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CASE REPORT

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Eleven Danish patients diagnosed with Scabies and treated with Tenutex®

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Abstract

Treatment with Tenutex® should be considered in patients diagnosed with scabies if the first-line treatment with 5% permethrin fails. Treatment failure with 5% permethrin may be due to tolerance or resistance in scabies mites.

KEYWORDS

drug resistance, permethrin, scabies, Tenutex

1 | INTRODUCTION

Scabies affects 200 to 300 million individuals annually worldwide. Based on 11 Danish case reports of patients who were diagnosed with scabies, we give suggestions about treatment and hypothesize that tolerance or even resistance to topical 5% permethrin may occur.

Scabies is a disease caused by an ectoparasitic infestation with the *Sarcoptes scabiei* var. *hominis* mite. In 2017, scabies and other ectoparasites were added to the list of Neglected Tropical Diseases (NTDs) by The World Health Organization (WHO).[1]

Worldwide, scabies affects 200 to 300 million individuals annually, and the prevalence is reported to be between 2% and 4% in Europe and the US.[2,3] The scabies mite is commonly transmitted through prolonged skin to skin contact and the symptoms develop 2 to 6 weeks after the infestation, but reinfestation can result in symptoms within 48 hours.[4,5] Patients with scabies usually present with intense pruritus and an erythematous skin eruption characterized by papules, nodules, vesicles, and mite burrows. The pruritus is typically aggravated at night. The skin manifestations are presumably a result from an early or delayed (type IV) hypersensitivity reaction to the mite, its eggs, saliva, and scybala.[3] The sites of predilection include the webs and lateral aspects of the fingers, volar wrists, waist, abdomen (around the umbilicus), axillae, buttocks, and the genital region.[2,3] Involvement of the back, nails, palms, soles, and above the neck is unusual except in immunocompromised individuals, young children, and infants.[3,5] Scabies can be treated orally with ivermectin and with several topical agents including 5% permethrin cream, Tenutex®, benzyl benzoate 10%-25% lotion, ivermectin 1% lotion, malathion 0.5% aqueous lotion, and sulfur 6%-33% cream, ointment, or lotion.[6] Patients with scabies and their close contacts should be treated simultaneously and avoid close contact until they have completed their treatments. Towels, bedding, clothing, and other items should be machine washed (at 50°C or higher), dry-cleaned, or sealed and stored in plastic bags for at least 1 week.[6] Recurrent infestations are common and can be suspected due to incorrect application of topical agents, insufficient hygiene, or reinfection by close contacts of the patient. The past years, we have experienced an increase of scabies infestations in several European countries, along with an increase of sales of antiscabietic agents.[7]

Based on 11 Danish case reports of patients who were treated successfully with Tenutex®, after failure to treatment with 5% permethrin, we suspect that scabies mites may have become tolerant or even resistant to the treatment.

2 | CASE REPORTS

The case reports concern 11 Danish patients who were diagnosed scabies and referred to the Dermatology Department of Odense University Hospital from March 2019 to November 2019 (Table 1). All the patients presented with intense pruritus and widespread erythematous skin eruptions characterized by scaly burrows, papules, and nodules. The clinical diagnosis of scabies was confirmed by handheld dermoscopy and isolation of living scabies mites that were observed under a light microscope. All the patients had previously failed on treatment with topical 5% permethrin, and 2 patients had also received treatment with oral ivermectin. None of the patients had received any antiscabietic treatments for at least 1 week before the first visit in the Dermatology Department of Odense University Hospital. After confirming the diagnosis of scabies, the patients were treated with an emulsion containing 2% disulfiram and 22.5% benzyl benzoate (Tenutex®). Eight patients received the treatment at days 0 and 7 and the remaining 3 patients at days 0, 1 and 7. The treatment was recommended to be washed off after 24 hours. Any household members received similar treatments as the patients. All the patients had a follow-up control visit or a phone call 4-6 weeks after day 0 of the treatment with Tenutex®. The

