




NOTA CIENTÍFICA

THE BROWN DOG TICK INFESTING HUMANS IN NORTH-CENTRAL MEXICO: A TICK-BORNE DISEASE RISK

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THE BROWN DOG TICK INFESTING HUMANS IN NORTH-CENTRAL MEXICO: A TICK-BORNE DISEASE RISK

La garrapata café del perro infestando humanos en el Centro-Norte de México: un riesgo en la transmisión de enfermedades

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Ticks are an important group of arthropods that act as vectors of pathogens in humans, and animals, this implies a serious threat to the maintenance of zoonoses (Estrada-Peña, 2015). Ticks belong to the subclass Acari, superorder Parasitiformes, order Ixodida (Anderson and Magnarelli, 2008; Lindquist *et al.* (2009), and superorder Ixodoidea (Krantz and Walter 2009). In particular Ixodida is divided in three families, Nutalliellidae, Argasidae (soft ticks), and Ixodidae (hard ticks) and are capable of feeding through blood-sucking from a great variety of domestic and wild animals, including man (Anderson, 2002).

In particular, Ixodidae includes 16 genera (*Amblyomma*, *Anomalohimalaya*, *Bothriocroton*, *Cosmiomma*, *Compluriscutula*, *Cornupalpatum*, *Dermacentor*, *Margaropus*, *Nosomma*, *Haemaphysalis*, *Hyalomma*, *Ixodes*, *Rhipicentor* and *Rhipicephalus*) (Guglielmone *et al.*, 2014), and the new two genera *Robertsicus* and *Archaeocroton* (Barker and Burger, 2018), for over 700 species (Guglielmone *et al.*, 2014) distributed worldwide. The genus *Rhipicephalus* comprises around 75 species, and several of them, have been incriminated as vectors of microorganisms (Walker *et al.*, 2000). Especially, the brown dog tick *Rhipicephalus sanguineus* (Latreille, 1806) has gained attention due to its distribution around the world, enhanced for its preferential feeding habits on dogs, in which,

humans can be accidental host, and for its incrimination in the spread of several pathogens including bacteria (*Anaplasma*, *Coxiella*, *Ehrlichia*, *Mycoplasma*, *Rickettsia*), protozoa (*Babesia*, *Hepatozoon*, *Theileria*, *Rangelia*), and filarial nematodes (*Cercopithifilaria*, *Dipetalonema*) of zoonotic concern (Dantas-Torres, 2008, 2010). The aim of this study is to report the brown dog tick *R. sanguineus* s.l. parasitizing humans in Mexico.

On September 2018, a family consisting of a 6 years old child, a 32 years old woman, and a 42 years old man from Tlahualilo, Durango, Mexico, arrived at the General Hospital from Gómez Palacio, Durango, Mexico, where they received medical attention. The family lives under poor sanitary conditions, had five dogs inhabiting inside the house, and manifested to have a tick indoor infestation. All patients presented a picture of febrile attacks, muscular pain, vomiting and digestive problems. At physical examination several ticks, were found attached to their bodies. All the specimens were collected manually, deposited in a Petri dish, and sent alive for identification at the Laboratory of Molecular Biology of the Parasitology Department at the Universidad Autónoma Agraria Antonio Narro – Unidad Laguna, Torreón, Coahuila, Mexico. Keys from USDA (1976) and Walker *et al.* (2014), were used to identify tick specimens.

A total of 25 ticks (Fig. 1), were removed from the patients. According to the appropriate identification keys (USDA, 1976; Walker *et al.*, 2014), 10 females and 15 males of the brown dog tick *R. sanguineus* s.l. were identified under stereoscopic microscopy. Some characteristics for

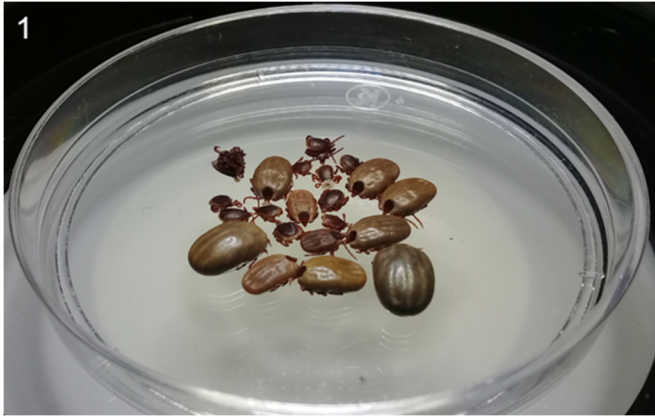


Figure 1. Ticks collected from patients.

This study records *R. sanguineus* s.l. parasitizing humans in a municipality of Gómez Palacio, Durango, Mexico. According to Hoffmann (1962), the brown dog tick was reported for the first time in Durango State by Hunter and Hooker in 1907, and it is presumed that this is responsible for the transmission of the causative agent of spotted fever. *Rhipicephalus sanguineus* s.l. has been reported parasitizing humans in southern Mexico (Rodríguez-Vivas *et al.*, 2016). Around the world, this tick has been reported attached in humans from Africa (Okoli *et al.*, 2006), Brasil (Serra-Freire, 2010), Israel (Uspensky, 2009), Japan (Kobayashia and Iwasaki, 2017), and Uruguay (Venzal *et al.*, 2003). The genus *Rhipicephalus*, represents the second place, were 48 of the 85 known species, have been reported in a 57% of cases in human attacks (Guglielmone and Robbins, 2018).

Rhipicephalus sanguineus s.l. is well adapted to live indoors, and in absence of dog hosts, parasitize humans (Dantas-Torres, 2010), increasing the risk to acquire zoonotic pathogens (Dantas-Torres, 2008, 2010). This report is important because these ticks parasitize dogs and serve as reservoirs of pathogens in the study area (Castillo-Martínez *et al.*, 2015; Almazán *et al.*, 2016;

the identification of the specimens are shown. Hexagonal *basis capituli*, convex eyes, short palp pedicles, pale color of scutum (both sexes), eleven festoons and distinct posterior grooves (male), “U” shaped posterior lips genital aperture (female) (Figs. 2a and b).

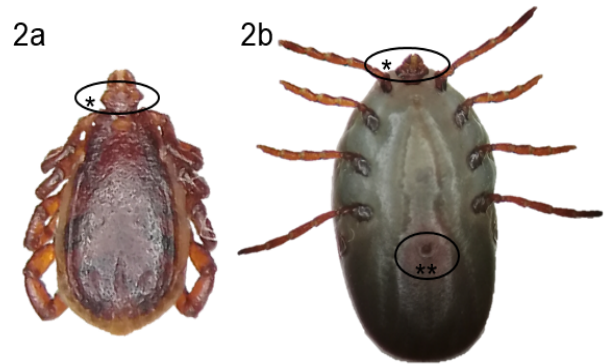


Figure 2. *Rhipicephalus sanguineus* a) Hexagonal *basis capituli**, b) “U” shaped posterior lips genital aperture**.

González-Álvarez *et al.*, 2017, Ortega-Morales *et al.*, 2019). Furthermore, recently the causative agent of the human granulocytic anaplasmosis, has been detected in brown dog ticks from Chihuahua State (Prado-Ávila *et al.*, 2018).

Rhipicephalus sanguineus s.l. is widely distributed around the world. Humans can be accidental host, enhancing the probability of being infected with a wide range of pathogens such as bacteria, protozoa, nematodes, and viruses of zoonotic concern. The aforementioned makes necessary to enhance knowledge about records of tick species attached to humans in our region due to the public and veterinary health implications.

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