

# Hedgehog Hives

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**Background:** Hedgehogs are increasingly popular pets in the United States and Europe. A number of infections may be acquired from these animals, and hedgehogs are possible hosts of parasites. However, to our knowledge there are no previous reports of urticarial reactions to hedgehogs.

**Observations:** We describe 3 patients who developed an acute, transient, urticarial reaction after contact with the extended spines of pet hedgehogs. One patient also developed a more prolonged reaction at the site of contact. Interestingly, all 3 patients had documented allergies to cats and/or dogs. The results of prick testing in 1

patient to an extract of hedgehog dander produced an immediate wheal-and-flare reaction.

**Conclusions:** A variety of dermatologic disorders may be seen in handlers of hedgehogs. Due to the increasing popularity of these animals as pets, it is likely that these reactions will be noted more frequently by dermatologists. The presence of allergies to other pets may be predictive of hedgehog hives and further investigation of the cross reaction of various animal antigens may clarify this relationship.

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**H**EDGEHOGS have become increasingly popular as cute, easy to maintain, and exotic household pets. It is estimated that there are 8000 to 10 000 pet hedgehogs currently in the United States (Jennifer Watson, oral communication, July 1998). The species of hedgehog that is most often used as a pet is the African pygmy hedgehog, *Erinacea albiventris* (**Figure**). While transmission of dermatophytes from hedgehogs to humans has been reported,<sup>1,2</sup> to our knowledge no other reports of inflammatory reactions from exposure to hedgehogs have been published. We describe 3 patients with hivelike reactions from handling hedgehogs and review the potential causes of dermatoses due to exposure to hedgehogs.

## REPORT OF CASES

### CASE 1

A 48-year-old woman was referred to the Dermatology Clinic at the Medical College of Wisconsin, Milwaukee, for a persistent folliculitis. The use of topical clindamycin hydrochloride solution and washing with chlorhexidine gluconate for 3 weeks produced no improvement. New

lesions appeared immediately after she handled her pet hedgehog. These were extremely pruritic and were described by the patient as welts that lasted for less than an hour. In addition, the patient developed more persistent itchy papules in the same areas. The patient had no previous history of skin problems. She had allergic rhinitis, and the results of testing revealed allergies to dust mites, mold, and animal dander. No desensitization was performed and the patient reported symptoms of rhinitis when exposed to dogs and cats. On examination, fine 1- to 2-mm papules were present on the upper part of the anterior aspect of the chest and the volar surfaces of the wrists bilaterally. No pustules were seen. The results of potassium hydroxide and scabies preparations were both negative. In addition, fungal and bacterial cultures showed no growth. A 2-mm punch biopsy specimen was obtained from a papule on the wrist. Histopathologic examination of skin biopsy sections showed foci of irregular epidermal thinning and, in the upper dermis, fibrosis, neovascularization, and chronic inflammation consistent with an inflammatory reaction to trauma with wound healing. Fungal elements were not seen nor was there any histological change that suggested an arthropod bite.

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African pygmy hedgehog. Note the relaxed spine pattern. In contrast, the spines are held in an upright and extended position when the animal is frightened.

### CASE 2

Approximately 2 months after adopting a pet hedgehog, an 11-year-old boy first noted urticaria after handling the hedgehog. The wheals most commonly occurred on the volar surfaces of the lower part of the arms and only when the boy handled the hedgehog when it was frightened and exhibited the curled-up response. A demonstration in the presence of one of the authors (A.S.P.) revealed wheals that were 2 mm in diameter and evenly spaced in a grid pattern that corresponded to the area of contact with the extended hedgehog spines. The wheals appeared within a few minutes after contact with the spines and cleared spontaneously within 30 to 40 minutes after onset. The patient was otherwise healthy, except for allergic rhinitis in response to cats and seasonal frictional lichenoid dermatosis.

