



Asymptomatic crusted lesions on the palms

Was there a link between where the patient lived (a nursing home) and the lesions on her hands?

AN 86-YEAR-OLD WOMAN with a high-grade fever for several days was brought in to our emergency department (ED) for evaluation. The patient lived in a nursing home and was in a persistent vegetative state. She had been bedridden for several years and had a history of stroke and dementia.

While examining the patient, we noticed multiple scattered erythematous keratotic papules and plaques on her face, trunk, and limbs. There were also yellow to brownish compact, thick, scaly, crusted plaques on

both of the patient's hands (**FIGURE**). We gathered skin scrapings from her palms and sent them to the lab. We also ordered lab work including a complete blood count, urine biochemistry, and a urine culture.

- WHAT IS YOUR DIAGNOSIS?
- HOW WOULD YOU TREAT THIS PATIENT?

FIGURE

Thick, brownish hyperkeratotic plaques on the palm



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A Norwegian scabies host may harbor more than 1 million mites.

Diagnosis: Norwegian scabies

Based on our physical findings and the lab work, we diagnosed Norwegian scabies and uresepsis in this patient.

Norwegian scabies, also known as crusted scabies, is an uncommon form of scabies infestation that was first described in Norway.¹ The causative organism is the burrowing mite *Sarcoptes scabie*, which is the same organism that is involved in ordinary scabies. The difference, though, is that the level of infestation with Norwegian scabies is more severe.

Definitive diagnosis depends on microscopic identification of the mites, their eggs, eggshell fragments, or mite pellets. Patients who have Norwegian scabies also have extremely elevated total serum immunoglobulin E and G levels.² In addition, these patients are predisposed to secondary infections.

■ **Clinically, multiple yellow to brown hyperkeratotic plaques** with significant xerosis are seen on the acral areas, including the scalp, face, and palmoplantar region. The toenails and fingernails may also show dystrophic changes with variable thickening.

Who's at risk?

In general, patients with dementia or mental retardation and those who are immunocompromised are most susceptible to Norwegian scabies.³ In ordinary scabies, the number of mites is usually less than 20 per individual.³ However, in cases involving an impaired immune response, it is difficult to control the numbers of mites in the infected skin, and a Norwegian scabies host may harbor more than 1 million mites.³

Despite the high mite load, most patients suffer only mild discomfort and tend to ignore the condition.³ This leads to delayed diagnosis and treatment.

■ **A disease that spreads quickly.** This disease is transmitted by close skin to skin contact and contact with infested clothing, bedding, or furniture. In nursing homes, patients with unrecognized Norwegian scabies are often the source of transmission to other residents and staff members.⁴

A diverse collection of diseases in the differential

The differential diagnosis for a rash such as

the one our patient had includes tinea manuum, contact dermatitis, syphilis, and palmoplantar keratoderma (PPK).

■ **Tinea manuum** is caused by a dermatophyte infection that involves the hands. Its characteristic features are dry hyperkeratotic plaques with thin or coarse scaling on the palms. It often affects the palmar surface and, occasionally, the dorsal aspect of the hands. In most patients, it is associated with tinea pedis, a condition called “two feet-one hand syndrome.” The most common causative organism is *Trichophyton rubrum*.⁵

Diagnosis is confirmed by the presence of fungal hyphae in skin scrapings dissolved in 10% potassium hydroxide (KOH) and examined by light microscopy. It can be treated with a topical antifungal agent. However, in the case of hyperkeratotic or intractable disease, an oral antifungal medication may be needed.

■ **Contact dermatitis** is a common inflammatory dermatosis involving the hands, and many cases can be linked to the person's job. It is often seen in individuals who need to wash their hands frequently (eg, health care workers) and those who are exposed to detergents (eg, restaurant workers).⁶

Clinical manifestation varies depending on the stage of eczematous progression. In the acute stage, the lesions are moist erythematous papuloplaques. In the subsequent subacute stage, a rash showing mild xerotic erythematous to brownish lesions is seen. Finally, in the chronic stage, the lesions show lichenification, which is thickening of the skin due to inflammation and scratching.³ The mainstay treatment involves simultaneously avoiding contact allergens and applying the proper topical steroid.

■ **Syphilis** may involve multiple organs, including the skin, and is caused by the bacterium *Treponema pallidum*. Although it has different clinical stages, the cutaneous manifestation of secondary syphilis occurs 4 to 10 weeks after primary infection. The cutaneous features of secondary syphilis are diverse and, thus, the disease is known as the “great imitator.”³

Most rashes are characterized by scaly erythematous maculopapules on the trunk, extremities, palms, and soles. However, microscopic examination of the scales after KOH treatment usually does not reveal any

➤ **The mainstay of therapy is daily application of topical scabidical agents such as 5% permethrin cream.**

visible organisms. The diagnosis should be correlated with clinical information, including a thorough medical history and serologic data for syphilis. Because syphilis is a bacterial infection, treatment with appropriate systemic antibiotics such as penicillin, doxycycline, or azithromycin is generally effective. (For more on secondary syphilis, see "Photo Rounds: Pruritic rash on trunk" [*J Fam Pract.* 2011;60:539-542].)

■ **PPK** comprises a group of inherited or acquired disorders characterized by abnormal thickening of the palms and soles. The inherited form results from defects in genes encoding the structural components of keratinocytes, which result in abnormal epidermal thickening.³ The acquired form is associated with various inflammatory or infectious skin conditions, including psoriasis and chronic eczema.

Depending on their pattern of appearance on the palms and soles, clinical lesions of PPK can be categorized into 3 forms: diffuse, focal, and punctate.³ Areas including nonvolar skin, teeth, nails, and sweat glands might also be affected. Treatment includes topical keratolytic agents and topical and oral retinoids.

Treatment and decontamination are needed for Norwegian scabies

Because of the large number of mites in the hyperkeratotic lesions in Norwegian scabies, this disease is difficult to manage.⁷ The mainstay of therapy is daily application of topical scabidical agents such as 5% permethrin

cream, 1% lindane cream, 6% to 10% sulfur-based topical agents, or 12.5% benzyl benzoate lotion. Although treatment plans are individualized, most of these preparations need to be applied for at least one week.

Application of a mixture of keratolytic agents on the hyperkeratotic areas might help the topical medication gain access to the target areas. Prescribing a single oral dose of ivermectin 200 mcg/kg with a topical preparation is also considered an effective approach to treating Norwegian scabies.⁴

In light of the highly contagious nature of Norwegian scabies, environmental decontamination is required. Clothes, bedding, and towels should be decontaminated by machine washing them in hot water and drying them in the hot cycle.³ Prophylactic treatment with a topical scabidical agent may be recommended for an entire institution or visitors and family members in order to prevent endemic outbreaks.

Our patient's recovery

Our patient was admitted to the intensive care unit and her skin lesions were treated with topical mesulphen once daily for 10 days. The cutaneous lesions improved gradually and the patient returned to the nursing home a month later. **JFP**

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