Mite and Bed Bug Infections

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KEYWORDS

• Mite • Bed bug • Scabies • Chiggers • House dust mites • Grain itch

KEY POINTS

- Common mite infections encountered in the primary care office include scabies, chiggers, grain itch, and allergic responses from house dust mites.
- Scabies is one of the 50 most prevalent diseases worldwide, with the mite burrowing under skin, especially interdigital web spaces, causing intensely pruritic, urticated papules.
- House dust mites are a well-known trigger for chronic allergic disease, especially respiratory allergic disease.
- Bed bugs live in dark crevices, such as mattresses, feed at night, and cause a maculopapular immune/allergic skin response in humans.
- Treatment of bed bug bites is largely symptomatic (antihistamines, topical steroids) with the focus being on eradication of the infestation, often requiring skilled exterminators.

INTRODUCTION

Patients with suspected bites or skin rashes regularly present to their primary care physician. For this reason, proper identification of the trigger for the skin reaction is essential to guide treatment and eradication. Mite infections and bed bugs are 2 such groups of organisms commonly encountered. Common mite reactions include scabies, chiggers, grain itch, and allergic responses from dust mites. Bed bugs are also becoming increasingly common with increased global travel, causing an immune mediated allergic skin response in humans.

SCABIES

Scabies is one of the 50 most prevalent diseases worldwide, and as recently as 2010 was estimated to affect more than 100 million people globally.[1,2] It has been

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recognized as a disease in humans as far back as 3000 years ago and was reported in ancient India, China, and the Middle East.[3] This condition is characterized by pruritus, which can be debilitating in some cases. Unlike in developing countries where the greatest burden of disease rests with the pediatric population, scabies in North America is more evenly distributed across all age groups, including the elderly, with outbreaks often occurring in nursing homes.[3–5]

Scabies is caused by the mite *Sarcoptes scabiei* and occurs as a result of the invasion of the skin by the parasite (**Fig. 1**). The female mite burrows into the epidermis of the skin, where she lays her eggs, with full-grown adult mites subsequently emerging within 2 weeks.[3,6] These adult mites mate and may reinfect the host or another host. The mites are transferred from person to person by prolonged contact, usually after about 20 minutes,[6–8] although fomites, particularly clothing items and beddings, have also been implicated.[3]

Presentation

There is often a 4- to 6-week period between initial contact with the organism and onset of symptoms.[9] Patients typically present with intensely itchy, urticated papules, nodules, and vesicles, which are due to a hypersensitivity reaction to the mites, their saliva, and other products, as well as the direct effect of the mite invasion.[10,11] The lesions are typically located in the interdigital web spaces, around the male genitalia, and the groin, but they may also be found elsewhere on the body.[6,12] The number of mites colonizing a human host is usually between 10 to 20 in classic scabies because the healthy host immune system is able to limit mite numbers.[2,3]

Crusted scabies (also known as Norwegian scabies) is a rare variant of scabies, thought to be associated with an immunosuppressed state and has been reported in patients with HIV as well as those undergoing organ transplantation[2,6,11,13–15] (**Fig. 2**) The colonizing mites may be as many as hundreds and even millions in this case.[3,13] It is highly contagious on account of the large number of mites present in affected individuals, although itching may be a less prominent complaint in up to 50% of cases.[6,11]

The itching in scabies also leads to defects in the integrity of the skin, and as a result, may also be associated with secondary bacterial infections,[4,11] *Staphylococcus*

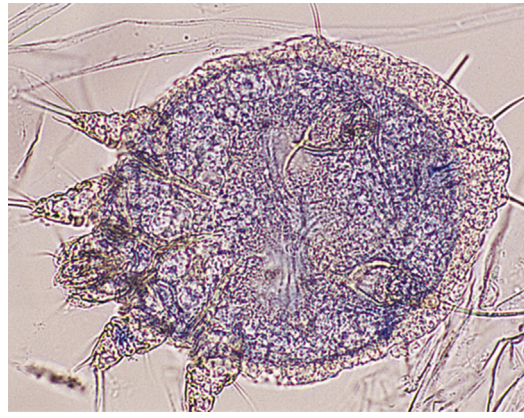

Fig. 1. A *S scabiei* mite obtained from a skin scraping (mineral oil, original magnification ×100). (*From* Jaramillo-Ayerbe F, Berrío-Muñoz J. Ivermectin for crusted Norwegian scabies induced by use of topical steroids. Arch Dermatol 1998;134(2):144; with permission.)

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