

Occupational allergy to *Psocoptera* species

Stefano Veraldi¹  | Michela Brena¹  | Luciano Süß²

¹Department of Pathophysiology and Transplantation, Università degli Studi di Milano, Foundation IRCCS, Cà Granda Ospedale Maggiore Policlinico, Milan, Italy

²Luciano Süß, National Italian Academy of Entomology and Istituto di Entomologia Agraria, University of Milan, Italy

Correspondence

Professor Stefano Veraldi, Dermatology Unit, University of Milan, Milan, Italy.

Email: stefano.veraldi@unimi.it

KEYWORDS: case report, conjunctivitis, dermatitis, *Psocoptera* species, rhinitis

Psocoptera are an order of insects whose members are distributed world-wide. Approximately 1000 species are known. They are grey to light brown, and 1 to 1.3 mm long, with a large head and long antennae.¹ *Psocoptera* species neither bite, sting, nor transmit infectious diseases. Typical habitats of these insects are libraries, bookshops, and stores of paper²; for these reasons, *Psocoptera* species have been popularly named booklice. We describe a case of occupational allergy to *Psocoptera* species.

CASE REPORT

A 36-year-old man was referred with a 6-week history of conjunctivitis, rhinitis and dermatitis on the face. The patient stated that he had begun to work at a shop containing old books 3 months previously. Clinical examination showed serous conjunctivitis and rhinitis, and mild erythema of the face. The patient complained of a burning sensation and pruritus on the eyelids, and severe pruritus of the face. Laboratory examinations

showed an increase in total IgE (423 IU/mL). Patch tests with the Società Italiana di Dermatologia Allergologica, Professionale e Ambientale (SIDAPA) baseline series gave negative results. Radioallergosorbent tests (RASTs) (including those for mites, trees, herbs, animal epithelia and proteins, moulds, and pollen) gave negative results. Prick tests with pollen, mites, animal epithelia and moulds also gave negative results.

The patient was treated with a cream containing 8% calamine and cetirizine (20 mg/day). Three weeks later, he returned, stating that the therapy had been only partially effective. He also brought some insects that he had found among old books (Figure 1). These insects were classified as *Psocoptera* species. Careful pest control in the bookshop was carried out. The patient's symptoms improved within 2 weeks after pest control.

It was impossible to determine specific IgE. However, some specimens of *Psocoptera* species were collected and finely centrifuged in water. The material thus obtained was mixed with sodium chloride,



FIGURE 1 Adult *Psocoptera* insect

sodium bicarbonate, phenol, glycerol, and water. Prick testing with this gave a positive result in terms of an erythematous, pruritic papule of diameter 4 mm that appeared 20 minutes later. Prick tests gave negative results in three controls. A 1-year follow-up showed that the patient was free of symptoms.

DISCUSSION

Liposcelis decolor and *Liposcelis brunnea* are common inhabitants of bathrooms, kitchens and inside windows in Madrid.³ In Japan, *Liposcelis bostrichophila* is a common household insect pest that infests tatami mats: it is detected in 90% of dust samples.⁴ Also, house infestation by *Liposcelis* species is rather common in Beijing.⁵ In an Indian study, it was observed that 25% of house dust samples were infested with *Psocoptera* species. It was also observed that 20% of patients with nasobronchial allergy had strong sensitivity to *Psocoptera* species, with high levels of total IgE and IgE specific for *Psocoptera* species. Immunoblot analysis showed 67-kDa, 59-kDa, 43-kDa and 27-kDa proteins to be major allergens of *Psocoptera* species.² Literature data on clinical manifestations caused by *Psocoptera* species are very scarce. A case of scalp infestation by *Liposcelis mendax* was reported in 1991.⁶ Some cases of allergic asthma caused by *L. bostrichophila*⁴ and *L. decolor* have been published.^{7,8} Specific IgE was detected in the sera of 41 of 185 patients (22%). In these patients, immunoblotting identified a 26-kDa protein from *L. bostrichophila* extract as the allergenic protein causing specific sensitization to booklice.⁴ The amino acid sequence of peptide fragments of this protein showed no homology with other previously described allergenic proteins, indicating that this protein was a new allergen.⁴ This protein has been subsequently named Lip b 1.⁹

We think that, in this patient, a *Psocoptera* species was responsible for his clinical manifestations. The history (the appearance of clinical manifestations 6 weeks after the patient began to work in the bookshop), the finding of several *Psocoptera* species, the rapid improvement of symptoms after pest control, the positive prick test result and being symptom-free on follow-up support the role of a *Psocoptera* species as the aetiological agent for the clinical manifestations in this patient.

CONFLICTS OF INTEREST

The authors have no conflicts of interest to report.

ORCID

Stefano Veraldi  <https://orcid.org/0000-0002-0985-3590>

Michela Brena  <https://orcid.org/0000-0003-3603-4301>

REFERENCES

1. Elston DM. What's eating you? *Psocoptera* (book lice, psocids). *Cutis*. 1999;64:307-308.
2. Patil MP, Niphadkar PV, Bapat MM. *Psocoptera* spp. (book louse): a new major household allergen in Mumbai. *Ann Allergy Asthma Immunol*. 2001;87:151-155.
3. Baz A, Monserrat VJ. Distribution of domestic *Psocoptera* in Madrid apartments. *Med Vet Entomol*. 1999;13:259-264.
4. Fukutomi Y, Kawakami Y, Taniguchi M, et al. Allergenicity and cross-reactivity of booklice (*Liposcelis bostrichophila*): a common household insect pest in Japan. *Int Arch Allergy Immunol*. 2012;157:339-348.
5. Sun JL, Shen L, Chen J, Yu JM, Yin J. Mite and booklouse fauna from vacuumed dust samples from Beijing. *Allergy Asthma Immunol Res*. 2014;6:257-262.
6. Burgess I, Coulthard M, Heaney J. Scalp infestation by *Liposcelis mendax*. *Br J Dermatol*. 1991;125:400-401.
7. Perotin JM, Scherer P, Leduc V, Bouchet F, Deslee G, Lavaud F. Allergic asthma to psocids, a new indoor allergen of ecological building materials. *Allergy*. 2011;66:1257-1258.
8. Marco G, Pelta R, Carnés J, Iraola V, Zambrano G, Baeza ML. Occupational allergic asthma induced by *Liposcelis decolor*. *Allergol Int*. 2016;65:210-211.
9. Ishibashi O, Sakuragi K, Fukutomi Y, et al. Lip b 1 is a novel allergenic protein isolated from the booklouse, *Liposcelis bostrychophila*. *Allergy*. 2017;72:918-926.

How to cite this article: Veraldi S, Brena M, Süß L. Occupational allergy to *Psocoptera* species. *Contact Dermatitis*. 2019;81:306-307. <https://doi.org/10.1111/cod.13298>