

# TROMBICULIDAE HARVEST MITES (*NEOTROMBICULA AUTUMNALIS*) INFESTATION IN DOG IN WINTER SEASON – A CASE REPORT

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## **Abstract**

*Neotrombicula autumnalis* is a mite belonging to Trombiculidae family, which lives free on soil and vegetation, and in larval stages becomes an ectoparasite, attacking wild and domestic animals and humans. The harvest mites are responsible for producing cutaneous pruriginous lesions in infested hosts. This study presents a trombidiosis case during winter season, in a 5 year old mongrel dog from the Eastern part of Romania. The dog presented a papulo-erythematous dermatitis, pruriginous, localized in interdigital spaces of posterior limbs area. Diagnosis has been established by microscopic identification of *N. autumnalis* parasitic larval stage from skin scraped material. To our knowledge this is the first report of trombidiosis in dog from the Eastern part of Romania, with evolution during winter season.

**Key words:** dog, harvest mites, Romania, winter

## **INTRODUCTION**

Trombidiosis represents a parasitic cutaneous affection produced by acarian larvae which belong to *Trombiculidae* Family, *Acari* Order, with over 1500 known species worldwide, of which 50 are known to attack domestic animals and humans (Wall and Shearer, 2001).

In Europe, trombiculidae presence has been spotted along the continent (Kampen, 2000), (*Neo-*)*Trombicula autumnalis* (Shaw 1790) being considered the widest spread species (Schöler et al., 2005). In Romania, trombiculiasis larvae infestation in animals is little known. Nesterov (1984) quoted by Olteanu (2001), reported *Trombicula* infestation in rabbits (*Lepus europaeus* and *Oryctolagus cuniculus*), and Mircean et al. (2008) described a trombidiosis outbreak produced by *N. autumnalis* harvest mites in a household from Cluj district.

The acarian prefers warm biotopes, with damp soils, but well drained, where animals that could be hosts for the larva are found (Cosoroabă, 2005). Adults and nymphs live free in soil and plants, feeding on plant fluids, eggs

and other arthropods larvae. Only larval stages parasite the animals. Usual hosts are represented by small wild vertebrates (rodents), domestic animals, pets and humans being accidental hosts. In Europe, active life of *N. autumnalis* manifests at the end of summer and in autumn, with an intense activity in dry and sunny days (Wall and Shearer, 2001). This report presents a case of *N. autumnalis* harvest mites infestation in a dog during winter season.

## **MATERIALS AND METHODS**

On the 18<sup>th</sup> of December 2012 inside the Clinic of Veterinary Medicine Faculty Bucharest, a 5 year old mongrel dog has been presented for evaluation, with multiple and extended old cutaneous lesions, in lumbar and thoracic area. Afterwards, a neoplastic cutaneous process was found. This modification wasn't the purpose of this study, but the lesions found 4-5 days ago, with pruritic character, papulo-erythematous, from posterior limbs extremities. Despite the fact that the animal presented those old cutaneous lesions, its general status was good. From patient's history, it was revealed that the owners lived in a household, in Constanța district (44°10'24"N, 28°38'18"E), being the only animal there.

Skin scrapings were taken from limbs and interdigital level, and spread on a slide. Lactophenol was added for clarification and then examined on a microscope. Microscopic examination revealed the presence of parasites. Morphologic identification was carried out based on Cosoroabă (1994) descriptions.

## **RESULTS AND DISCUSSIONS**

Microscopic examination revealed mite larvae presence, orange coloured, with smooth hairs across the body (Fig. 1), with 3 pairs of long legs, segmented, which end with claws (Fig. 2). The oral apparatus presented a long hypostome, two chelicerae which end with a reape shaped claw and two pedipalps, segmented. The palpal claw is three-pronged, morphological character which separates the genus (Wall and Shearer, 2001). Based on these characters, *N. autumnalis* larvae were identified. To our knowledge this is the first report of trombidiosis in dog from the Eastern part of Romania, with evolution during winter season.

Cutaneous modifications identified in our case, represented by papulo-erythematous areas, accompanied by pruritus, fit in the lesion scheme described in previous studies (Small et al., 2004; Kavitha et al., 2011).



Fig 1 –*Neotrombicula autumnalis* harvest mites, (x10)



Fig. 2 – *N. autumnalis* - the long legs, segmented, covered with smooth hair and ending with claws (x20)

Regarding lesion distribution, our results are similar to those obtained by Nuttal et al. (1998) that found lesions on interdigital skin level in two dogs (out of 18), but also in ear level, ventral side of the body and ventral side of the tail. Also, Mircean et al. (2008) signaled frontal-parietal lesion presence and auricular pavilions edge. Distribution of identified lesions identified by us corresponded with vegetation contact areas. Generally, larvae attach to hosts at ventral side body level, where skin is smoother and easier to penetrate (Jones, 1950). Limbs and especially interdigital spaces represent such preferred areas by mite's larvae.

While attaching to the host, larvae stick their chelicerae in superficial layers of the skin (mechanical action) and inoculate saliva rich in proteolytic enzymes (irritative action), which explains pruriginous character of lesions. Saliva enzymes digest host tissues, and the result is absorbed by the larvae through formed stylostome (feeding tube) (Jones, 1950). Stylostome feeding process, common to trombiculidae larvae, was surprised in histological sections reported in previous studies (Cunningham et al., 2001).

*N. autumnalis* harvest mites infestation is less known in our country, compared with other geographic regions worldwide, where it is found frequently, affecting both domestic and wild animals (Nuttall et al., 1998; Cunningham et al., 2001). In warm countries, trombiculides activity is manifested throughout the year, while in tempered areas it becomes active in warm seasons, with larvae appearing at the end of the summer and autumn (Cosoroabă, 2005). In Europe, previous studies have identified *N. autumnalis* harvest mites infestation in animals in autumn (Nuttall et al., 1998; Cornegliani and Cavazzini, 1999; Mircean et al., 2008; Martiolle et al., 2011), from which the acarian's name is derived. In England, White (2001) reported an unusual *N. autumnalis* harvest mites infestation case, in a cat in January. Unlike previous signaled cases, our case was diagnosed in the second half of December, winter season. Larvae presence in December can be determined by high temperature situated above the climate averages of the season, from the respective area. It is possible for climate changes to influence dynamics and seasonal activity of the mites appearing also in winter months. In a second hand, evolution of biologic cycle and the fact that harvest mites stick to the host for only 3-7 days for feeding (Cosoroabă, 1994) and then falling on vegetation in order to continue their development, sustains the idea that the infestation was carried out in December.

In the past, trombiculiasis infection was attributed to rural areas, which were considered preferred biotopes for the mites due to rodent's presence, main

hosts of mites. Lately, their presence was signaled in urban areas also, this aspect being attributed to small vertebrate's presence (rodents) (Schöler et al., 2006). Our identified case came from a household area inside Constanța city, where rodent's presence was signaled by owners, being in consistence with previous alerts.

## CONCLUSIONS

Microscopic examination of scraped material obtained from a dog with pruriginous dermatitis allowed us to identify *N. autumnalis* harvest mites. Papulo-erythematous lesions, accompanied by pruritus, had a localized distribution, including limb extremities and, especially, interdigital skin. The study shown here has revealed *N. autumnalis* harvest mites infestation presence in winter season.

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