

Letter to the Editor

Indoor dermatitis due to *Aeroglyphus robustus*

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DEAR EDITOR, *Aeroglyphus robustus* is an astigmatid mite described initially by Banks in 1906 and called *Glycyphagus robustus*.¹ In 1941 Zachvatkin described and called the subfamily *Aeroglyphinae* and the genus *Aeroglyphus*. He considered this mite of Canadian origin to be the same as the European species *A. peregrinans* (Berlese, 1892),² and he upgraded the subfamily *Aeroglyphinae* to family *Aeroglyphidae*. It was only in 1959 that Cooreman described *A. robustus* in detail, distinguishing it morphologically from *A. peregrinans*.³ At present, in the Italian acarofauna, *A. robustus* is not present in the family *Aeroglyphidae*,⁴ and its pathogenic role in humans has never been described before. The taxonomy of *A. robustus* is order Astigmata, suborder Acaridia, superfamily Glycyphagoidea, family *Aeroglyphidae*.

A 57-year-old nonatopic healthy man was referred for an itchy rash with small and isolated erythematous papules, some with pinhead-shaped central tense vesicles and some excoriated and covered by small crusts. The lesions initially involved the extensor surface of the forearms and the sides of the trunk (Fig. 1); after 1 week they spread to the upper and lower limbs. The patient's wife showed similar skin lesions. They had no other systemic symptoms, and physical examination was otherwise unremarkable. The patient was a farmer, and 1.5 months earlier he had brought home two large bags of grain, cramming them in at the entrance. The grain, of unknown origin, had been collected from a container located near the patient's house.

The patient and his wife were treated with oral cetirizine (10 mg per day) and desoximetasone ointment, with partial reduction of itching and skin lesions within 10 days. Domestic

ectoparasitosis was suspected. In order to verify it, sawdust collected from all of the rooms and the grain bags was examined with E.D.P.A.[®] (Esame Diretto Polveri Ambientali), patented by one of the authors.⁵ Briefly, dust samples were collected by broom and dustpan from the floor of the home's rooms and labelled in small containers. After microsieving, sedimentation or flotation, pathogen arthropods and their specific traces (fragments, exuviae, bristles, faeces) were observed with a stereomicroscope and prepared and mounted on slides in warm Berlese solution for direct observation by optical microscope.

The dust sample collected from the grain bags was twice as rich in weeds/pests as those collected from the rooms of the house. However, in both samples *A. robustus* was identified, with several adults (Fig. 2a) and immature forms (protonymphs, nymphs, larvae). *Aeroglyphus robustus* is morphologically characterized by dorsally tuberculate idiosoma covered by numerous idiosomal multibranching bristles shaped like wheat plugs and, in particular, by two very long opisthosomal bristles in the female (Fig. 2b).^{3,6,7} The so-called hypopial deutonymphs of *A. robustus* were also identified (Fig. 2c); they are typical forms of resistance to untoward environmental conditions. Inspection of the house showed the presence of moulds of the genera *Penicillium* and *Aspergillus*, in a high relative humidity (85%), on some north-facing walls.

The patient tried to eliminate the house infestation using an aerosol automatic spray insecticide based on cyfluthrin. This approach turned out to be ineffective because the mites hide where the insecticide does not reach them and because of the presence of the resistant form (hypopial deutonymph). In fact, a new E.D.P.A. examination showed vital adults and immature forms of *A. robustus*. Intervention by a pest-control company was then required and the domestic environment was

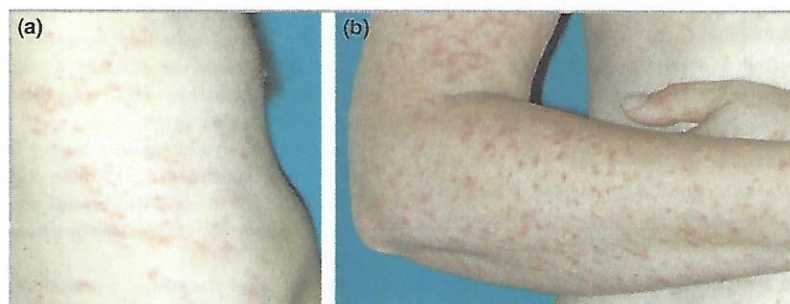


Fig 1. Erythematous papular dermatitis with some central tense vesicles and crusts on the side of the trunk (a) and the extensor surface of the forearm (b).



Fig 2. *Aeroglyphus robustus*. (a) Adult male (original magnification $\times 100$), (b) opisthosoma with typical tubercles and multibranching bristles (contrast phase, original magnification $\times 400$) and (c) hypopial deutonymphs with hypopus (original magnification $\times 100$).

fumigated with cyphenothrin. Immediately the patients' skin lesions improved, but after 2 weeks similar new skin lesions in the farmer and his wife appeared again. Probably, hypopial deutonymphs restored the mite population, resulting in a new infestation. A second fumigation with cyphenothrin resolved the domestic infestation, as shown by the resolution of skin lesions and by the negativity of a further E.D.P.A. study.

Once the arthropod responsible for the dermatitis was identified through E.D.P.A., it was necessary to clean up the moulds on the house walls with sodium hypochlorite, as these mites are mycophages, and to reduce the environmental relative humidity with an electric dehumidifier.

Aeroglyphus robustus ($330 \times 220 \mu\text{m}$) is a mycophagous astigmatid mite living predominantly on battered and poorly preserved flour products, where moulds develop. It is called 'warty grain mite' because it is known as a pest of stored grain.¹ The life cycle comprises the stages of egg, larva, protonymph, deutonymph and adult, and lasts about 20 days. Environmental conditions that favour its development in the domestic environment are high temperatures ($28\text{--}30^\circ\text{C}$) and high relative humidity ($85\text{--}90\%$);⁸ moulds on the walls are the primary trophic site of *A. robustus*. Currently we cannot assume its role as a vector, but only as a bacterial or fungal reservoir.

Aeroglyphus robustus is an uncommon mite, never recorded before in Italy, probably because of the difficulty in identification of this species. The pathogenetic mechanism underlying skin lesions due to *A. robustus* is not yet known. It is probably related to the multibranching bristles that pierce the skin as foreign bodies and contain irritants, similarly to the better-known *Glycyphagus domesticus* and *Lepidoglyphus destructor*.⁹ However, the pathogenicity of *A. robustus* to humans is probably due not only to these bristles, but also to the irritant contact with exuvial liquids and faeces issued mainly by the larvae and protonymphs.

Exposure to pyrethroid insecticides by fumigation, eradication of wall moulds and restoration of normal domestic humidity are the three key points to eradicate *A. robustus* from the domestic environment. After these measures are taken,

thorough cleaning of the house by careful and repeated dust vacuuming is crucial to remove the numerous bristles and other organic fragments still present in the domestic environment. In fact these continue to be skin irritants even after the mites are killed.

This report is the first case of human dermatitis caused by *A. robustus* and the first evidence of this mite in Italy, although it is possible that dermatitis due to this mite may go undiagnosed or be ascribed to other mites.

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