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Otobius megnini (Duges, 1844) Otoacariasis in a Horse from Tlahualilo, Durango, Mexico: A Case Report

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Abstract

This study reports the infestation of a horse by the tick *Otobius megnini*. A total of 82 specimens were collected from both ears during a routine consultation, and by morphological examination, all the specimens corresponded with the description of the ear tick. Studies are necessaries to determine the life cycle, the range of hosts, and the role in the transmission of diseases of public and veterinary concern by this tick in our region.

Keywords: Argasidae; Ear tick; Horse; Otitis; Public health

Introduction

Otoacariasis is defined as the affection of the ear canal, in which the causal agent is an arthropod classified in the subclass Acari [1]. Such as mites of the Democidae, Psoroptidae Sarcoptidae families or ticks grouped as Argasidae or Ixodidae [2]. Mites reported as a cause of mange in horses are *Chorioptes equi*, *Psoroptes-equi* and *Sarcoptes scabiei* var *equi* [3]. While the ticks commonly found in horses belong to the genera *Amblyomma* spp., *Dermacentor* spp., *Ixodes* spp., *Rhipicephalus* (*Boophilus*) spp. and *Otobius megnini* [4]. *O. megnini* ~~as~~ is a one host life cycle, in which the immature stages feed on blood inside the ear canal. As larva, it feeds for one to two weeks, while as nymph it feeds for one to seven months. When replete, nymphs drop off the host and crawl in to cracks of trees or buildings, where they melt into adults, mate, and lay eggs [5]. While the tick is in its parasitic stage, inside the ear canal, it causes pain which develops a variety of clinical signs, including head shaking, colic, emaciation, hyperesthesia, tremors and muscle spasms, and paralysis. Moreover, mechanical damage caused with its mouth parts provokes inflammation of the ear canal, tympanic membrane, and cause otitis interna, likewise secondary microbial infections of wounds could be developed [6]. Around the world, the presence of *O. megnini* in horses has been described in Argentina [7], Bolivia [8], Chile [9], and Sri Lanka [10]. While in Mexico. The first report of this soft tick comes from 1884 [11, Table1]. Notwithstanding, reports of this tick parasitizing horses in our country represents a gap in knowledge therefore, this study describes a case of otitis caused by the ear tick in a horse from Tlahualilo, Durango, Mexico.

Locality	Climate*	Host(s)
Aguascalientes	Dry	Humans: *Homo sapiens* Cats: *Felis catus* Cattle: *Bos* spp. Cervidae: *Odocoileus* spp. Dogs: *Canis lupus familiars* Donkeys: *Equus asinus* Horses: *Equus caballus* Mule: *Equus asinus*×*Equus caballus* Sheep: *Ovis aries*
Baja California	Dry semi-arid	
Chihuahua	Dry semi-arid	
Coahuila	Dry semi-arid	
Colima	Warm sub-humid	
Durango	Semi-arid, tempered sub-humid	
Guanajuato	Tempered sub-humid	
Guerrero	Warm sub-humid	
Hidalgo	Semi-arid, tempered sub-humid	
Jalisco	Semi-arid, warm sub-humid	
Estado de México	Tempered sub-humid, warm sub-humid	
Michoacán	Warm sub-humid tempered sub-humid	
Morelos	Warm sub-humid tempered sub-humid	
Oaxaca	Warm sub-humid, warm humid	
Puebla	Tempered sub-humid, warm sub-humid	
Sinaloa	Warm sub-humid, dry semi-arid	
Sonora	Dry semi-arid	
Tlaxcala	Tempered sub-humid	
Distrito Federal	Tempered sub-humid	
*INEGI. Climatología. Available from: http://www.inegi.org.mx/geo/contenidos/recnat/clima/		

Table 1: Characteristics on the distribution of *O. megnini* in México, adapted from Hoffman [11].

Case Report

On October 25/2017, a 10-year-old male horse was referred for consultation. The patient works in range land, co-existing with livestock and during the night is housed outdoors. The main signs found were restlessness and head shaking. At the examination of the ear canal, several foreign bodies were visually detected. As possible, all the material was manually extracted and deposited in a tray. Ear wax and debris were inspected carefully, and several arachnid-like arthropods were separated from the sample. The arthropods were deposited in appropriately labeled vials and transported to the Department of Parasitology of the Universidad Autonoma Agraria Antonio Narro for identification purpose. All the specimens were washed and under stereoscopic microscopy identified by adequate taxonomic keys [12].

Results and Discussion

All the collected specimens corresponded with the description of the ear tick *O. megnini* [12]. A total of 82 specimens were collected (Table 2) and classified by life stage as described by Diyes and Rajakaruna [13], characteristics of the tick are described in Figure 1.

Instar	Larvae		Nymphs		
Condition	Unfed	Engorded	Unfed	Semi engorded	Engorded
Total	7	56	5	4	10

Table 2: Categorization of the specimens recovered.

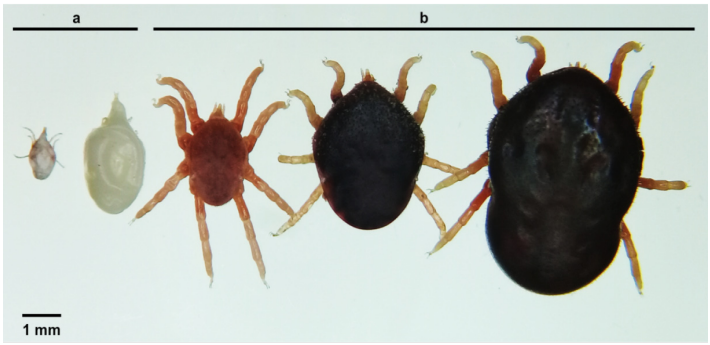

Figure 1: Dorsal view of O. *megnini* specimens, a: unfed and engorged larvae; b: unfed, semi-engorged and engorged nymphs. The texture of integument with the characteristic spines can be observed.

Treatment was initiated by removing ear wax and debris by mechanical cleaning of the ear. Chlorhexidine gluconate diluted in water was used as a final step of the ear cleaning, to prevent pathogen colonization. An acaricide in a petroleum jelly base was prescribed in order to control reinfestation of ticks. Furthermore, as *O. megnini* prefers cracks and crevices to hide and lay eggs, fumigation of the resting place was recommended. Madigan et al. [14] and Zarate-Ramos et al. [15] reported that

this tick was associated with clinical manifestations including colic, hyperesthesia, hyper tonicity, muscle spasms, prolapse of the third eyelid, and tremors; however, otitis was not stated. Furthermore, in both cases, the horses recovered of clinical signs until they received treatment for the ear ticks. In this report, the patient did not manifest colic evidence, only head shaking, another clinical manifestation described by Madigan et al. [14]. The ear tick is commonly reported as a parasite of horses [7-10]. Severe infestations with *O. megnini* could block the ear canal and cause injuries with secondary bacterial infections, and nervous affection, causing balance dysfunctions commonly confused with neuromuscular disorders of another origin [16].

Conclusion

Due to the putative role of *O. megnini* in the transmission of *Coxiella burnetii*, the Q fever agent [12] studies are necessaries to determine the life cycle, the range of hosts, and the role in the transmission of diseases of public and veterinary concern by this tick in our region.

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