

# Pruritic Dermatitis Caused by Bird Mite Infestation

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To the Editor:

There are a wide variety of zoonotic diseases that can be transmitted from birds to humans. Pigeons, chickens, starlings, canaries, and parakeets are known reservoirs of one particular zoonotic infection caused by the parasitic arthropod *Dermanyssus gallinae*.<sup>1</sup> *Dermanyssus gallinae* (chicken mite) and *Ornithonyssus sylviarum* (northern fowl mite) are collectively referred to as bird mites. When these mites are unable to take blood meals from birds, they search out alternative hosts<sup>2</sup>; in humans, this often leads to the development of pruritic dermatitis.<sup>3</sup>

A 30-year-old woman presented to our clinic for evaluation of severe generalized pruritus accompanied by a sensation of “bugs on the skin” of 2 weeks’ duration. She noted the pruritus worsened when she was sitting outside on her porch. A few days prior to presentation, she noticed a small, “pinpoint-sized bug” on her arm (<1 mm in size), which she brought in for identification (Figure).

The bug was identified as a bird mite (*Dermanyssus gallinae*) on light microscopy, which was later confirmed by a medical entomologist. After the diagnosis of bird mite dermatitis was made, the patient noted there was a nest of starlings above the light on her porch. When she later investigated the nest following the current presentation, she noted many small mites crawling around the nest. The nest was removed and her symptoms resolved completely within 2 weeks without treatment.

Bird mites belong to the Arachnida class, under the order Acari. In 1958, Williams<sup>4</sup> noted



*Dermanyssus gallinae* found on the patient’s skin observed under light microscopy.

*D gallinae*’s ability to feed on human blood. Bird mites have 5 stages of development: egg, larva, protonymph, deutonymph, and adult. Protonymphs, deutonymphs, and adults can bite humans for a blood meal.<sup>5</sup> Bird mites range from 0.3 to 1 mm in length and have nonsegmented, egg-shaped bodies with 4 pairs of legs. Before taking a blood meal, bird mites generally are a translucent brown color, and appear red when engorged with blood.<sup>2</sup> Their small size makes them barely visible to the unaided eye. Of note, *D gallinae* and *O sylviarum* can be distinguished from each other based on subtle differences in morphology; for instance, the posterior genitoventral shield of *O sylviarum* is narrowly rounded, whereas

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it is broadly rounded in *D gallinae*. The dorsal shield of *O sylviarum* abruptly narrows posteriorly but is more smoothly narrowed in *D gallinae*.<sup>6</sup> Additionally, *O sylviarum* tends to cause more irritating dermatitis in humans than *D gallinae*.<sup>3</sup>

Although they can be found worldwide, *D gallinae* and *O sylviarum* undergo optimal development at 20°C to 25°C and 70% humidity.<sup>3,5,7</sup> Bird mites generally develop over the course of 5 to 12 days; thus, the population of bird mites in a single nest may grow to the tens of thousands before young birds permanently leave. *Dermanyssus gallinae* can survive for months in abandoned nests without a blood meal, while *O sylviarum* can survive for several weeks.<sup>8</sup> It is important to note that humans are not ideal hosts for bird mites, as they are unable to survive for extended periods of time or reproduce on human hosts.<sup>9</sup>

When bird mites are no longer able to obtain blood meals from nesting birds, they begin their nocturnal migration to find suitable hosts. Bird nests generally are abandoned in late spring; thus, most patients with bird mite dermatitis present to clinics with bird mite dermatitis in late spring and early summer.<sup>10</sup> Mites often travel through cracks in doors, floors, walls, and ceilings but also can gain access to living areas through ventilation ducts and air conditioning units.<sup>1</sup> The mite's bite and crawling on the skin is sometimes noticed by the patient. In general, however, intense itching is not observed until about 1 to 3 days after the mite makes contact with the skin. Patients often report that pruritus is worst at night.<sup>9</sup> Papules and vesicles (bite reactions) may accompany the pruritus, and physicians commonly find bloody crust and excoriations in particularly pruritic areas.<sup>5</sup> Urticarial plaques and diffuse erythema occasionally also may be present.<sup>9</sup> Bird mites sometimes can be scraped from the skin and observed under light microscopy.<sup>11</sup> Blood eosinophilia is not found in bird mite dermatitis. On histologic examination, perivascular eosinophilic infiltration can be seen in the upper part of the dermis.<sup>12</sup>

The differential diagnosis in patients with pruritic dermatitis of unknown origin generally includes scabies, pediculosis, and dermatitis caused by other types of infestation. However, unlike scabies, bird mites do not cause burrows to form on the skin.<sup>9</sup> The presence of a bird's nest near the area where the patient lives places bird mite dermatitis higher in the differential.

*Dermanyssus gallinae* is a known vector of bacteria (eg, *Salmonella*, *Shigella*, *Staphylococcus*, *Spirochaete*, *Rickettsia*, *Pasteurella*, *Chlamydia psittaci*, *Erysipelothrix rhusiopathiae*) as well as the viruses that cause Eastern and Western equine encephalitis and St. Louis encephalitis. Transmission of these bacteria

and viruses is known in birds, but transmission to humans has not been reported.<sup>2,5,9,13</sup>

The management of bird mite dermatitis is straightforward. Usually mites can be successfully removed from the skin simply by bathing. Symptomatic treatment for bites with antihistamines and topical corticosteroids is sometimes but not always necessary.<sup>2</sup> Unlike scabies or lice, there is no need for treatment with lindane.<sup>1</sup> In terms of the prevention of additional bites, any bird nests located near living areas should be removed. Because bird mites often retreat back to nests between blood meals, insecticide sprays generally are unnecessary in interior spaces. Synthetic pyrethroids (eg, bifenthrin, cyfluthrin, cypermethrin, deltamethrin, cyhalothrin) can be used outside and in attics where nests may be located.<sup>2,14,15</sup> However, the ability of bird mites to develop resistance to repeated chemical control could become a future concern.<sup>16</sup>

Research regarding the true incidence of bird mite dermatitis is lacking. Some researchers believe that the condition is underreported, possibly due to its uncommon environmental origin.<sup>3</sup> Reports of bird mite dermatitis in the literature also are scarce. Our case demonstrates the importance of taking a thorough patient history to rule out exposure to bird mites. All patients with pruritic dermatitis of unknown origin should be questioned about possible contact or proximity to bird nests. These simple questions can lead to the correct diagnosis and a treatment plan that will quickly and effectively resolve the pruritic skin eruption.

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