



ARAŞTIRMA

F.Ü.Sağ.Bil.Vet.Derg.
2015; 29 (1): 19 - 21
http://www.fusabil.org

A Preliminary Study for Determining Tick Species Attached Humans in Bitlis Province of Turkey

Mehmet Fatih AYDIN

Karamanoğlu Mehmetbey
Üniversitesi,
Sağlık Yüksekokulu,
Karaman, TÜRKİYE

This study reports tick species removed from 91 patients who complained of tick bite between May and August 2009 in the Emergency Service of Bitlis State Hospital located in Eastern Anatolian region of Turkey. Ticks were detached from the patients in Emergency service and stored in tubes containing 70% ethanol. Ticks were diagnosed under a stereo microscope according to the morphological features. As a result of the investigation, nine tick species were identified as follows: *Rhipicephalus bursa* (18/91), *Dermacentor marginatus* (15/91), *Hyalomma anatolicum* (12/91), *Hyalomma aegyptium* (9/91), *Haemaphysalis sulcata* (9/91), *Hyalomma marginatum* (6/91), *Hyalomma excavatum* (6/91), *Rhipicephalus sanguineus* group (6/91), *Haemaphysalis* spp. (3/91) and *Hyalomma rufipes* (1/91). In addition to this two *Rhipicephalus* sp. nymphs and four *Hyalomma* sp. nymphs were identified. These results provide first data for tick species infesting humans in Bitlis province. Further studies are required to determine which tick species are infesting humans and domestic-wild animals in Turkey, and also throughout the world.

Anahtar Kelimeler: Tick, human, Bitlis, Turkey.

Türkiye'nin Bitlis Yöresinde İnsanlara Tutunan Kene Türlerinin Belirlenmesine Yönelik Ön Bir Çalışma

Bu çalışma 2009 yılı Mayıs ve Ağustos ayları arasında Türkiye'nin Doğu Anadolu bölgesindeki Bitlis Devlet Hastanesinin Acil Servisine kene tutunma şikâyetiyle başvuran 91 hastadan çıkartılan kene türlerini rapor etmektedir. Keneler hastalardan acil serviste çıkartılmış ve % 70'lik etanol içeren tüplerde saklanmıştır. Kenelerin stereo mikroskop altında morfolojik özelliklerine göre tür teşhisleri yapılmıştır. İnceleme sonucu belirlenen dokuz kene türü şu şekildedir: *Rhipicephalus bursa* (18/91), *Dermacentor marginatus* (15/91), *Hyalomma anatolicum* (12/91), *Hyalomma aegyptium* (9/91), *Haemaphysalis sulcata* (9/91), *Hyalomma marginatum* (6/91), *Hyalomma excavatum* (6/91), *Rhipicephalus sanguineus* group (6/91), *Haemaphysalis* spp. (3/91) ve *Hyalomma rufipes* (1/91). Buna ek olarak iki *Rhipicephalus* sp. nimfi ve dört *Hyalomma* sp. nimfi belirlenmiştir. Bu sonuçlar Bitlis yöresinde insanları enfeste eden kene türleri ile için ilk bilgileri sağlamaktadır. Türkiye'de ve dünya çapında, insanlar ile evcil ve vahşi hayvanları enfeste eden kene türlerinin belirlenmesine yönelik ileri çalışmalara ihtiyaç duyulmaktadır.

Key Words: Kene, insan, Bitlis, Türkiye.

Introduction

Ticks are obligate hematophagous arthropods that parasitize every class of vertebrates in almost every region of the world. Ticks can cause anemia, toxication, paralysis, irritation, allergies, and secondary infection because of skin lesions. Ticks are biological and mechanical vectors of viral, bacterial, rickettsial, spirochetal, protozoal, and helminthic diseases (1-3).

There are two major tick families; Ixodidae or hard ticks, Argasidae, or soft ticks. A third family, the Nuttalliellidae, is represented by only a single species that is confined to southern Africa. In the world, 907 species (Ixodidae: 720, Argasidae: 186, Nuttalliellidae: 1) of ticks have been recorded (4). Also, 32 tick species in two families on human and animals had been detected in Turkey (5, 6).

Ticks can transmit approximately 200 diseases to humans and animals. One of the tick transmitted diseases is Crimean-Congo hemorrhagic fever (CCHF) virus is transmitted to humans by ticks of the genus *Hyalomma*, but also through direct contact with blood or tissues of viraemic hosts. It is characterized by extensive ecchymosis, visceral bleeding, and hepatic dysfunction. The disease is endemic in parts of Africa, Asia, the Middle East, and Eastern Europe. Crimean-Congo hemorrhagic fever is an important public health issue in Turkey because of its high mortality rate and distribution (7).

Ticks and tick-borne diseases possess a great importance in Turkey from past to present. It is important to determine tick species on host and environment. This study aims to determine tick species detached from patients who complained tick bite in Emergency service in State Hospital in Bitlis province of Turkey.

