

## Case report

# Carpet beetle dermatitis: a possibly under-recognized entity

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Patients may develop arthropod bites in patterns based on the place of exposure. Bedbug infestations are a widely recognized source of repeated arthropod bites. Carpet beetle (Coleoptera: Dermestidae) dermatitis, however, is likely to be under-recognized and underdiagnosed, and may mimic the clinical and pathologic findings of other arthropod assaults.

### Case report

A 74-year-old man presented for evaluation of recalcitrant pruritic papules, pustules, and pinpoint vesicles of six months duration, initially involving his lower back and extending to the extremities by the time of presentation. He reported nocturnal worsening of pruritus and no known alleviating factors. His wife denied any similar symptoms but, notably, slept in a different room. The

patient had a history of hypertension, hyperlipidemia, asthma, and prostate cancer. He had undergone definitive treatment for the cancer with brachytherapy eight years earlier. Additional daily medications included metoprolol, atorvastatin, fluticasone, albuterol, aspirin, cholecalciferol, and a multivitamin supplement.

Physical examination revealed an erythematous papulopustular eruption with sparse rare vesicles (Fig. 1). Histopathology demonstrated a spongiotic dermatitis with superficial and deep eosinophilic infiltrates (Fig. 2a,b) suggestive of arthropod hypersensitivity reaction.

Because of initial concerns for an infestation of *Cimex lectularius*, the patient's home was evaluated by two different exterminators, each of whom independently diagnosed an infestation of carpet beetles. Final confirmation was obtained by the inspection of several collected samples of mature beetles and larvae (Fig. 2c–e) acquired

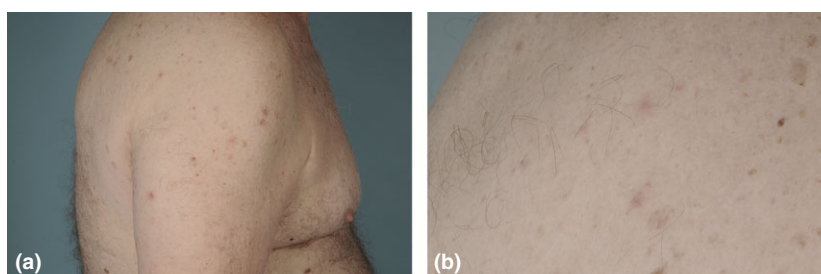


**Figure 1** Clinical examination of a 74-year-old man shows (a) scattered erythematous papules, pustules, and rare vesicles on the patient's trunk and extremities. (b) A close-up view shows nonspecific erythematous papules and rare vesiculopustules.

