

## Clinical Letter

### Recurrent anaphylaxis due to pigeon tick bites

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Dear Editors,

Pigeon ticks (*Argas reflexus*) are nocturnal parasites that usually infest urban pigeons. Due to the growing population of urban pigeons in European cities, the incidence of pigeon tick bites in humans and therefore the incidence of related reactions may be rising [1, 2]. Pigeon tick bites can cause a variety of immunologic symptoms extending from local rash, itching, inflammatory nodules, vesicles, and lymph node swelling up to anaphylaxis [3, 4]. In cases of nocturnal anaphylaxis of unknown cause, the possibility of pigeon tick bites should be considered. Local reactions on the arms or legs that are consistent with arachnid bites may indicate this cause of anaphylaxis.

In spring 2014, a 47 year-old-woman presented in our department because of two events of nocturnal anaphylaxis with wheals and acute respiratory distress. Emergency medical treatment was given on each occasion. A cause was not apparent. In 2018 (i.e. four years later) the same patient presented again in our department because of another anaphylaxis in the early morning a few weeks previously. On this occasion, the patient noticed a small arachnid on her hand immediately prior to the symptoms. The first symptom she noticed was itching on her right hand. Within minutes the itching had generalized to her whole body. She observed a flush with wheals and angioedema on her hands and feet. She felt nauseous, and increasing dyspnea developed shortly afterwards. Her husband called an ambulance and the patient was treated with intravenous steroids and antihistamines; the symptoms then resolved gradually. Epinephrine was not administered, although it would have been effective [5]. When the swelling of her hands waned, an itching red papule on her right hand was clearly visible (Figure 1). She reported that she had observed the same kind of pests in her home several times before. She therefore had a professional pest control service come to her home, which identified the arachnids as pigeon ticks. Based on this additional information, a newly developed ImmunoCAP (Thermo Fisher Scientific, Freiburg, Germany) for *Argas reflexus* specific IgE was used for further diagnostic testing. The tests found elevated levels of specific IgE antibody to *Argas reflexus* (5.25 U/ml, carrier polymer-system 3). The total serum IgE level was slightly elevated at 102 U/ml. These findings were consistent with an immediate-type allergy to *Argas reflexus*. The patient was provided with an epinephrine autoinjector and instructed in



**Figure 1** Pigeon tick bite on the right hand one week after the anaphylactic reaction.

its use. It was recommended that the nesting sites of pigeons on her roof be removed and that further nesting be prevented. We speculate that pigeon ticks were also the cause of the two nocturnal occasions of anaphylaxis in 2014.

Health problems due to pigeon ticks are currently increasing in Middle Europe [6]. The first description of pigeon ticks in Europe dates back to the early 20<sup>th</sup> century [7]. Unengorged ticks are 2–8 mm long, have a flat, oval-shaped brown body and eight legs (Figure 2). They are found near the nesting sites of pigeons on roofs, in attics or lofts, and they enter inhabited areas through windows and cracks in the masonry [1, 8]. Hungry adults or nymphs leave their hiding places at night to find a new source of food. They feed on the host for a relatively short time of 20 minutes to two hours [9]. The fact that pigeon ticks are nocturnally active and that the attack on the host usually goes unnoticed might account for the relatively low number of recorded allergic reactions to pigeon ticks. Furthermore, other arthropods such as bed bugs, mites, ants or spiders are made responsible for the allergic symptoms presented by bitten individuals [1]. The most common triggers of anaphylaxis in adults are venoms, predominantly wasp and bee venoms, followed by foodstuffs



**Figure 2** Pigeon tick found in the patient's home.

and medications [10]. Nocturnal anaphylaxis that awakens the patient from sleep is rare. It should also lead to the consideration of delayed anaphylaxis due to red meat in patients sensitized to galactose-alpha-1,3-galactose (alpha-gal) [11]. In southern North America as well as Central and South America, *Triatoma* bugs might account for nocturnal anaphylaxis [12]. The recognition of anaphylaxis due to *Argas reflexus* requires awareness and knowledge of the behavior of this species. In conclusion, nocturnal anaphylaxis, combined with arachnid bites and pigeons in the neighborhood should lead to the differential diagnosis of pigeon tick allergy [2].

#### Conflict of interest

None.

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#### References

- 1 Buczek A, Bartosik K, Kulina D et al. Skin lesions in humans bitten by European pigeon tick *Argas reflexus* (Fab.) (Ixodida: Argasidae) massively occurring in the Upper Silesian conurbation of south-west Poland. *Ann Agric Environ Med* 2018; 25(2): 234–40.
- 2 Rolla G, Heffler E, Boita M et al. Pigeon tick bite: A neglected cause of idiopathic nocturnal anaphylaxis. *Allergy* 2018; 73: 958–61.
- 3 Kleine-Tebbe J, Heinatz A, Gräser I et al. Bites of the European pigeon tick (*Argas reflexus*): risk of IgE-mediated sensitizations and anaphylactic reactions. *J Allergy Clin Immunol* 2006; 117: 190–5.
- 4 Hilger C, Bessot JC, Hutt N et al. IgE-mediated anaphylaxis caused by bites of the pigeon tick *Argas reflexus*: cloning and expression of the major allergen Arg r 1. *J Allergy Clin Immunol* 2005; 115(3): 617–22.
- 5 Werner-Busse A, Zuberbier T, Worm M. The allergic emergency—management of severe allergic reactions. *J Dtsch Dermatol Ges* 2014; 12(5): 379–87.
- 6 Haag-Wackernagel D. Gesundheitsgefährdungen durch die Straßentaube *Columba livia*: Parasiten. *Amtstierärztlicher Dienst und Lebensmittelkontrolle* 2008; 3: 174–88.
- 7 Benoit-Bazille H. L'Argas reflexus (Fabr.) et son parasitisme chez l'homme. *Mem Soc Zool Fr* 1910; 22(3): 261–80.
- 8 Buczek A, Bartosik K. Occurrence of *Argas reflexus* (Fabricius, 1794) (Ixodida, Argasidae) in urban habitat of south-eastern Poland. *Wiad Parazytol* 2011; 57(4): 277–9.
- 9 Buczek A. Fecundity and reproductive activity of *Argas* (*A. reflexus* (Fabricius, 1794) (Acari: Ixodida: Argasidae). *Wiad Parazytol* 1993; 39(1): 49–57.
- 10 Worm M, Babina M, Hompes S. Causes and risk factors for anaphylaxis. *J Dtsch Dermatol Ges* 2013; 11(1): 44–50.
- 11 Commins SP, Satinover SM, Hosen J et al. Delayed anaphylaxis, angioedema, or urticaria after consumption of red meat in patients with IgE antibodies specific for galactose-alpha-1,3-galactose. *J Allergy Clin Immunol* 2009; 123: 426–33.
- 12 Moffitt JE, Venarske D, Goddard J et al. Allergic reactions to *Triatoma* bites. *Ann Allergy Asthma Immunol* 2003; 91: 122.