



Three Emerging Vector-Borne Diseases in Turkey

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Summary: Many vector-borne infections have already been described in the world and in Turkey so far most of these infections were also characterized with emerging and/or reemerging, zoonotic and contagious or no contagious features. Some insect-borne infections such as epizootic hemorrhagic disease, lumpy skin disease in cattle and also feline leishmaniosis in domesticated cats were reported in Turkey recently. In this mini review, it was aimed to give brief information about these three diseases.

Key Words: Epizootic hemorrhagic disease, feline leishmaniosis, lumpy skin disease

Türkiye’de Yeni Ortaya Çıkmış Vektör-Kaynaklı Üç Hastalık

Özet: Bugüne kadar Dünya’da ve Türkiye’de arthropoda ile bulaşan çok sayıda hastalık tarif edilmiştir. Vektörlerle bulaşan hastalıkların çoğu yeni bir hastalık ve/veya belirli bir süreden sonra yeniden görünme özelliğinde, zoonoz ve bulaşıcı veya bulaşıcı olmayan karakterlidirler. Türkiye’de sığırlarda yakın zamanda özellikle bazı sinek türleriyle nakledilen epizootik hemoraji infeksiyöz ve lumpy skin hastalıklarıyla kedilerde leishmaniosis rapor edilmiştir. Bu derlemede üç hastalık hakkında kısa bilgi verilmiştir.

Anahtar Kelimeler: Epizootik hemoraji, kedi leishmaniosis, lumpy skin

Introduction

Most of the emerging and reemerging diseases are vector-borne, which have already been described in the world (17). In Turkey, almost more than 40 vector-borne diseases were recorded from human, animals and plants so far (16). Recently three vector-borne diseases such as epizootic hemorrhagic disease (36), lumpy skin disease (35) in cattle and feline leishmaniosis (14) in domestic cats were reported in Turkey. In this mini review, it was aimed to give brief information about these three diseases which have already been reported in cattle and cats.

Epizootic Hemorrhagic Disease (EHD)

Epizootic Hemorrhagic Disease (EHD) is a *Culicoides*-borne and non-contagious disease of ruminants (21). The agent of EHD is a virus and is closely related to bluetongue virus (BTV) and is a member of the genus Orbivirus in Reoviridae family (22). The virus mainly causes severe disease in deer. However, the disease occurs less frequently in cattle and is transmitted by several *Culicoides* species such as *C. variipennis*, *C.*

lahillieri, *C. neveli*, *C. cornutus* and *C. schultzei* group midges to the susceptible hosts. *Culicoides* biting midges are true biological vectors of the disease (31). The disease has wide distribution in the world and occurs in North, Central and South America, Africa, South East Asia, Japan and Australia (21), and was seen in Israel recently (38).

In Turkey, the first EHD outbreak in cattle was reported in 2009 from western part of the country (36). The outbreak was observed in Muğla province in July 2007 and the cases were considered as EHD based on the clinical signs of the infected cattle. The clinical diagnosis of the infection was confirmed by laboratory analyses (36).

Lumpy Skin Disease (LSD)

Lumpy skin disease (LSD) is another insect-borne and emerging viral disease of cattle. The agent is lumpy skin disease virus (LSDV) and is classified in the genus *Capripoxvirus* of Poxviridae family (8). The disease occurs in acute or subclinical forms in infected cattle herds in endemic areas and causes economically devastating losses in dairy industry (Figure 1).

Figure 1. Original photos from Prof. Dr. Veysi ASLAN



It was reported that the first LSD outbreak was described as a new skin disease and named as 'pseudo urticaria' of cattle by MacDonald in Zambia (Northern Rhodesia) in 1929 (23). In the following period, the disease spread to other southern African countries by the 1940s and was recognized as an infectious disease in 1943 (12, 37). LSD has currently pandemics on some parts of Africa continent (35).

The first LSD case outside of Africa was described in Kuwait in 1986 (26). Following this case, LSD outbreaks have been reported in some other Middle East Countries such as Lebanon in 1993, Yemen in 1995, United Arab Emirates in 2000, and Bahrain in 2003 (24). In addition, some LSD epidemics have already been reported in Egypt (1, 15), Saudi Arabia (26), Israel (7, 39) and in Sultanate of Oman (5). The disease was discussed in the sub-regional workshop on lumpy skin disease and other vector-borne diseases held in Larnaca, Cyprus on 28th February 2013 (25). In the Larnaca meeting, some reports on the epidemiology and vaccination of the disease and also vector control strategies from Middle East countries such as Egypt, Cyprus, Jordan, Palestinian Autonomous Territories, Lebanon and Israel were discussed (25).

Lumpy Skin Disease is transmitted mechanically via arthropod vectors. As a known stable fly and a cosmopolitan pest of livestock, *Stomoxys calcitrans* (20), some mosquitoes, *Aedes natrionus*, *Culex mirificens* (9), *Ae. aegypti*, (10, 11) and also some hard ticks, *Rhipicephalus (Boophilus) decoloratus*, *R. appendiculatus* and *Amblyomma hebraeum* have a transmission role in the epidemiology of LSD in the endemic areas (34).

In Turkey, first LSD outbreak in cattle was observed and described based on the clinical signs of infected cattle around Kahramanmaraş provinces particularly in Elbistan region and was also reported in ProMED database in August 2013 (2). In the following period,

the disease was confirmed in three outbreak cases (the first case in 2 September 2013 in Batman; the second case in 9 September 2013 in Kahramanmaraş; and the third case in 13 September 2013 in Hakkari) in 30 September 2013 by the Ministry of Agriculture in Turkey (2).

Feline Leishmaniosis (FL)

Leishmaniosis is a zoonotic vector-borne disease and is caused by protozoan parasites of the genus *Leishmania* in humans or animals. All forms of the disease are transmitted by sand-flies in sub family Phlebotominae. The amastigote forms of the parasite are ingested with a blood meal, and proceed to divide in the vector gut and transform to promastigotes. The transmission of the pathogen is completed by the vector in three days following feeding. Almost 20 species of *Leishmania* infect humans and domesticated animals such as dogs, equines, sheep, goats, buffaloes, cattle and cats (3).

Leishmaniasis in domestic cats (*Felis catus domesticus*) has been sporadically reported in various parts of the world. *Leishmania venezuelensis* and *L. braziliensis* variants, *L. (Leishmania) mexicana*, *L. (Viannia) sp.*, *L. (L.) amazonensis*, *L. (V.) braziliensis* and *L. (L.) infantum* have been identified in cutaneous lesions in cats in Venezuela (6), in the USA (4), in Brazil (13, 28, 32, 33) respectively. *Leishmania (L.) infantum* was reported in some south Europe, countries such as France (27), Spain (19), and Italy (29) and also in Portugal (18). On the other hand, *L. (Viannia) braziliensis* has been described in France Guiana (30) recently.

In Turkey, first clinical feline leishmaniosis case caused by *L. infantum* has already been reported in Aydın province (14).

In conclusion, further molecular investigations are required for epidemiology of EHD and LSD in cattle and also feline leishmaniosis in Turkey.

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