

## European Guideline for the Management of Scabies

### Introduction and aetiology

Transmission of the mite *Sarcoptes scabiei* generally occurs by protracted direct body contact; although in crusted scabies, transmission also occurs via infected clothing or bedding.

Mites are capable of burrowing into the stratum corneum of a contact person within 1 hour. Mite antigens including excrement may also generate a hypersensitivity reaction.

### Diagnosis

#### Clinical

- The main symptom is itch, which usually develops 2-6 weeks after infestation. In a re-infected person the itch recurs within 1-4 days.
- Examination reveals characteristic silvery lines with a mean length of 0.5cm, which may be seen in the skin where the mites have burrowed. Typical sites include between the fingers and on the sides of hands and feet, on wrists, extensor surface of the elbow, female nipples, penis and scrotum, anterior axillary folds.
- "Hypersensitivity" to mites may induce urticarial papules or nodules, especially in the genital area
- Eczema and impetigo are consequences of itch
- The clinical manifestations of crusted scabies are described below

#### Indication for testing

This is important in, at least, the index patient before taking far-reaching epidemiological measures e.g. epidemic in an institution

- Direct microscopic examination of a potassium hydroxide mount of a superficial epidermal skin sample ("skin snip") obtained with a scalpel from the end of a burrow
- Experienced clinicians may probe a burrow with a needle to obtain material for direct microscopic examination

- Direct examination of skin for mites using an epiluminescence stereomicroscope has also been described (1).

## Management

Information, explanation and advice for the patient

- Patients should be advised to avoid close contact until they and their sexual partners have completed treatment and follow-up (level of evidence IV; grade C recommendation)
- Patients should be given a detailed explanation of their infestation together with clear written information (level of evidence IV; grade C recommendation)

## Indication for routine STI examination

- History of risk behaviour for STI in sexually active patients with scabies

## Indications for therapy

- Characteristic clinical findings
- High-risk contacts: persons with protracted or frequent skin contact (e.g. via the hands) should be treated whether or not they have symptoms
- Low-risk contacts: persons with indirect contact (e.g. via bedding) only require treatment in cases of crusted scabies (see below)

## Recommended regimens

Efficacy, tolerability and cost guide the specific choice of therapy, although there have also been concerns raised about the possibility of resistance emerging to available antiscabietics (2)

The quality of evidence comparing one treatment with another is poor (3).

Lindane is no longer included as the European Medicines agency (EMA) withdrew its license in 2008.

Eight randomized controlled trials of antiscabietic treatment have been published since the previous guideline (4-12).

- Permethrin cream 5% (once for 8-14 hours) is effective(9,13), well-tolerated(14, 15), but expensive (level of evidence Ib; grade A recommendation)
- Benzyl benzoate lotion ( 10 to 25%) is also cheap and effective, but requires application on more than one day ( 2 to 3 applications ) (11). (level of evidence III; grade B recommendation)
- Ivermectin is not licensed in most countries, but can be given orally as a repeated dose (200 microg/kg) 2 weeks apart in patients weighing more than 15 kg.. Comparisons with lindane and benzyl benzoate give conflicting results with regard to efficacy (4-6, 11, 16, 17) (level of evidence Ib; grade A recommendation). Although Ivermectin has been associated with deaths when given to debilitated patients (18, 19), this has not been borne out in the more recent studies. There are no controlled trials of topical ivermectin.
- A foam-based preparation of synergized pyrethrins is available in some countries. One study suggested this may be as effective as permethrin (7) (level of evidence II; grade B recommendation)
- Sulfur (6-33%) is the oldest antiscabietic in use and comes in various preparations (8, 20). It appears to be effective, is very cheap, safe, but stains clothing and requires application on three successive days (level of evidence Ib; grade A recommendation)

#### Addendum on treatment procedure

- Treatment instructions: patients should be provided with written instructions, which should include the amount of drug to be applied. Apply lotion/cream to the entire skin including the scalp, all folds, groin, navel, external genitalia and the skin under the nails. In adults with classical scabies , treatment of face is controversial. In babies, the skin of the face should also be treated (transmission is possible from contact by breastfeeding). If the patient applies the lotion/cream him/herself, the hands should not be washed after application. If

the lotion/cream is applied by someone without scabies, that person should wear (medical) disposable gloves. If there is any doubt as to whether or not a patient will apply the lotion/cream according to instructions, a second application is recommended, preferably soon after the first.

- Hygienic measures: after completion of treatment, use fresh bedding and clothing. Potentially contaminated clothes and bedding should be washed at high temperature (>50° C) if possible, or may be kept in a plastic bag for up to 72 hours, because mites separated from the human host die within that time.

### Pregnancy/lactation

- Permethrin, benzyl benzoate (applied twice), and sulfur (applied thrice) appear to be safe in pregnancy although the evidence is limited (21) (level of evidence III; grade B recommendation)

### Follow-up

- It should be explained to patients that after treatment some itching might persist for several weeks, especially in atopic individuals.
- Symptomatic relief may be obtained from an emollient
- A test of cure (direct microscopy, not using potassium hydroxide, for living/moving mites) may be performed, especially in crusted scabies

### Crusted scabies

Crusted scabies is seen in immunocompromised persons e.g. AIDS patients (22, 23), and those confined to long-term institutions.

- Clinical signs typically consist of hyperkeratotic/crusted plaques, papules and nodules, particularly on the palms of the hands and the soles of the feet, although areas such as the axillae, buttocks and scalp may also be affected. Isolated genital plaques have been described (24). Occasionally there may be psoriasiform or

eczematous lesions with fine, powder-like scaling and redness, generally on a dry skin. Diagnosis by direct microscopy of skin samples is straightforward in view of the large numbers of mites and eggs in the scales.

