Case report — Gevalverslag

First report of a parasitic mite, *Leptotrombidium (Hypotrombidium) subquadratum* (Lawrence) (Acari: Trombiculidae: Trombiculinae), from dogs and children in the Bloemfontein area, South Africa

H Heyne¹, E A Ueckermann² and L Coetzez

ABSTRACT

*Leptotrombidium subquadratum* larvae were collected for the first time in 1994 from dogs in Bloemfontein. The larvae have been collected annually, during the summer months, over a period of 6–7 years. Previously the only known hosts were scrub hare (Lepus saxatilis) (locality unknown) and short-snouted elephant shrew (*Elephantulus brachyphrynus*) (Kruger National Park). These mites cause severe itching and dermatitis in humans and dogs.

Key words: chiggers, dogs, *Leptotrombidium subquadratum*, mite infestation.


INTRODUCTION

Some species of trombiculid mites, also known as chiggers, harvest- or scrub-itch mites, are problematic in the United States, the United Kingdom and also the Far East. They are known to transmit *Rickettsia tsutsugamushi*, the cause of scrub typhus (Tsutsugamushi disease) in humans in the Oriental and Australasian regions. Some species cause dermatitis (scrub-itch or trombidiosis). According to Baker, of the approximate 700 species of trombiculid mites known in 1956, 46 attack humans or domestic animals. Of these, about 20 species were regarded as being of medical importance. In the 1970s, when Vercoomme-Grandjean and Langston revised the chigger mites of the world, a total of 1486 mites had been described in the subfamily Trombiculinae alone, with a projected total of about 2000 by the year 1976.

Only the larval stages of these mites are parasitic on vertebrates, while the nymphs and adults prey on small arthropods. The larvae prefer overgrown habitats and, like their ixodid counterparts, will climb up vegetation, where they wait for a suitable host (e.g. a rodent) to pass.

The engorged larva enters a quiescent nymphal stage (protonymph), before the only active nymphal stage (deutonymph)

emerges. The 3rd nymphal stage (tritonymph) also becomes inactive before it moults to the adult.

In South Africa chiggers have never really been considered to be of veterinary or medical importance. However, in 1992 a trombiculid larva of the genus *Guntheria* Wormersley, collected from sheep in the Amersfoort district (Mpumalanga), was shown to cause orf-like lesions. A 2nd infestation by a member of the family Trombiculidae came to our attention in 1994. These mites were collected from dogs in Bloemfontein (Free State Province).

CASE HISTORY

During November 1994, a resident of the suburb Bayswater, Bloemfontein, contacted us concerning a mite infestation on her dogs (miniature Schnauzers). The dogs were licking and biting their paws and on examination, tiny orange mites were found between their toes. The cause of the infestation was suspected to be *Dermanyssus gallinae* (De Geer), the red chicken mite, as the resident had kept some bantams. The chickens had been euthanised due to old age and it was assumed that in the absence of suitable hosts the mites infested the dogs. The owner treated the dogs with various acaricides, which resulted in the mites disappearing for 2–3 days, only to reappear. A decline in their numbers occurred during the winter months (April to September/October), only to increase again as soon as it became warmer.

Specimens collected were identified as the larvae of *Leptotrombidium (Hypotrombidium) subquadratum* (Lawrence) by one of us (EUA). Lawrence originally described this mite from 8 larval specimens collected from *Lepus saxatilis* Cuvier (scrub hare), from an unknown locality in South Africa. They were subsequently also

Fig. 1: *Leptotrombidium (Hypotrombidium) subquadratum*, larval stage.


¹ ARC - Onderstepoort Veterinary Institute, Private Bag X5, Onderstepoort, 0110 South Africa.
² ARC - Plant Protection Research Institute, Private Bag X134, Pretoria, 0001 South Africa.
³ National Museum, PO Box 266, Bloemfontein, 9300 South Africa.

Received: October 2000. Accepted: March 2001.
collected from *Elephantulus brachyrhynchus* (Smith) (short-snouted elephant shrew) in the Kruger National Park. Only the larval stage of this mite has been described, as the adult and nymphal stages are as yet unknown.

In 1999 a similar problem developed on dogs belonging to another family residing in Bayswater, Bloemfontein. Specimens collected from 3 dogs (a bullmastiff cross, a fox terrier, and a chihuahua cross) were identified as *L. (H.). subquadratum*. It was reported that the mites also attacked the owners' young son, who developed a severe local allergic reaction (itching and dermatitis). On examination of the lesions, the reddish-orange mites were found embedded at the attachment sites.

During February 2000 these 2 residences in Bayswater were visited to ascertain the extent of the problem. At the first home the dogs had been dipped the previous day and no mites were found, but 2 of the dogs at the 2nd residence had mites between their toes. Mites were also found on the snout and in the groin regions of 1 of the dogs (a fox terrier). Cats and silky chickens examined for mites at this residence were not infested.

The State Veterinarian at the Veterinary Laboratory and private veterinarians practising in Bloemfontein were visited and informed about the possible presence of this mite in the Bloemfontein region. As one of the characteristic symptoms of the mite infestation is that infested dogs will lick and bite their paws, this can easily be confused with an allergy caused by Kikuyu grass. The veterinarians were shown the mites collected and requested to be on the alert for further mite infestations and to contact us if any cases were presented.

The problem is being followed up by regular visits to the infested sites, surveys and experimental work to isolate the vector/s and to establish the source and extent of the infestation, with the objective of developing an integrated control programme.

**ACKNOWLEDGEMENTS**

We thank Dr A S Dippenaar and Dr E M Nevill for advice on this manuscript.

**REFERENCES**

9. Zumpt F 1961 *The arthropod parasites of vertebrates in Africa south of the Sahara. (Ethiopian region), Volume I (Chilicerata).* South African Institute for Medical Research, Johannesburg

*Veterinarians who observe typical symptoms in domestic animals are requested to get in touch us at heloise@moon.oiv.ac.za*