridden patients. The lotion should be left on for the recommended time (8 to 24 hours) then washed off

with tepid water. It is recommended that all patients receive a written explanation on how to treat themselves (for example, see the patient handout above).

A repeat application of topical therapy is often required in crusted scabies or atypical types of scabies. This can sometimes result in sensitisation or contact dermatitis to the topical agent.⁴ Crusted scabies may require the application of a keratolytic agent, such as 6% salicylic acid, before treatment, to improve the penetration of the scabicides.⁸



Figure 3. Crusted 'Norwegian' scabies.



Figure 4. Nodular scabies affecting the scrotum and penis.

continued

Table 2. Topical scabicides

Topical agent	Availability	Considerations
Permethrin 5% (Lyclear, Quellada Lotion)	5% cream in 30 g, or 5% lotion in 50 or 100 mL	<ul style="list-style-type: none"> • Low toxicity • Wash off 8 to 12 hours after application • Contraindicated in pregnancy or in infants under 2 months • No resistance described
Benzyl benzoate (Ascabiol)	25% oil in water emulsion (in 200 mL)	<ul style="list-style-type: none"> • Apply overnight • Repeat application required in 24 hours • Can cause significant cutaneous discomfort (dilute if this occurs)
Crotamiton (Eurax)	10% cream in 20 g, or 10% lotion in 50 mL	<ul style="list-style-type: none"> • Not as effective as other agents • Antipruritic and antiseptic effects • Use daily after a bath for 3 to 5 days
Precipitated sulfur ointment	Manufactured in white soft paraffin or emulsifying ointment	<ul style="list-style-type: none"> • For use in infants younger than 2 months and pregnant or lactating women (but its safety has not been proven) • Application required daily for at least 7 days • Smelly, greasy, poorly tolerated • Cheap

For treatment of children under 5 years, permethrin is approved for those greater than 2 months of age, and a single application of benzyl benzoate diluted in water is recommended for use in infants.³ Precipitated sulfur (2 to 10% in petrolatum) has been used, but its safety has not been proven.³

Oral agent

Ivermectin (Stromectol), originally used in veterinary practice, interrupts gamma aminobutyric acid (GABA)-induced neurotransmission of the parasite.³ It is effective, safe, cheap and convenient;

however, because clinical trials of its use lack statistical power, it is not a PBS item. Its use is currently reserved for special forms of scabies, such as scabies not responsive to topical agents, severe scabies (either classic or crusted) and scabies in immunosuppressed patients.³ It may also be beneficial in the eradication of endemic or epidemic scabies in institutional settings such as nursing homes.³

A single dose of 200 µg/kg of ivermectin appears to result in antiscabetic activity for two months.¹ It is thought that two or three doses (each 200 µg/kg) separated by one to two weeks will be



Figure 5. Nodular scabies affecting the prepuce.

required to treat severe scabies,³ but significant trials are still lacking. As it is not a PBS item, ivermectin has to be paid for by the patient. It can be ordered by the local pharmacy and costs between \$30 and \$35 for a single treatment (usually four tablets).

Side effects of ivermectin are uncommon but include musculoskeletal pain, oedema of the face and extremities, papular and bullous eruptions, asthma and coughing.⁸ Its use is contraindicated in lactating and pregnant women (category B3), as well as in children younger than 5 years of age.^{3,11} As ivermectin is extensively metabolised in the liver its use in patients with impaired hepatic function is not recommended.¹¹ It has not yet been trialled in patients with renal disease. Interactions between ivermectin and other drugs have not yet been studied in clinical trials.¹¹

How are complications treated?

Some relief from itching can be obtained by using oral antihistamines. Topical corticosteroid creams on intense rashes, or emollient creams on less intense rashes, may also help relieve itch.⁶

If secondary bacterial infection is present, an oral antibiotic (macrolide) may

be required.³ Streptococcal infection of scabetic lesions may be with a nephrogenic strain and can lead to acute glomerulonephritis.

Scabetic nodules can be treated with topical steroids, or in some cases intralesional steroids may be required.

What if the itch continues after treatment?

Itching may persist for two to three weeks after treatment. If the itch continues beyond three weeks, exclude reinfection, poor compliance or incorrect application of medication. Overtreatment can lead to an eczema-like reaction, and some patients may have contact dermatitis. This can usually be managed with emollients, and in some cases topical steroids.

Delusions of parasitosis may occur in patients who have been successfully treated for scabies; such patients often require psychiatric referral.⁶

Conclusion

Scabies presents in many different ways, making diagnosis challenging. Prolonged infection leads to increased infectivity as

the mites propagate. This makes the spread of disease to close contacts more likely, and in some settings, such as nursing homes, it can lead to minor epidemics. Accurate diagnosis and effective treatment are essential and will prevent such spread from occurring. **MT**

Who wants your opinion?

WE DO. You may disagree with some of the material we publish, or some of the opinions expressed. So, write and tell us and we will consider your letter for publication. We are more likely to print letters no longer than 250 words, so please be succinct.

Write to:
Dr John Ellard, Editor
Medicine Today
PO Box 1473
Neutral Bay
NSW 2089

References

1. Brown TJ, Yen-Moore A, Tyring SK. An overview of sexually transmitted diseases. Part II. *J Am Acad Dermatol* 1999; 41: 661-673.
2. Walton SF, McBroom J, Matthews JD, Kemp DJ, Currie BJ. Crusted scabies: a molecular analysis of *Sarcoptes scabiei* variety *hominis* populations from patients with repeated infestations. *Clin Infect Dis* 1999; 29: 1226-1230.
3. Chosidow O. Scabies and pediculosis. *Lancet* 2000; 355: 819-826.
4. Platts-Mills TA, Rein MF. Scabies. In: Holmes KK, Sparling PF, Mardh PA, eds. Sexually transmitted diseases. 3rd ed. New York: McGraw Hill, 1999: 645-650.
5. Burns DA. Diseases caused by arthropods and other noxious animals. In: Champion RH, Burton JL, Burns DA, Breatnach SM, eds. Textbook of dermatology. 6th ed. Vol 2. Oxford: Blackwell Science, 1998: 1458-1465.
6. Orkin M, Maibach HI. Scabies and pediculosis. In: Freedberg IM, Elsen AZ, Wolff K, et al, eds. Fitzpatrick's dermatology in general medicine. 5th ed. Vol 2. New York: McGraw Hill, 1999: 2677-2680.
7. Burgess IF. Diagnosing and treating scabies. *Practitioner* 1996; 240: 739-743.
8. Maguire JH, Speilman A. Ectoparasite infestations. In: Isselbacher KJ, Braunwald F, Wilson J, Martin JB, Fanci AS, Kasper DL, eds. Harrison's principles of internal medicine. 13th ed. Vol 1. New York: McGraw Hill, 1994: 934-935.
9. Commens C. The treatment of scabies. *Aust Prescriber* 2000; 23: 33-35.
10. Gebauer K. Scabies and lice. *Curr Therapeutics* 1999; 40(11): 46-49.
11. MIMS Annual. 24th ed. Sydney: MIMS Australia, 2000: 8.751-8.752.