Case In Point
An Intriguing Diagnosis

Scabies in Toddler Twins

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Twins 16-month-old boys were referred by a pediatric endocrinologist to the pediatric dermatology clinic for assessment of generalized itchy lesions of 7-months’ duration. The lesions had been treated as eczema with a topical corticosteroid, which provided no relief. The twins were born prematurely at 33 weeks’ gestation and had been receiving thyroxine for congenital hypothyroidism. There was no personal or family history of atopy.

On further evaluation, both twins had papular lesions on the face, behind the ears, on the torso, and in the interdigital webs on the palms and feet (Figure 1). The mother (Figure 2) and aunt had similar lesions. Microscopic examination of skin scrapings revealed Sarcoptes scabiei.
sions. The maternal grandmother also was reported to have an itchy rash of several months’ duration.

Microscopic examination of scrapings from lesions of the twins, their mother, and the aunt showed between 4 and 10 mites each, amid abundant eggs, larvae, and fecal pellets. Treatment consisted of topical application of 10% benzyl benzoate for the children and 25% benzyl benzoate for the adults in the family. The lesions had resolved without recurrence when assessed 4 weeks later.

**SCABIES: AN OVERVIEW**

**The organism.** Human scabies is caused by *Sarcoptes scabiei var hominis*. Its name is derived from the Greek words *sarx* meaning “flesh” and *koptein* meaning “to smite and to cut” and the Latin word *scabere*, meaning “to scratch.” *S. scabiei* has 4 pairs of legs and is tan-brown (Figure 3). It is an obligate human parasite. Away from the human body, the organism can rarely survive longer than 48 hours even under optimal conditions.

Female mites measure 0.4 × 0.3 mm and are considerably larger than male mites. Once on human skin, female mites dig tunnel-like burrows in the stratum corneum with their strong mandibles. This process usually takes less than 30 minutes and is facilitated by the secretion of enzymes that dissolve the skin. The skin is then ingested by the mite as nutrient. Male mites search for unfertilized female mites on the skin surface and die after mating. Female mites usually live 4 to 6 weeks, remain gravid for life, and lay 2 to 4 eggs per day. The eggs are deposited in the burrowed tunnel and hatch in 2 to 4 days. The larvae mature into adults in 10 to 17 days.

**Transmission.** Human-to-human transmission usually occurs after intense skin contact. The risk of transmission increases with the duration and frequency of direct skin-to-skin contact. *S. scabiei* once dislodged uses odor and heat to find a new host.

**Epidemiology.** It is estimated that about 300 million persons are infected each year globally. Scabies may occur as epidemics in hospitals and long-term care facilities. Predisposing factors include poverty, overcrowding, homelessness, poor hygiene, poor nutritional status, and high levels of sexual activity. In temperate climates, the incidence is higher in winter than in summer. Scabies is more common in young children (younger than 2 years). Both sexes are more or less equally affected.

**Clinical manifestations.** Children become symptomatic 4 to 6 weeks after an initial infestation. Symptoms develop in previously infested persons 1 to 4 days after re-exposure to *S. scabiei*. Scabies is characterized by burrows, erythematous papular eruption, and intense pruritus. Burrows become apparent when there is a local host reaction around the tunnel. Clinically, they appear as serpiginous grayish or whitish lines...
several millimeters long in the upper epidermis, typically on the interdigital folds, flexor aspects of wrists (Figure 4), extensor surfaces of elbows, axillae, beltline, thighs, navel, genitalia, abdomen, and buttocks.1,2,6 The back is rarely involved, and the head and neck are usually spared.1 However, in infants and toddlers, lesions may occur in areas usually spared in older children and adults, such as the scalp, face, neck, and palmoplantar skin, as illustrated in this case.1,5

The pruritus is usually generalized with nocturnal predominance.2,5 Itching of scabies results from a delayed type IV hypersensitivity reaction to the mite, its saliva, eggs, or feces (scybala).2 Papules caused by a hypersensitivity reaction to the mite are erythematous, usually 1 to 2 mm in diameter.4 Some of the papules are excoriated, crusted, or scaling. In children younger than 2 years, the eruption may be vesicular.6

Nodular scabies is a clinical variant. The nodules are reddish to brown. They may develop on the elbows, axillae, penis, scrotum, groin, and buttocks.2,4 These nodules contain no mites and do not necessarily indicate active infestation.4

Norwegian or crusted scabies is another clinical variant characterized by hyperinfestation with mites and widespread, crusted, and hyperkeratotic lesions with variable whitish scaling (Figure 5).2,6 The condition usually occurs in immunodeficient persons.

**Diagnosis.** The diagnosis can be made on the basis of the history, especially when there is a family history of scabies and characteristic clinical findings, such as burrows. Finding the mite, ova, or fecal pellets on microscopic examination of scrapings taken from lesions with a scalpel or curette confirms the diagnosis. Mineral oil applied to the skin facilitates collection of scrapings. Dermoscopy is also a valid tool for diagnosing scabies.11

**Differential diagnosis.** Differential diagnosis of scabies includes all pruritic dermatosis, such as atopic dermatitis, contact dermatitis, insect bites, varicella, urticaria, tinea corporis, pyoderma, infantile acropustulosis, psoriasis, cutaneous mastocytosis, and lichen planus.2,5,12 The distinctive features of each condition usually allow a straightforward differentiation from scabies.

**Complications.** Scratching can lead to secondary bacterial infection by *Staphylococcus aureus* or group A streptococci. Poststreptococcal glomerulonephritis may follow group A streptococcal infection.4,6 Scratching may also increase the severity of existing skin conditions, such as atopic dermatitis and psoriasis.12

**Management.** The drug of choice for the treatment of scabies is 5% permethrin cream.1,6,8,13 The cream should be washed off 8 to 12 hours after application and the process repeated a week later. Other treatment options include topical application of crotamiton, benzyl benzoate, and ivermectin.6,8 Prophylactic treatment of household members, particularly those who have had prolonged direct skin-to-skin contact with the patient, is important.6 Oral antihistamines can be used to alleviate pruritus.

**Prognosis.** The prognosis is excellent with proper treatment unless the patient is immunocompromised or institutionalized.2 Most recurrences are the result of reinfestation from untreated contacts.10

**REFERENCES:**