Occupational papular urticaria due to *Pyemotes ventricosus* in antique dealers

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Dermatitis induced by arthropods is common in the domestic environment, whereas occupational cases are rarely reported. The latter have been more frequently related to contact with rice, grains, or straw infested with mites and insects, especially in harvesting, transportation, and storage of cereals[1,2] and in wood workers.[3] Occupational dermatitis in two antique dealers due to *Pyemotes (P.) ventricosus* infesting their antiques store is reported.

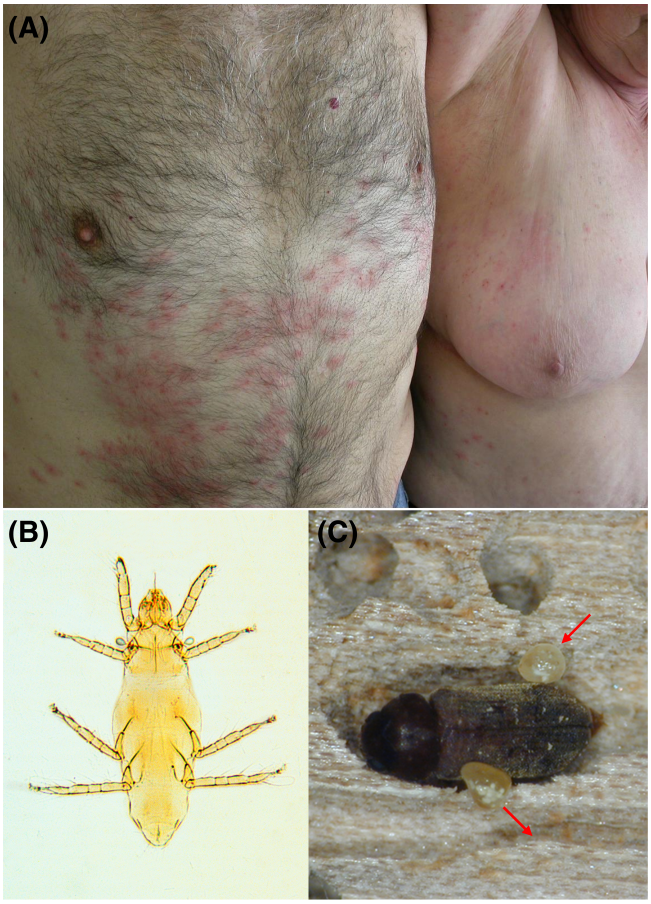


FIGURE 1 **(A)**, Papular urticaria of the trunk in both spouses. **(B)**, Adult female of *Pyemotes ventricosus*. **(C)**, Larva of *Oligomerus ptilinoides* infested by pregnant females of *Pyemotes ventricosus* (red arrows)

CASE REPORT

A couple of 72-year-old nonatopic, otherwise healthy antique dealers consulted our clinic of dermatology in July 2018 because of erythematous, edematous, and papular lesions, 0.5–1 cm in diameter, centered by a tiny vesicle or with a central hemorrhagic punctum, diffuse, but particularly numerous on the trunk (Figure 1A). Diagnosis of papular urticaria was made. The patients reported that lesions had a relapsing course during the last 5 years and that some furniture of their antiques store were infested by woodworms. For this reason, they performed several times "do it yourself" disinfestations of both furniture and work environment.

Laboratory investigations were negative. Occupational ectoparasitosis was suspected and environmental dust collected from the workplace was processed by Indoor Dust Direct Examination in the Urania Research Center (Perugia, Italy) as described previously.[4] Numerous and alive adult females of *Pyemotes ventricosus* (Newport, 1850) were documented (Figure 1B).

After the removal of wormeaten wood furniture from antiques store and its treatment by professional pest controllers, an environmental remediation was carried out using an aerosol automatic spray insecticide based on cyfluthrin, in order to kill the mites still present in the environment. At the same time, the patients were treated with oral cetirizine and mometasone furoate ointment with complete healing in about 14 days. No relapses were observed during the following 1-year follow-up.

