An elderly long-term care resident with crusted scabies

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Crusted scabies is a highly contagious form of scabies. Altered immune response, nutritional deficiencies and modified host response are all risk factors for crusted scabies. The authors report a case involving a patient found to have a chronic maculopapular, erythematous rash with large hyperkeratotic, white and grey plaques on the soles of both feet. An ultimate diagnosis of crusted scabies was reached after a delay in diagnosis suspected to be caused by the similarity in appearance to more common skin conditions such as psoriasis. After topical permethrin was unsuccessful, intermittent dosing of oral ivermectin resulted in a rapid reduction in cutaneous plaques.

**Key Words:** Crusted; Long-term care; Norwegian; Sarcoptes scabiei; Scabies

**DIAGNOSIS**

The skin scrapings were mounted on a slide with a drop of Euparal (Bioquip, USA) to act as a clearing agent, with permanent mounting media once dried. Compared with other mountants, Euparal is believed to act as a clearing agent, with permanent mounting (1). Miller (1) further discusses the use of Euparal and its clinical advantages. The skin scrapings were mounted on a slide with a drop of Euparal (white blood cell count 11.5×10⁹/L) with eosinophilia (1.9×10⁹/L) and macrophages. A skin sample was obtained. The family elected to manage the patient in a palliative manner given her numerous comorbidities and poor functional status. She died in hospital from dehydration six days later.

**DISCUSSION**

Crusted scabies is a highly contagious form of scabies in which the patient can have a substantially higher mite load compared with traditional scabies infections (2). A review by Guldbakke and Khachemoune (3) summarized the risk factors for crusted scabies in three categories: altered immune response (eg, use of topical corticosteroids); nutritional deficiencies (eg, vitamin A deficiency); and modified host response (eg, Down syndrome) (3). Crusted scabies is often observed in older, debilitated or immunocompromised patients who have reduced ability to control the proliferation of the mites (2,3). Cognitive impairment may also have an effect because of a resulting decreased ability to mechanically remove a portion of the mite load from scratching (3). A genetic predisposition to crusted scabies infection is suggested because as many as 40% of individuals infected have no discernable risk factors (2). Despite the higher mite load of crusted scabies, some patients do not experience an increase in pruritus above baseline (4). The plaque appearance of crusted scabies can be mistaken for psoriasis, potentially leading to a delay in diagnosis (5-7).

When topical therapies fail, oral ivermectin can be useful in the treatment of crusted scabies. Ivermectin is a macrocyclic lactone-derived avermectin drug (8). The ability of ivermectin to selectively

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**CASE PRESENTATION**

A 94-year-old woman with progressive dementia over the previous year was transferred from a long-term care facility to hospital in late autumn, to address worsening confusion and hallucinations secondary to hypernatremia. In addition, the patient had a two-month history of a generalized, pruritic, erythematous skin rash, and a 'scaly rash' on the soles of both feet. An ultimate diagnosis of crusted scabies was reached after a delay in diagnosis suspected to be caused by the similarity in appearance to more common skin conditions such as psoriasis. After topical permethrin was unsuccessful, intermittent dosing of oral ivermectin resulted in a rapid reduction in cutaneous plaques.

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interact with glutamate-gated chloride channels leads to an increase in permeability of the cell to chloride ions (8). This results in a decrease in neurotransmission to muscle cells, causing paralysis and, ultimately, death of the parasite (8).

This patient had a history of oral prednisone use, increasing her risk for presenting with this form of infection. Crusted scabies in individuals who have recently used topical or oral corticosteroids has been noted previously (9-11). Two of these cases discuss such an infection, or worsening of the infection after only topical corticosteroid use (10,11). This is in contrast to the report by Binic et al (9), who describe a case of crusted scabies after the use of topical and oral corticosteroids. Another challenge with the use of corticosteroids for a patient with a scabies infection is the potential to mask the typical pruritus and inflammation, producing a rare, and difficult to recognize, entity known as scabies incognito (12). Thus, although the use of corticosteroids with scabicidal therapy is not contraindicated, we suggest an avoidance of use if possible. Oral antihistamines in place of corticosteroids may have been used with success in conjunction with corticosteroids. Another challenge with the use of corticosteroids for a patient with a scabies infection is the potential to mask the typical pruritus and inflammation, producing a rare, and difficult to recognize, entity known as scabies incognito (12). Thus, although the use of corticosteroids with scabicidal therapy is not contraindicated, we suggest an avoidance of use if possible. Oral antihistamines in place of corticosteroids may have been used with success in conjunction with scabicidal therapy to control pruritus (12). Corticosteroids may have a role post-treatment in scabies infections. After successful treatment, the pruritus and changes in skin integrity may linger, appearing as postscabies eczema (13). It is recommended at this later state to rehydrate the skin with moisturizers and to control the inflammation with strong corticosteroids (13).

Our patient also had eosinophilia, which was observed in 58% of 78 patients with crusted scabies in one study (2). Twelve percent of these patients had a very high eosinophil count (>7.0×10^9/L) (2). Eosinophilia is observed more often in those with crusted scabies compared with the noncrusted form, supporting the theory that separate host immune responses account for the different appearances between these clinical presentations (2,14-16).

The dermatological presentation in this patient led to a long list of differential diagnoses including psoriasis. Previous case studies also refer to the similar appearance of psoriasis and crusted scabies (5-7). Interestingly, the affected area of the body varied among these studies, ranging from involvement of only the feet or fingertips, to a more generalized presentation on multiple areas of the body (5-7). Notable in these cases is that the presence of hyperkeratotic plaques led to crusted scabies being mistaken for psoriatic skin disease, with a concomitant delay in diagnosis (5-7). A subsequent similar case at the same institution gave rise to a hospital-wide outbreak due to a delayed recognition of the diagnosis.

To achieve more timely treatment, we recommend that physicians add the diagnosis of crusted scabies to their differential when a patient presents with a cutaneous eruption that includes a component of hyperkeratotic plaques. Although not contraindicated, the avoidance of corticosteroid usage during an active scabies infection is advisable to prevent further difficulty in diagnosis and increase risk for crusted scabies. Additionally, if no response is observed with topical permeatin, oral ivermectin appears to successfully cause a rapid reduction in signs of crusted scabies.

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