

Crusted (Norwegian) scabies in two old-age home residents

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Scabies is commonly seen in hospitals, where it frequently affects geriatric and convalescent patients. The clinical features of the classic form of scabies are well recognised. Crusted (Norwegian) scabies, which is a hyperinfestation variant of scabies, is very contagious and can present as other dermatoses, thus delaying the correct diagnosis and management. Two residents of different old-age homes presented with hyperkeratotic skin eruptions, which later proved to be crusted scabies. In both cases, the scabies was initially misdiagnosed as eczema. The delay in making a correct diagnosis led to an outbreak of scabies in the old-age home in which one of the patients was residing.

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Introduction

Scabies is a skin infestation caused by the mite *Sarcoptes scabies hominis*. The adult mite measures 0.2 to 0.4 mm and is just visible to the naked eye. Scabies is transmitted by close skin and sexual contact. The classic form of scabies is an itchy dermatosis that is characterised by the presence of excoriated papulopustules, vesicles, and burrows.

Crusted scabies (CS), also known as Norwegian scabies because it was first described in lepers in Norway, is a clinically distinct and highly contagious form of scabies, in which there is a heavy load of scabietic mites. Crusted scabies is expected to become more prevalent with the wider use of immunosuppressants, potent topical steroids, and increase in patients with acquired immunodeficiency syndrome (AIDS). A delay in the diagnosis of even one case of CS can lead to a massive outbreak of scabies in an institution. We report on two old-age home residents with CS that was initially misdiagnosed as eczema. The delay in diagnosis resulted in an outbreak of CS in the old-age home in one case.

Case reports

Case 1

A 66-year-old wheelchair-bound woman, who was a resident of an old-age home, presented to the Social Hygiene Service in March 1999 with hyperkeratotic skin rashes over the hands and feet, which had persisted for a few weeks. She was initially given topical treatment for eczema but her condition failed to improve. A dermatologist was consulted, and examination revealed widespread scaly crusts especially over the hands (Fig 1) and feet. Subungual hyperkeratosis was also evident. Microscopic examination of the scales detected several scabietic mites and confirmed a clinical suspicion of CS. Further clinical investigation showed that eight of the patient's neighbouring residents and staff workers were also affected. The index patient was barrier-nursed and given repeated



Fig 1. Case 1: hyperkeratotic crusts over the hand with nail involvement

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Fig 2. Case 2: hyperkeratotic erythematous scales over the buttocks

treatment with 25% benzyl benzoate emulsion (BBE), 3% salicylic acid ointment, crotamiton cream, chlorpheniramine maleate, and erythromycin. After 2 weeks of treatment, most of the skin lesions had resolved. There was residual periungual hyperkeratosis from which scabietic mites could still be identified and which required further antiscabietic treatment.

Case 2

A 92-year-old woman, who was a resident of another old-age home, was referred to the Social Hygiene Clinic in July 1999 for the management of 'eczema' that had persisted for a few weeks. Scratching was reported to be minimal. The patient had cor pulmonale and was wheelchair-bound. Examination revealed erythematous papules on the trunk and limbs, and hyperkeratotic scaly erythema over the buttocks (Fig 2). The axillae, groins, finger webs, and nails appeared unremarkable. Burrows were absent. Skin scrapings from the buttocks revealed scabietic mites, eggs, and faeces, and CS was diagnosed. She was treated in the same way as was the patient in case 1. An evaluation of the infection status of her old-age home failed to detect an outbreak of scabies, but one of her neighbouring residents was also affected.

Discussion

The diagnosis of classic scabies is made when a mite or a burrow is identified.¹ A burrow refers to an intra-epidermal tunnel dug by a female mite, in which the mite lives and lay eggs. Externally, burrows appear as short, wavy lines and are most commonly found in cryptic areas such as finger webs, wrists, axillae, inframammary areas, and over the male genitalia. Burrows that constitute a characteristic sign in classic scabies, however, are frequently absent or masked by hyperkeratotic scales in CS. Patients with a physical debilitation, mental retardation, or sensory impairment,

and patients who are receiving immunosuppressant drugs or who have AIDS are at-risk of CS. The common feature is a depressed cellular and humoral immunity,² and/or absence of scratching. Absence of scratching allows the accumulation of hyperkeratotic scale crusts and thousands, if not millions, of scabietic mites to accumulate. In contrast, only 10 to 15 mites may be present in classic scabies. Microscopic examination of skin scrapings can easily reveal mites in CS; thus, the key step in making an early diagnosis of CS is a high index of suspicion. Crusted scabies has been mistakenly diagnosed as hyperkeratotic eczema, psoriasis, and Darier's disease. Our experience with these two cases was consistent with these reports.

Management of CS is challenging. Strict barrier-nursing is necessary to avoid nosocomial transmission. In contrast to the single application of scabicide for classic scabies, treatment application needs to be repeated, every 4 to 7 days for CS. Repeated clinical evaluation and skin scraping for the microscopic detection of mites is required to monitor the progress. Benzyl benzoate emulsion is a prototypic scabicide used locally. It is safe, cheap, and very effective for classic scabies but its efficacy against CS is less reported in the literature. Prolonged application of BBE for CS can also cause irritant contact dermatitis, especially in intertriginous, eczematous, and infected areas. A 40% treatment failure rate using BBE has been reported in Sweden.³ Permethrin is now preferred over BBE as the first-line treatment in western countries, but it is expensive. Malathion and 1% gamma benzene hexachloride (lindane) are effective alternatives. Both sting less than BBE, although gamma benzene hexachloride may cause neurotoxicity. Crotamiton cream has a low efficacy and it should not be used as a single scabietic agent. Ivermectin has been reported to be very effective in treating CS,^{4,6} although it has not yet been licensed by the United States Food and Drug Administration for use against human scabies, and it is not available locally. It is currently the only oral drug available for scabies in the United States. A single dose of 200 µg/kg is commonly used, although two or three repeated doses at intervals of 1 to 2 weeks have been reported in some studies. Treatment with oral ivermectin is quick, easy, safe, well-tolerated, and allows maximal patient compliance.

The hyperkeratotic crust frequently seen in CS prevents the penetration of scabicides. Hence, scale crusts should be removed by brushing and applying topical keratolytics such as 3% salicylic acid ointment. Nail trimming and scrubbing with scabicide is

necessary for those with nail involvement. Removal of the nail using 40% urea cream or by avulsion may even be required for recalcitrant subungual scabies.⁷ The better response to treatment for the patient in case 2 is probably due to a lower mite load and absence of nail involvement. Bacterial colonisation of the crust sometimes occurs and may be complicated by pyoderma, septicaemia, erythroderma, and even death. The erythema over the buttocks of the patient in case 2 was probably due to bacterial cellulitis. Thus, the use of systemic antibiotics such as erythromycin is justified in CS.

It has been estimated that more than 7000 mites can be shed into the environment from a single patient with CS over 2 days. The adult mites can survive for 3 days outside the human body, and the eggs survive for up to 10 days. Because the transmission by fomites is possible, one case of CS could lead to a large outbreak of classic scabies in an institution. One study reported 16 of 20 episodes of scabies outbreak in which sources could be traced to an index case of CS.⁸ Prompt treatment, barrier-nursing, and decontamination of the environment form an integral part of the management of CS. The successful eradication of an outbreak of scabies depends on the cooperation between clinicians,

nurses, and staff working in the ward, as well as the hospital infection control unit and the attending dermatologist. From this information, health care workers should be alert to this infestation and aim for early detection, diagnosis, and prompt implementation of treatment protocols.

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