### CASE 3

The mother of the 11-year-old boy described above had no problems when in contact with her son's hedgehog until a few months after the initial exposure. On subsequent handling, she routinely experienced palmar erythema and marked pruritus within minutes after contact with the hedgehog. In addition, regularly spaced small wheals, identical to those of her son, developed within minutes when extended hedgehog spines contacted her skin. The mother was healthy, but she too had allergic rhinitis and conjunctivitis after exposure to cats. Prick testing was performed with hedgehog dander that was collected by stroking the spines with a clean toothbrush. The material collected on the brush was suspended in sterile saline for prick testing, which resulted in immediate wheal formation. Two individuals without known sensitivity to animal dander underwent prick testing and did not react to the hedgehog extract.

### COMMENT

Hedgehogs are quilled mammalian insectivores that have spines for protection from predators. The spines are modified hairs that have a spongy matrix and an outer keratinous shaft.<sup>3</sup> The spines can readily penetrate the skin

and are a nidus for dermatophyte infection that can be transmitted to humans.<sup>1,2</sup> Dermatophytosis is the only previously reported cutaneous inflammatory reaction as a result of hedgehogs. We describe 3 patients with urticarial reactions to hedgehogs. In all cases, the reactions occurred within minutes after handling and were characterized by intense pruritus and erythema. The wheals resembled the wheals resulting from a prick test in appearance and course and corresponded to the pattern and spacing of the hedgehog spines. In addition, 1 patient developed a more persistent papular eruption in the areas affected by the hives. The course and morphologic characteristics of the eruption in our 3 patients resembled the results of a prick test in which antigenic material present on the hedgehog spines is inoculated.

Interestingly, all 3 patients reported allergic reactions to cats. In contrast, 3 additional family members of patients 2 and 3 who had no reaction to the hedgehog also had no history of animal allergies. The presence of reported allergies to cats in these patients may indicate a predisposition to an allergic response to other animals. Contact urticaria has previously been reported in a number of small animals, including cats, dogs, rats, mice, guinea pigs, rabbits, hamsters, and toads.<sup>4</sup> Several studies<sup>5-7</sup> have shown that cat allergens are cross reactive with other mammals, including dogs, foxes, raccoon, mink, mice, and rats. To our knowledge, there are no published studies examining hedgehog antigens, and further studies are needed to elucidate the relationship of an allergy to cats as a predictor of an allergy to hedgehogs.

A second factor that may increase the irritation or antigenicity of the hedgehog spines is a behavior termed *anting* or *anointing*. When a hedgehog encounters a new or interesting object or food, it will chew it and hypersalivate, which causes the formation of a foam that the animal then spits back onto its spines. It is believed that this behavior may cause the accumulation of toxins on the spines to make the hedgehog less palatable to predators. The presence of saliva and organic material on the spines of the hedgehog may also increase the potential for skin irritation in pet handlers.

Transmission of fungi from the hedgehog to humans is another cause of dermatoses due to these pets. The dermatophyte, *Trichophyton erinacei*, is carried by 25% of hedgehogs,<sup>8</sup> generally without producing signs in the animal. *Trichophyton erinacei*, which is closely related to *Trichophyton mentagrophytes*, causes an extremely inflammatory and pruritic eruption that resolves spontaneously 2 to 3 weeks after onset. Potassium hydroxide preparations show fungal hyphae, and the dermatophyte grows well on standard dermatophyte media.<sup>1</sup> Although tinea corporis is more common, tinea capitis due to *T erinacei* from a hedgehog has been described in a 3-year-old girl.<sup>2</sup>

An additional cause of dermatoses from handling hedgehogs may be the presence of ectoparasites on the pet. Fleas (*Archeaopsylla erinacei*), mites (*Caparinia*, *Chorioptes*, and *Notoedres*), and ticks (*Ixodes hexagonus*) are all potential parasites of pet hedgehogs.<sup>9</sup> The pet of patients 2 and 3 had a mite infestation; however, their reactions to the animal persisted after adequate treatment of the parasites.

In summary, hedgehogs may produce cutaneous reactions in pet owners by several different mechanisms. Although not previously reported, the propensity to develop acute urticarial reactions to hedgehogs such as we have seen is likely to be common. The transient nature of the eruption and the clear association with handling the pet may decrease the likelihood that the owner would seek medical advice. As hedgehogs increase in popularity as pets, it is likely that more cases of hedgehog dermatoses will be seen by dermatologists who should be familiar with the potential causes and the appropriate evaluation.

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