

Systemic Reactions Caused by Bed Bug Bites

TO THE EDITOR—Bed bug bites are commonly caused by *Cimex lectularius* (or *C. hemipterus*), with a cosmopolitan distribution. Recently, bed bug resurgence has been reported in many occidental countries, presumably due to insecticide resistance and growing international trade and travelling [1]. Bed bug bites usually cause localized reactions such as itchy maculopapular wheals. Systemic reactions have rarely been described, even if severe bullous reactions and anaphylaxis have been reported. We report here an unusual presentation of bed bug bites, associated with systemic symptoms.

CASE REPORT

A 67-year-old man developed erythematous papules on the abdomen, limbs, and bottom for over 1 week, with a general feeling of malaise. The main hypothesis regarding possible causes was bed bug bites, because of the clinical aspect and the circumstances preceding the onset of symptoms (recent acquisition of antique furniture). He was given topical steroids and asked to look out for bed bugs in his home. He came back 3 days later because of asthenia, fever, inflammatory bilateral edema, and arthralgia of both wrists and hands without palpable synovitis. He also reported conjunctivitis, as well as a sore throat at the beginning of the eruption that had spontaneously regressed within 48 hours.

A physical examination revealed purpuric and bullous evolution of the lesions, and systemic vasculitis was initially suspected. A blood test showed hypereosinophilia ($1770/\text{mm}^3$) and an elevated C-reactive

protein level (32 mg/L). Search for common autoimmune and infectious diseases were negative. Skin biopsy of a papule of the forearm showed a spongiotic epidermal hyperplasia without necrotic keratinocytes and a dermal infiltrate of mononuclear cells and eosinophils, without vasculitis; direct immunofluorescence studies were negative.

The patient finally found an insect on his bed, which was macroscopically a common bed bug. Clinical and biological signs resolved within 9 days, with antihistamines and topical steroids associated with home decontamination.

DISCUSSION

The simultaneous occurrence and resolution of skin and systemic symptoms in this patient are highly suggestive of a common cause, which is bed bug bites. Moreover, we did not find any other explanation to the patient's symptoms, although we cannot definitely exclude the coincidence of an unproved viral infestation. Therefore, it is most likely that the systemic symptoms were linked to the pest.

To our knowledge, intense systemic reactions induced by bed bug bites including hypereosinophilia, polyarthralgia, and fever have never been described in the medical literature. However, bullous reactions are frequent, and there is a report of a generalized bullous reaction with fever and asthenia occurring after repeated bed bug bites [2].

The underlying mechanisms of systemic manifestations associated with bed bug bites may vary among patients. Type I hypersensitivity reactions have been reported but do not match with our patient's clinical and histological findings. A recent study reported bullous reactions at the bite sites, with histological features of a highly inflammatory, acute, necrotizing, eosinophil-rich vasculitis on skin biopsies; and the risk of immune-mediated systemic reactions was raised by the authors [3]. Concerning our patient, local and systemic reactions might be merely mediated by eosinophils, because there were no histopathological features of vasculitis.

In conclusion this case suggests that bed bug bites may trigger multisystemic inflammatory reaction associated with hypereosinophilia. This potential clinical complication comes in addition to the psychological impact of the infestation [4, 5].

Note

Potential conflicts of interest. All authors: No potential conflicts of interest. All authors have submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Conflicts that the editors consider relevant to the content of the manuscript have been disclosed.

Céline Phan,¹ Florence Brunet-Possenti,²
Eduardo Marinho,³ and Antoine Petit¹

¹Department of Dermatology, Hôpital Saint-Louis,
²Department of Dermatology, and ³Department of
Dermatopathology, Hôpital Bichat, Paris, France

References

1. Delaunay P. Human travel and travelling bedbugs. *J Travel Med* **2012**; 19:273–9.
2. Liebold K, Schliemann-Willers S, Wollina U. Disseminated bullous eruption with systemic reaction caused by *Cimexlectularius*. *J Eur Acad Dermatol Venereol* **2003**; 17:461–3.
3. DeShazo RD, Feldlaufer MF, Mihm MC, Goddard J. Bullous reactions to bedbug bites reflect cutaneous vasculitis. *Am J Med* **2012**; 125:688–94.
4. Goddard J, de Shazo R. Psychological effects of bed bug attacks (*Cimexlectularius* L). *Am J Med* **2012**; 125:101–3.
5. Delaunay P, Blanc V, Del Giudice P, et al. Bedbugs and infectious diseases. *Clin Infect Dis* **2011**; 52: 200–10.

Correspondence: C. Phan, Department of Dermatology, Hôpital Saint Louis, 1 Avenue Claude Vellefaux, 75010 Paris, France (cel.phan@gmail.com).

Clinical Infectious Diseases® 2016;63(2):284–5

© The Author 2016. Published by Oxford University Press for the Infectious Diseases Society of America. All rights reserved. For permissions, e-mail journals.permissions@oup.com. DOI: 10.1093/cid/ciw253