TABLE 1 The table shows the sex and age of the patients, number of previous treatments with 5% permethrin, prescribed treatment regimens with Tenutex®, efficacy at follow-up and side effects after the treatment

Patient number, sex, and age	Previous treatments with topical 5% permethrin (day 0 and day 7)	Tenutex® treatment regime.	Efficacy at follow-up	Side effects of Tenutex®
1. Boy: 1 year	5 treatments	Days 0,1 and 7	Phone call after 4 wk No symptoms of scabies	Discoloration of clothing and eczema
2. Girl: 11 y	4 treatments	Days 0, 1 and 7	Control after 4 wk No symptoms of scabies	None
3. Woman: 30 y	3 treatments	Days 0, 1 and 7	Control after 5 wk No symptoms of scabies	Dry skin
4. Girl: 16 y	1 treatment	Days 0 and 7	Control after 5 wk No symptoms of scabies	Itch
5. Man: 19 y	1 treatment	Days 0 and 7	Control after 4 wk No symptoms of scabies	Burning in the skin half an hour after application
6. Woman: 21 y	1 treatment	Days 0 and 7	Control after 5 wk No symptoms of scabies	Burning at the genitals after application
7. Woman: 21 y	1 treatment	Days 0 and 7	Control after 6 wk No symptoms of scabies	Itch and skin irritation
8. Girl: 15 y	1 treatment	Days 0 and 7	Control after 5 wk No symptoms of scabies	None
9. Girl: 1 year	2 treatments	Days 0 and 7	Phone call after 6 wk No symptoms of scabies	Dry skin.
10. Man: 19 y	1 treatment	Days 0 and 7	Phone call after 5 wk No symptoms of scabies	None
11. Man: 20 y	1 treatment	Days 0 and day 7	Control after 6 wk No symptoms of scabies	Dry skin

treatments were considered effective by absence of pruritus, classic skin manifestations, and negative dermoscopy findings at the control follow-up. At the phone call follow-up, the treatments were considered effective if the patients had no rash or pruritus. All 11 patients cleared the infestation after the first treatment with Tenutex®. The reported side effects after the treatments were dry skin, itching, eczema, burning sensation, and discoloration of clothing.

3 | DISCUSSION

Diagnosis and proper treatment of scabies is of great importance to avoid further spread of the infestation. According to the European guideline for the management of scabies, 5% permethrin cream is a first-line treatment option.[6] Permethrin affects the sodium transport across neuronal membranes causing delayed repolarization and respiratory paralysis of arthropods.[8] Permethrin resistance in other ectoparasites, such as head lice (pediculosis humanus capitis), has been documented and a similar resistance may have developed in scabies mites.[9,10] A previous study including 440 patients showed that 2,5% permethrin was superior to treatment with Tenutex®.[11] The presented case reports are interesting since all the patients had failed on treatment with topical 5% permethrin and were cured using Tenutex®. The success after second-line treatment with Tenutex® may be due to improvements in the advice given by specialists regarding the use of treatment and hygiene. However, we speculate that it could be due to a developing tolerance or even resistance to 5% permethrin cream in the scabies mites. Seven patients reported side effects to Tenutex®. These side effects were mild and transient and included dry skin, itching, and eczema. Other known side effects are burning bullae, erosions, erythematous, and scaling of skin.[12] Based on the presented case reports, we suggest Tenutex® as a second-line treatment option for scabies, if the first-line treatment with 5% permethrin fails. We hypothesize that treatment failure with 5% permethrin may be due to tolerance or resistance in scabies mites; however, further studies are needed.

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CONFLICT OF INTEREST
None declared.

AUTHOR CONTRIBUTIONS
KP and NM were involved in the clinical management of the patients. CS wrote the manuscript and serves as corresponding author. KP and CV have revised and contributed to the manuscript.

ETHICAL APPROVAL
This article does not contain any clinical studies with human patients performed by any of the authors.

DATA AVAILABILITY STATEMENT
Data sharing not applicable to this article as no datasets were generated or analyzed during the current study.

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