Crusted scabies

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ABSTRACT
Crusted scabies is a highly contagious disease. The condition usually occurs in patients who are immunocompromised or who are physically unable to scratch the mites off the skin. This report describes a 57-year-old chronic alcohol drinker with central nervous system depression initially treated for a diagnosis of eczema, but was subsequently found to have crusted scabies. Accurate diagnosis and timely management is essential to prevent an outbreak.

Key words: Antiparasitic agents; Pruritus; Scabies

INTRODUCTION
Crusted scabies is a highly contagious disease that usually occurs in immunocompromised patients or those who are physically disabled so are unable to scratch the mites off the skin. Crusted scabies is easily misdiagnosed as eczema and thus a high index of suspicion is needed.¹

CASE REPORT
In January 2012, a 57-year-old man presented to our hospital with non-specific discomfort for a few days. He had hypertension, chronic hepatitis B infection, and diabetes mellitus, which was unsatisfactorily controlled (his latest glycosylated haemoglobin level tested 3 months earlier was 10%). He was also a chronic alcohol drinker.

On admission, his blood pressure was 82/56 mm Hg and pulse rate was 109 beats per minute. He was confused and dehydrated, with a glucose level of 22 mmol/L (reference range, 3.9-6.1 mmol/L). He had metabolic acidosis, with arterial blood pH of 7.23 (reference range, 7.35-7.45) and a bicarbonate level of 15 mmol/L (reference range, 21-28 mmol/L). His ethanol level was 45 mmol/L (reference range, <21.7 mmol/L) indicating central nervous system depression.

He was admitted to the intensive care unit, and his condition improved over the next few days. On improvement of his sensorium, he complained of generalised itchiness. He was prescribed fluocinolone cream 0.025% twice daily for suspected eczema, and was subsequently transferred to the general ward.

Physical examination revealed diffuse hyperkeratotic crusts over the limbs and trunk (Figure). There were no nodules, pustules, or signs of cellulitis. Skin scraping for Sarcoptes scabiei was performed and he was transferred to an isolation ward for suspected crusted scabies. He was treated with benzoyl benzoate every 12 hours for 3 days and ivermectin 200 µg/kg (1.2 mg) once orally. Skin scraping confirmed the presence of S scabiei. Another course of benzoyl benzoate and ivermectin was repeated on day 7 and day 14. All the hyperkeratotic crusts were washed off with repeated bathing. Multiple skin scrapings were then done after the first course of treatment and were all negative for S scabiei. Nonetheless, his itchiness persisted despite the resolution of the skin lesions. He was treated with emollients (emulsifying ointment three times daily) and topical steroid (fluocinolone cream 0.025% twice daily). The itchiness improved gradually after 2 weeks of treatment.

He was living alone with no close relatives or friends. Therefore, no close contacts were traced. Environment decontamination was not performed at his residence because the mites could not survive outside the host for long, as the patient was in hospital for 30 days.

DISCUSSION
According to a large study in the United Kingdom,² scabies is more common among women, with a
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The prevalence of scabies in the age group of 10-19 years was 4.55 and 5.92 per 1000 for males and females, respectively. The prevalence decreases gradually as people age, but increases again among people older than 80 years (2.2 and 3.5 per 1000 for males and females, respectively). This patient had features that made him susceptible to scabies infestation, including central nervous system depression and immunosuppression owing to chronic alcoholism and malnutrition.

According to the Department of Health in Hong Kong, the reported numbers of new cases of scabies in local dermatology clinics were 56 and 29 of 17,740 and 14,180 cases in 2008 and 2009, respectively. This was probably an underestimation because most of cases are managed in other settings, e.g. in specialised out-patient geriatric or medical clinics or during hospitalisation. The prevalence of scabies in local nursing homes was 5.8%.

*S. scabiei* is the organism that causes scabies. It is transmitted by direct person-to-person contact. Female mites burrow into the skin under the stratum corneum and lay eggs. Hypersensitivity to the excreta of the mites causes the symptoms of scabies. Scabies develop after 3 to 6 weeks of infection, but this can be as short as one to 3 days after reinfection. Typically, there are only 5 to 15 female mites present in a host infected with scabies. In crusted scabies, the number of mites can be hundreds or even millions. Fomites are generally not the source of transmission. In a study of the infectivity of scabies in 1940, 4 of 300 healthy volunteers developed scabies after climbing nude into beds that were just vacated by infested patients. However, this does not apply to crusted scabies, for which environmental decontamination is mandatory owing to the vast number of mites present.

