

CORRESPONDENCE

Anaphylactic reactions to bites of the pigeon tick *Argas reflexus*

Argas reflexus is a parasite of wild and domesticated pigeons. When its natural host is removed, the tick may colonize buildings in the vicinity. In the absence of pigeons, it may bite man as a compensatory host. The pigeon tick bite induces local inflammatory reactions (about 99%), but also systemic allergic reactions (about 8%) [1]. We report the case of a 39-year-old male who reported two episodes of generalized urticaria waking him at night. The events occurred 2 years after moving to a renovated old building. Before these incidents, he had noticed recurrent episodes of nocturnal redness, itching and swelling of localized skin areas. The next mornings, he sometimes found a papule with a central sting, and, furthermore, suffered from lymphangitis three times. Finally, *Argas reflexus* was detected in his apartment by a pest exterminator. No further episodes occurred after moving to a different apartment. Skin testing was not performed because of the lack of a commercial tick extract and the potential risk of transferring infectious agents by using an extract from wild ticks. Specific IgE were detected to tick whole body extract (0.45 kU/L, Immuno-CAP) and to the major tick allergen Arg r 1 (0.40 kU/L, ELISA). Total serum IgE-level was normal (33.7 kU/L). The low specific IgE titers may be explained by the fact that the patient had not had any contact with pigeon ticks for 6 years and that the IgE titer had declined since the last exposure. The specific sensitization was confirmed by immunoblot using whole body extract of *Argas reflexus* (figure 1A), and IgE reactivity to the major allergen Arg r 1 was demonstrated using recombinant Arg r 1 (figure 1B). In addition we analyzed possible cross-sensitisation between *Argas reflexus* and other distantly related ticks. SHBP (serotonin- and histamine-binding protein) of the dog tick *Dermacentor reticulatus* is related to Arg r 1 [2]. Our patient revealed a weak IgE-reactivity to some unidentified Dermacentor proteins at 21-31 kD (figure 1C). However, inhibition assays showed that the IgE reactivity to Arg r 1 of our patient's serum (figure 1D) was not impaired by preincubation with whole body extract of *Dermacentor reticulatus*.

Anaphylaxis caused by bites of *Argas reflexus* is probably more frequent than reported in the literature. To date, several isolated studies have been reported but detailed epidemiological data are missing [1-3]. Efforts should be made to increase clinical awareness of the diagnosis and to improve diagnostic tests. Prompted by the patient's question whether he needed to worry about other tick

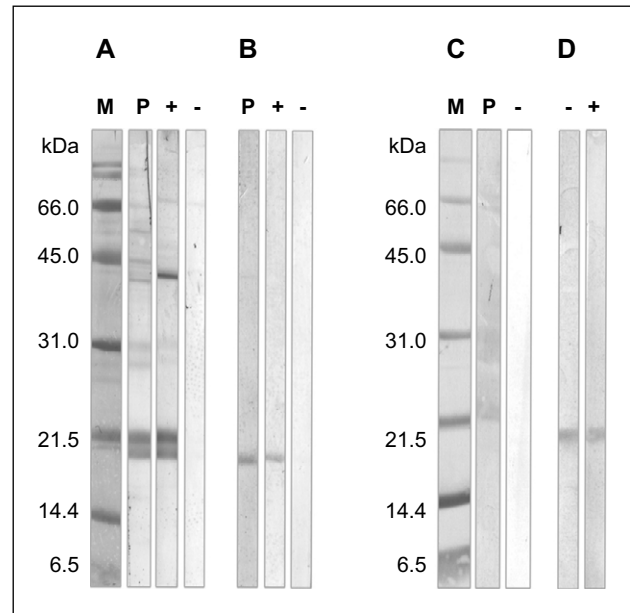


Figure 1. Detection of specific IgE antibodies to *Argas reflexus* and IgE inhibition assay with *Dermacentor reticulatus* extract. **A)** IgE immunoblot with *Argas reflexus* whole body extract; **B)** IgE immunoblot with recombinant Arg r 1 (Swissprot accession No Q5GQ85); (M, molecular weight marker; P, patient serum; +, pool of 3 patients allergic to *Argas reflexus*; -, negative control). **C)** Detection of IgE antibodies to *Dermacentor reticulatus* whole body extract (P, patient serum, -, negative control). **D)** IgE inhibition assay with *Dermacentor reticulatus* extract: IgE reactivity to rArg r 1 after serum preincubation with (+) or without (-) *Dermacentor reticulatus* whole body extract (50 µg).

bites, we searched for tick proteins with homology to Arg r 1. Previous studies have shown homology with the tick histamine-binding proteins of *Rhipicephalus appendiculatus* (RaHBP1, RaHBP2, and RaHBP3) [3], the serotonin- and histamine-binding protein (SHBP) of *Dermacentor reticulatus* [4], the tick salivary gland proteins from *Ornithodoros savignyi* (TSGP1, TSGP2, TSGP3, and TSGP4) [5], and a platelet aggregation inhibitor from *Ornithodoros moubata* [4-6]. *Dermacentor reticulatus* is a hard tick, widespread in Europe, infesting dogs, but also biting humans. The other ticks mentioned above do not occur in Europe. Therefore we choose *Dermacentor reticulatus* to perform the inhibition assay. Based on the proteins that have been sequenced so far and the fact that no cross-reactivity between Arg r 1 and

Dermacentor reticulatus whole body extract could be shown, we considered that the risk of cross-allergenicity of *Argas reflexus* to other distantly related ticks is low. ■

Acknowledgements. Financial support: none. Conflict of interest: none.

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