Geliş Tarihi : 06.11.2014
Kabul Tarihi : 20.01.2015

Yazışma Adresi Correspondence

Mehmet Fatih AYDIN
Karamanoğlu Mehmetbey
Üniversitesi,
Sağlık Yüksekokulu,
Karaman - TÜRKİYE

veterinermfa@gmail.com

Materials and Methods

The ticks were obtained from 91 patients who complained of tick bite in the Emergency Department of Bitlis State Hospital located in the Bitlis province of Turkey between May and August 2009 (Figure 1). The ticks were removed from the patient's body by physicians and stored in tubes containing 70% ethanol. They were identified under a stereo microscope (Olympus SZX16) by its morphological features (8, 9).

Results

All humans were found to be infected by one tick species and 91 ticks were collected during the study. Nine tick species were identified as follows: *R. bursa* (18/91), *D. marginatus* (15/91), *H. anatolicum* (12/91), *H. aegyptium* (9/91), *H. sulcata* (9/91), *H. marginatum* (6/91), *H. excavatum* (6/91), *R. sanguineus* group (6/91), *Haemaphysalis* spp. (3/91) and *H. rufipes* (1/91). In

addition to this two *Rhipicephalus* sp. nymphs and four *Hyalomma* sp. nymphs were collected (Table 1, Figure 2).

Table 1. Tick species detected on humans in Bitlis province of Turkey

Tick species	♀	♂	Total
<i>R. bursa</i>	6	12	18
<i>D. marginatus</i>	8	7	15
<i>H. anatolicum</i>	7	5	12
<i>H. aegyptium</i>	5	4	9
<i>H. sulcata</i>	4	5	9
<i>H. excavatum</i>	4	2	6
<i>H. marginatum</i>	4	2	6
<i>R. sanguineus</i> group	3	3	6
<i>Haemaphysalis</i> spp.	3	-	3
<i>H. rufipes</i>	-	1	1
<i>Rhipicephalus</i> sp. nymph		2	2
<i>Hyalomma</i> sp. nymph		4	4
Total			90



Figure 1. Location map of the province of Bitlis

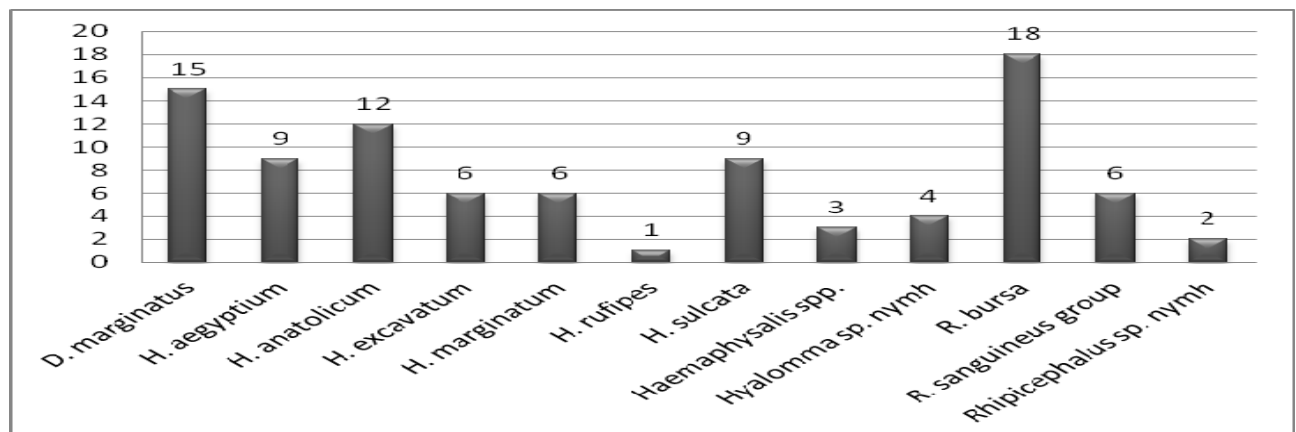


Figure 2. Distribution of tick species detected on humans in Bitlis province of Turkey

Discussion

In Turkey some studies have been conducted on tick infestation on humans. As a result of these studies; in Thrace province: *H. marginatum*, *H. aegyptium*, *H. detritum*, *Ixodes ricinus* *R. sanguineus* group, *R. bursa*, *Haemaphysalis parva*, *Haemaphysalis punctata*, *H. sulcata*, *D. marginatus*, *Ornithodoros* sp. and *Argas* sp. (10); in Istanbul province: *I. ricinus*, *H. marginatum*, *H. aegyptium*, *H. detritum*, *R. bursa*, *R. sanguineus* and *D. marginatus* (11); in central Black Sea region: *H. marginatum*, *H. detritum*, *H. excavatum*, *H. anaticum*, *R. bursa*, *Rhipicephalus turanicus*, *D. marginatus*, *I. ricinus* and *H. punctata* (12); in Aydın province: *H. aegyptium*, *H. anaticum*, *Hyalomma scupense*, *H. excavatum*, *H. marginatum*, *H. rufipes*, *Rhipicephalus (Boophilus) annulatus*, *R. bursa*, *R. sanguineus*, *R. turanicus*, *D. marginatus*, *I. ricinus* and *H. parva* were determined (13). Our results consistent with the previous studies and also these results are the first record for tick species in Bitlis province.

