

Disseminated bullous eruption with systemic reaction caused by *Cimex lectularius*

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ABSTRACT

Bedbugs seem to have become more common due to international trade and travelling. We report on a 37-year-old man who developed a bullous reaction with fever and general malaise due to bites of the common bedbug, *Cimex lectularius*. Fortunately, bullous and systemic reactions are rare.

Key words: Bedbug, *Cimex lectularius*, systemic reaction, bullous reaction

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Introduction

Bedbugs belong to the family of true bugs known as Cimicidae. The common bedbug, *Cimex lectularius*, is the species encountered most often and has a cosmopolitan distribution, found everywhere except Antarctica. These animals are small, oval, flat, hard-bodied, flightless insects.

Bedbugs are notorious for their association with humans. They are blood feeders and have piercing, sucking mouth-parts which are inserted into the skin of the host and used to withdraw a blood meal. Prior to feeding the common bedbug adult is 3–5 mm in length and brownish in colour. After feeding the body elongates and widens and the colour changes to dull red. Bedbugs are nocturnal insects and emerge from their hiding places at night to feed on nearby hosts, including man, mice, rats, rabbits, guinea pigs, cattle and poultry. The bugs prefer to be in enclosed places and often feed in areas where clothing is held tightly against the skin, such as underneath the waistband of underwear or pyjamas.

Bedbugs may be found in many locations, including homes, hotels, poultry houses, around small caged pets or near bird and bat nests and roosts. They can be found in the tufts, seams and folds of mattresses, covers, bed frame and box springs, behind baseboards, window and door casings, picture mouldings, loosened wallpaper, cracked plaster, or in furniture. Bedbugs often find their way into luggage and may spread in this manner. Infestations of bedbugs can often be detected by their offensive odour; this is caused by an oily secretion produced from special glands.^{1,2}

Bedbugs have been implicated in the transmission of numerous human diseases, including hepatitis B, but they have not been proved to be responsible for any epidemics or serious disease outbreak.^{3,4}

The bite of a bug is usually not felt at first but later when it may itch, swell, burn, become inflamed or form a weal. Effects of a bite vary between individuals but may persist for a week or more in susceptible persons. An allergic reaction to the saliva injected into the skin by the bug is not uncommon, although sometimes delayed. Rarely, when a person is hypersensitive, an asthmatic reaction may occur.^{2,5} Our report is of an unusual presentation of bedbug bites.

Case Report

A 37-year-old veterinarian from Germany developed a papular pruritic rash on his arms when travelling in the UK. He used oral antihistamines and a topical corticosteroid ointment as treatment and the lesions disappeared within 2 days.

Four weeks later he returned to the same hotel and after one night developed a bullous eruption with moderately impaired health and a slightly increased temperature. On examination he presented with disseminated erythematous large tense bullae, 1–3 cm in diameter, on his left arm, presacral area and buttocks (fig. 1). Some of these intensively itching lesions had crusts and secondary impetiginization. A microbial swab of the clear fluid of a bulla was sterile, blood count was normal and immunoglobulin E level was 234 U (increased).



fig. 1 Bullous eruption due to *Cimex lectularius* bites.



fig. 2 *Cimex lectularius*, the common bedbug.

The patient found a large (5 mm) animal on his bed that he brought, alive, to the department (fig. 2). This was kindly classified by Professor Hans Strümpel from the Institute of Zoology, University of Hamburg, Germany, as *Cimex lectularius* (the common bedbug). We confirmed the diagnosis as a hyper-ergic bullous allergic reaction to bedbugs and treated the patient with a single dose of both 100 mg prednisolone and 4 mg dimetinden maleate intravenously. Antibiotic prophylaxis with erythromycin 2 g per day was given for 5 days. Topical treatment was realised with an ointment combining betamethasone-17-valerate and fusidinic acid (Fucicortcreme®; Leo Pharma). Remission was complete after 1 week.

Discussion

Bedbugs became uncommon after the Second World War but over recent years an increase has been observed, thought to be due to international trade and travelling.^{6,7}

Bedbugs are insects that feed on blood. Feeding time is 3–12 minutes. They have a unique way of copulation – the traumatic insemination in paragenital organs of the female abdominal wall after wounding by the introduction of a specialized male

intromittent organ.⁸ After a blood meal, female bugs will lay between one and five eggs in a day and with multiple feedings may lay more than 200 eggs during their life. Nymphs moult five times before becoming an adult and in case of starvation can live more than 260 days. Adult females can survive more than 150 days of starvation.¹

During feeding bedbugs inject saliva through hollow tubes derived from the maxilla into the wound; the saliva contains an anticoagulant, a vasodilant, and an anaesthetic. Recently, nitrophorin has been identified in bug saliva as the major nitric oxide-liberating heme protein.⁹ Furthermore, a 17-kDa protein with anticlotting activity, by inhibiting the activation of factor X within the tenase complex, as well as a 40-kDa apyrase-like nucleotide-binding enzyme have been purified.^{10,11} The blood meal is characterized by delayed clotting and formation of a peritrophic membrane. Bugs may leave blood stains on sheets and walls after feeding. Type I allergic asthmatic reactions have been observed.^{2,5} Local sting reactions are common. However, severe bullous reactions as seen in the present case are rare.^{12,13}

Bedbug control in the home begins with finding the location of their hiding places. Pesticides containing dichlorvos, malathion, and pyrethrins have proved effective¹⁴ and thorough cleaning should follow; all areas where infestations are found should be vacuumed.

Bug bites have to be considered in the differential diagnosis of bullous eruptions of the skin.

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