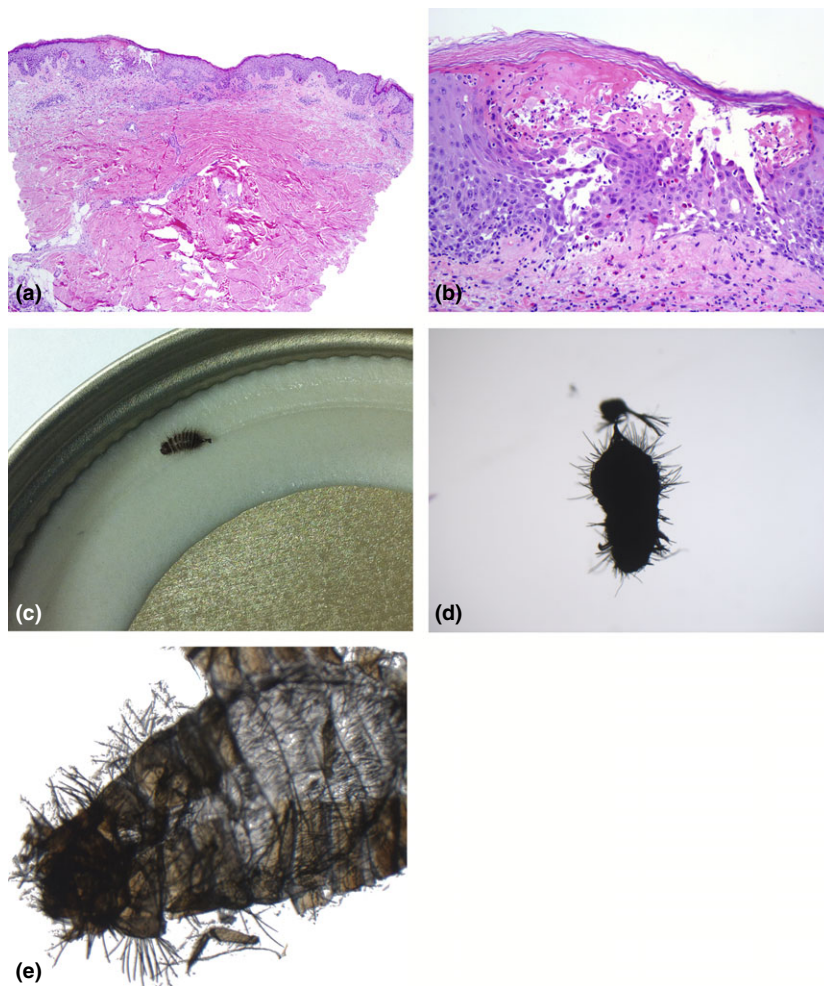


**Figure 2** (a) Histology reveals superficial and deep mixed infiltrate with prominent eosinophils clustered at the epidermis. (b) The epidermis displays extensive spongiosis and eosinophilic inflammation. (Hematoxylin and eosin stain; original magnification [a]  $\times 40$ , [b]  $\times 200$ .) (c) Exterminators identified a carpet beetle larva, with (d) prominent spines. (e) The spines are visible with magnification. (Original magnification  $\times 4$ )

from the patient's bedroom and an additional room in the house. The subject vacated his bedroom, and extermination was performed in the affected rooms. The patient noted continued symptomatic improvement at subsequent clinic visits.

The patient was prescribed cetirizine and advised to use the soak and smear regimen with triamcinolone 0.1% ointment twice daily.

## Discussion

Carpet beetle dermatitis is a rare but well-documented dermatologic condition presenting as a papulovesicular, pruritic eruption.<sup>1</sup> Many species of carpet beetle can fly and infest homes via direct invasion. Contaminated food or accumulated hair and lint are the most common sites of initial infestation. Although multiple different carpet beetle genera and species exist within the USA (*Attagenus megatoma* and *Anthrenus scrophulariae* are the most prevalent),<sup>1,2</sup> the genera *Attagenus*, *Dermestes*, *Anthrenus*, and *Trogoderma* all cause a similar allergic papulovesicu-

lar dermatitis. This eruption is a hypersensitivity reaction to hemolymph (insect blood) exposure and/or to hastae (larval hairs) nested in the patient's skin.<sup>3</sup>

As noted with our patient, carpet beetle dermatitis flares can wax and wane and may occur even after effective fumigation because this hypersensitivity reaction is caused by the hastae (not by the adult beetle itself) and is temporally related to the larval stage.<sup>3</sup> Larvae can sustain themselves upon select household organic materials, including hide and wool, thereby perpetuating the reaction.<sup>1,4</sup>

Most exposed individuals experience the allergic reaction as an intense pruritic eruption, but a smaller subset of patients can develop additional irritation of the eyes and respiratory tract. Of note, primary treatment entails effective control of the source of infestation with fumigation when necessary, as in our case. Dermatologic treatment is focused on symptomatic relief. Topical steroids may be used as needed with the soak and smear regimen<sup>5</sup> if a more intensive therapeutic option is required. Although a prick test with a larval extract has

been described as causing a positive reaction,<sup>6</sup> we did not perform prick testing in our patient and do not know if the lesions reflected an irritant or an allergic response.

This case calls attention to a rare etiology of pruritus, a common symptom of patients presenting to dermatologists. Increased awareness of this condition will improve diagnostic accuracy and timeliness and treatment efficacy.

## References

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