In Turkey 7 *Hyalomma* species [*H. anaticum*, *H. excavatum*, *H. marginatum*, *H. detritum*, *Hyalomma*

dromedarii, *H. rufipes*, and *H. aegyptium*] have been recorded (5, 14). However, the presence of *H. rufipes* has only been recorded rarely in Turkey, in Eastern Anatolia (15). Recently, *H. rufipes* was detected on cattle in the West Aegean and South Marmara region (16, 17) and on human in Aydın province of Turkey (13). *Hyalomma rufipes* transmit a variety of protozoal, bacterial and viral agents, such as the CCHF virus, *Anaplasma marginale*, *Rickettsia conorii*, and *Babesia occultans* (8).

In conclusion, this is a preliminary data reported for tick species for humans in the Bitlis province. These results are the first data for tick species in the province. Further studies are warranted for ticks and people should be trained about ticks and tick-borne diseases in the province and thorough the Turkey.

Acknowledgement

We thank all the health workers and the staff of the Emergency Service and Microbiology Laboratory of Bitlis State Hospital.

References

- Jongejan F, Uilenberg G. The global importance of ticks. *Parasitology* 2004; 129: 3-14.
- Aktas M, Vatansever Z, Altay K, Aydın MF, Dumanlı N. Molecular evidence for *Anaplasma phagocytophilum* in *Ixodes ricinus* from Turkey. *Trans R Soc Trop Med Hyg* 2010; 104: 10-15.
- Aydın MF, Aktas M, Dumanlı N. Molecular identification of *Theileria* and *Babesia* in ticks collected from sheep and goats in the Black Sea region of Turkey. *Parasitol Res* 2015; 114: 65-69.
- Horak IG, Camicas JL, Keirans JE. The Argasidae, Ixodidae and Nuttalliellidae (Acari: Ixodidae): A world list of valid tick names. *Exp App Acaro* 2002; 28: 27-54.
- Aydın L, Bakirci S. Geographical distribution of ticks in Turkey. *Parasitol Res* 2007; 101: 163-166.
- Dumanlı N, Altay K, Aydın MF. Tick species of cattle, sheep and goats in Turkey. *Türkiye Klinikleri J Vet Sci* 2012; 3: 67-72.
- Ergonul O. Crimean-Congo haemorrhagic fever. *Lancet Infect Dis* 2006; 6: 203-214.
- Estrada-Pena A, Bouattour A, Camicas JL, Walker AR. Ticks of Domestic Animals in the Mediterranean Region: A Guide to Identification of Species. 1st Edition, Zaragoza: Spain, 2004.
- Merdivenci A. Türkiye Keneleri Üzerine Araştırmalar. 1. Baskı, İstanbul: Kutulmuş Matbaası, 1969.
- Gargili A, Kar S, Yılmaz N, et al. Evaluation of ticks biting humans in Thrace Province, Turkey. *Kafkas Univ Vet Fak Derg* 2010; 16(A): 141-146.
- Vatansever Z, Gargili A, Aysul NS, et al. Ticks biting humans in the urban area of Istanbul. *Parasitol Res* 2008; 102: 551-553.
- Umur S, Hokelek M, Acici M, Gurler AT, Beyhan YE. Orta Karadeniz Bölgesinde İnsanlarda Isırık Şikayetiyle Getirilen Kene Türleri. XV. Ulusal Parazitoloji Kongresi. Kayseri / Ürgüp, 18-23 Kasım 2007.
- Bakirci S, Aysul N, Eren H, Unlu AH, Karagenc T. Diversity of ticks biting humans in Aydın province of Turkey *Ankara Univ Vet Fak Derg* 2014; 61: 93-98.
- Aydın MF, Aktas M, Dumanlı N. Tick infestations on sheep and goats in the Black Sea Region of Türkiye. *Kafkas Univ Vet Fak Derg* 2012; 18(Suppl-A): A17-A22.
- Hoogstraal H. African Ixodoidea. I Ticks of the Sudan. U.S. Naval Medical Research No: 3. Egypt: Unit Cairo, 1956.
- Bakirci S, Sarali H, Aydın L, et al. *Hyalomma rufipes* (Koch, 1844) infesting cattle in the West Aegean region of Turkey. *Turk J Vet Anim Sci* 2011; 35: 359-363.
- Yesilbag K, Aydın L, Dincer E, et al. Tick survey and detection of Crimean-Congo hemorrhagic fever virus in tick species from a non-endemic area, South Marmara region, Turkey. *Exp Appl Acarol* 2013; 60: 253-261.