- Topical treatment is with several applications of permethrin 5% cream to the entire skin including the head. This may be alternated with keratolytic therapy e.g. emollients or bathing. Combinations of topical treatments with oral agents such as ivermectin have been used in some outbreaks (25). (level of evidence III; grade B recommendation)
- Because of the increased risk of transmission to contact persons, strict isolation should be observed until cure is achieved. Active epidemiological measures to ensure treatment of all contacts are necessary.

## References

1. Argenziano G, Fabbrocini G, Delfino M. Epiluminescence microscopy: a new approach to *in vivo* detection of *Sarcoptes scabiei*. *Arch Dermatol* 1997; **133**:751-3.
2. Mounsey KE, Holt DC, McCarthy J, Currie BJ, Walton SF. Scabies: molecular perspectives and therapeutic implications in the face of emerging drug resistance *Future Microbiol.* 2008;3:57-66
3. Strong M, Johnstone P. Interventions for treating scabies. *Cochrane Database Syst Rev* 2007, Issue 3. Art. No.: CD000320. DOI: 10.1002/14651858.CD000320.pub2.
4. Nnoruka EN, Agu CE. Successful treatment of scabies with oral ivermectin in Nigeria. *Trop Doct* 2001;31:15-8
5. Madan V, Jaskiran K, Gupta U, Gupta DK. Oral ivermectin in scabies patients: a comparison with 1% topical lindane lotion. *J Dermatol* 2001;**28**(9):481-4
6. Brooks PA, Grace RF. Ivermectin is better than benzyl benzoate for childhood scabies in developing countries. *J Paediatr Child Health* 2002;**38**(4):401-4
7. Amerio P, Capizzi R, Milani M.. Efficacy and tolerability of natural synergised pyrethrins in a new thermo labile foam formulation in topical treatment of scabies: a prospective, randomised, investigator-blinded, comparative trial vs. permethrin cream. *Eur J Dermatol.* 2003;13:69-71

8. Singalavanija S, Limpongsanurak W, Soponsakunkul S. A comparative study between 10 per cent sulfur ointment and 0.3 per cent gamma benzene hexachloride gel in the treatment of scabies in children. *J Med Assoc Thai* 2003;86 Suppl:531-6
9. Zargari O, Golchai J, Sobhani A, Dehpour AR, Sadr-Ashkevari S, Alizadeh N, et al. Comparison of the efficacy of topical 1% lindane vs 5% permethrin in scabies: a randomized, double-blind study. *Indian J Dermatol Venereol Leprol* 2006;72:33
10. Biele M, Campori G, Colombo, et al. Efficacy and tolerability of a new synergized pyrethrins thermofobic foam in comparison with benzyl benzoate in the treatment of scabies in convicts: the ISAC study. *J Eur Acad Dermatol Venereol*. 2006;20:717-20.
11. Ly F, Caumes E, Ndaw CA, Ndiaye B, Mahé A. Ivermectin versus benzyl benzoate applied once or twice to treat human scabies in Dakar, Senegal: a randomized controlled trial. *Bull World Health Organ*. 2009;87:424-30.
12. Chosidow O. Clinical practices. Scabies. *N Engl J Med*. 2006;354:1718-27.
13. Schultz MW, Gomez M, Hansen RC, et al. Comparative study of 5% permethrin cream and 1% lindane lotion for the treatment of scabies. *Arch Dermatol* 1990;**126**:167-70
14. Meinking TL, Taplin D. Safety of permethrin vs lindane for the treatment of scabies. *Arch Dermatol* 1996; **132**:959-62.
15. Franz TJ, Lehman PA, Franz SF, Guin JD. Comparative percutaneous absorption of lindane and permethrin. *Arch Dermatol* 1996; **132**:901-5.
16. Chouela EN, Abeldano AM, Pellerano G, et al. Equivalent therapeutic efficacy and safety of ivermectin and lindane in the treatment of human scabies. *Arch Dermatol* 1999; **135**:651-5
17. Usha V, Gopalakrishnan Nair TV. A comparative study of oral ivermectin and topical permethrin cream in the treatment of scabies. *J Am Acad Dermatol* 2000;**42**:236-42.
18. Barkwell R, Shields S. Deaths associated with ivermectin treatment of scabies. *Lancet* 1997; **349**:1144-5.
19. Coyne PE, Addiss DG. Deaths associated with ivermectin treatment for scabies. *Lancet* 1997; **350**:215-6.
20. Avila-Romay A, Alvarez-Franco M, Ruiz-Maldonado R. Therapeutic efficacy, secondary effects, and patient acceptability of 10% sulfur in either pork fat or cold cream for the treatment of scabies. *Pediatr Dermatol* 1991;**8**:64.

21. Mytton OT, McGready R, Lee SJ, *et al.* Safety of benzyl benzoate lotion and permethrin in pregnancy: a retrospective matched cohort study. *Br J Obstet Gynecol* 2007;114:582-7
22. Corbett EL, Crossley I, Holton J, *et al.* Crusted ("Norwegian") scabies in a specialist HIV unit: successful use of ivermectin and failure to prevent nosocomial transmission. *Genitourin Med* 1996; **72**:115-7.
23. Nandwani R, Pozniak AL, Fuller LC, Wade J. Crusted ("Norwegian") scabies in a specialised HIV unit (a protocol, bathing included). *Genitourin Med* 1996; **72**:453-4.
24. Perna AG, Bell K, Rosen T. Localised genital Norwegian scabies in an AIDS patient. *Sex Transm Inf* 2004;80:72-3.
25. Alberici F, Pagani L, Rattu G, Viale P. Ivermectin alone or in combination with benzyl benzoate in the treatment of human immunodeficiency virus-associated scabies *Br J Dermatol.* 2000;142:969-72