DISCUSSION

P. ventricosus is a predaceous mite, belonging to the Pyemotidae family, that has parasitic activity on larvae of insects infesting vegetable materials and on larvae of insects infesting wood, especially those belonging to the species *Oligomerus ptilinoides* (Wollaston, 1854), a common Italian woodworm (Figure 1C).[4] *P. ventricosus* was reported as one of the most frequent species responsible for ectoparasitoses and its presence is strictly related to the wormeaten wooden structures, especially in domestic environments.[4] Nevertheless, occupational ectoparasitoses induced by *P. ventricosus* in subjects working in contact with contaminated cereals or other materials of vegetable origin such as farmers, bakers, and employees in herbal medicine production, have rarely been described.[1,5,6] In particular, occupational dermatitis in antique dealers in contact with wormeaten wooden structures infested by *P. ventricosus* had never been described before. Only two patients with occupational ectoparasitosis due to contact with wormeaten wooden structures were reported, but these patients were restorers and the infesting agent was *Scleroderma domesticum* (Klug, 1809), an insect belonging to the Bethylidae family with parasitic activity on the larvae of woodworm, as *P. ventricosus*.[3]

In our opinion, the absence of reports of occupational ectoparasitoses by *P. ventricosus* in antique dealers depends on the fact that normally they are self-employed, so they prefer to make autonomous, and therefore nonspecific, attempts to solve their problem. This could lead to the persistence of wormeaten wooden structures, frequent reservoirs of *P. ventricosus*, thereby explaining the frequent relapsing clinical course of skin lesions, as in our patients.[4]

The morphology of the skin lesions caused by *P. ventricosus* is nonspecific,[4] even if the most common clinical presentation is papular urticaria, as observed in our patients. Of interest, the latter skin lesions were not strictly confined to the sites of direct contact with mites, but rather the trunk was the main site involved, probably because of small mite size (200 μ) that allows it to penetrate through tissue fibers of clothes. The pathomechanism involved is unclear. It was hypothesized that *P. ventricosus* releases irritating unknown salivary neurotoxin proteins, causing skin lesions.[7]

In conclusion, we emphasize that *P. ventricosus* could cause occupational ectoparasitoses, especially in patients working in close contact with wormeaten wood, such as antique dealers. A close cooperation between dermatologist and parasitologist is mandatory for a correct diagnosis and specific successful disinfestation.[8]

CONFLICT OF INTEREST

All authors have no interests to report.

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REFERENCES

1. Betz TG, Davis BL, Fournier PV, Rawlings JA, Elliot LB, Baggett DA. Occupational dermatitis associated with straw itch mites (*Pyemotes ventricosus*). *JAMA*. 1982;247(20):2821-2823.
2. Stingeni L, Bianchi L, Tramontana M, Moretta I, Principato MA. Indoor dermatitis due to *Aeroglyphus robustus*. *Br J Dermatol*. 2016;174(2):454-456.
3. Lembo S, Panariello L, d'Errico FP, Lembo G. Professional's and non-professional's papular urticaria caused by *Scleroderma domesticum*. *Contact Dermatitis*. 2008;58(1):58-59.
4. Stingeni L, Bianchi L, Hansel K, et al. Dermatitis caused by arthropods in domestic environment: an Italian multicentre study. *J Eur Acad Dermatol Venereol*. 2017;31(9):1526-1533.
5. Uenotsuchi T, Satoh E, Kiryu H, Yano Y. *Pyemotes* dermatitis caused by indirect contact with husk rice. *Br J Dermatol*. 2000;143(3):680-682.
6. Tomczyk-Socha M, Jedrzejewska-Jurga K, Limburska J, Tomczyk J. Outbreak of occupational dermatitis associated with *Pyemotes ventricosus*. *JAMA Dermatol*. 2017;153(7):686-688.
7. Stingeni L, Tramontana M, Principato M, et al. Re: '*Pyemotes ventricosus* detection in a baby skin folds' and 'Alternative hypothesis for mite identification with reference to *Pyemotes ventricosus* detection in a baby skin folds'. *J Eur Acad Dermatol Venereol*. 2020;34(1):e25-e27.
8. Corazza M, Tassinari M, Pezzi M, et al. Multidisciplinary approach to *Pyemotes ventricosus* papular urticaria dermatitis. *Acta Derm Venereol*. 2014;94(2):248-249.

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