Diagnosis of scabies can be made clinically, based on: (1) widespread itching that is worse at night, sparing the face and scalp; (2) symptoms disproportionate to detectable clinical signs; (3) pruritic eruption with characteristic lesions and distribution (the sides and webs of the fingers, flexor aspects of the wrists, extensor aspects of the elbows, anterior and posterior axillary folds, skin immediately adjacent to the nipples (especially in women), periumbilical areas, waist, male genitalia (scrotum, penile shaft, and glans), extensor surface of the knees, lower half of the buttocks and adjacent thighs, and lateral and posterior aspects of the feet); and (4) other household members with similar symptoms. The characteristic burrows are not always evident on examination. If present, these burrows support the diagnosis of scabies.

Various diagnostic tests can be undertaken for confirmation. Skin scraping is the most commonly used test for scabies in this locality, but its sensitivity is only 46%. The burrow ink test involves gently rubbing a scabetic papule with the tip of a fountain pen or felt-tip marker to cover it with ink, then removing the ink on the surface with an alcohol wipe. The test is positive if ink tracks into and outlines a burrow, forming a dark zigzagged line. Dermoscopy involves directly visualising the mites using a dermoscope (an illuminated magnifier). The sensitivity of dermoscopy ranges from 83 to 91%. Nonetheless, a dermoscope may not be available in every clinic or ward, and requires proper training, thus, its use is usually limited to dermatologists. The adhesive tape test is done by applying transparent adhesive tape to the skin firmly and pulling it off rapidly, then examining the tape under a microscope for features of scabies. This technique is minimally invasive, but contact bleeding may be produced inadvertently. The sensitivity of the adhesive tape test is 68%. Further validation and implementation of these tests in our locality are needed.

Treatment of scabies is mainly topical. Benzyl benzoate is an ingredient of ‘balsam of Peru’. Benzoyl benzoate 25% lotion is applied from neck down over the entire body and left overnight; application of the lotion is repeated on the next day. Cure rate ranges from 86 to 96%. Lindane was the first-line treatment for scabies in the 1970s, but...
is seldom used nowadays. The neurotoxic effects of lindane may lead to numbness, anxiety, tremor, or convulsions.12 Fatality has been reported after oral ingestion.13 Permethrin is currently recommended as the first-line topical agent,14 as it requires only one application and has low toxicity.15 A thin uniform layer is applied to all skin surfaces from the neck to the toes at night, avoiding contact with the eyes and mucous membranes. The cream is removed after 8 to 14 hours by bathing or showering the next morning. The cure rate is over 90%.10,16 Ivermectin is the only oral agent for the treatment of scabies, and it is as effective as topical permethrin.16 Ivermectin is given at a dose of 200 µg/kg. A repeated dose at least one week later is suggested because ivermectin is not ovicidal and it takes 2 to 4 days for larvae to develop into adult mites within 10 to 14 days.17 Eggs may then be produced before the second dose. Thus, the second dose should be given between days 7 and 14. The use of ivermectin in scabies is generally safe. The potentially fatal Mazzotti reaction, which may occur after ivermectin administration for onchocerciasis, has never been reported in conjunction with scabies. There has been concern about an increase in deaths associated with ivermectin treatment of scabies in a long-term care facility,18 but this cohort of patients was treated repeatedly with lindane (a neurotoxin) before the use of ivermectin, which could explain the high death rate observed.

There is no consensus on the best treatment for crusted scabies. Most clinicians prefer multiple doses of topical agents, e.g. permethrin or benzoyl benzoate together with repeated doses of ivermectin. The number of treatments depends on the severity of the disease. One suggestion is to apply topical permethrin 5% (or benzoyl benzoate 25%) every 2 to 3 days for 1 to 2 weeks and to take 3 doses (days 1, 2, and 8), 5 doses (days 1, 2, 8, 9, and 15) or 7 doses (days 1, 2, 8, 9, 15, 22, and 29) of oral ivermectin (200 µg/kg/dose).19 Severely crusted lesions should be treated with keratolytics for better drug efficacy.

Patients with crusted scabies are considered to be core transmitters of the disease. In 16 of 20 episodes of scabies outbreak with a traceable source, the index case has crusted scabies.20 Therefore, specific control measures such as isolation, contact precaution, protective garments, and decontamination of clothing and bedding with a machine wash at 60°C and hot dry are important to prevent a reinfection or outbreak. Treatment, either with topical permethrin or oral ivermectin, should be offered to those who have close contact with a patient with crusted scabies.21

REFERENCES