

A short review on ticks and Crimean-Congo hemorrhagic fever disease in emergency department perspective in endemic regions

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Abstract

Crimean-Congo hemorrhagic fever (CCHF) is a lethal disease caused by the CCHF virus of the Bunyaviridae family. The virus is transmitted to humans through tick bites or contact with blood and tissues of infected animals. Various domestic and wild animals have been identified as a reservoir for this virus, including cattle, sheep, goats, hedgehogs and hares. Numerous species of ticks can carry the virus; however, very few of them have been implicated as vectors. The most important tick vector is the *Hyalomma* spp., as the virus was isolated from it and its geographic distribution coincides with that of the disease.

In Turkey, especially since 2002, CCHF has been a serious public health problem threatening lives of thousands of people. A regional epidemic has occurred in Turkey in 2003 and since then, when considering the number of CCHF cases reported worldwide, the highest number has been reported in Turkey.

The majority of cases in our country were from 15 cities in a region called Kelkit Canyon and its environs in the middle and North Anatolia, particularly the cities of Corum, Tokat, Sivas, Yozgat and Erzurum from which two-thirds of cases were reported.

In this article, our aim was to guide physicians for CCHF in endemic regions in the World and share our experiences. Being aware of the disease is the mainstay for prevention from the disease and reduce morbidity and mortality related to it.

Keywords: Crimean-Congo Hemorrhagic Fever Disease; Emergency department; Ticks

1. Introduction

Crimean-Congo Hemorrhagic Fever (CCHF) Disease is a public health problem particularly in “Kelkit Valley” region in Turkey. Kelkit Valley is located in the Middle Anatolian region and provides a suitable habitat for ticks to grow and proliferate either with its climate and geographical features. In this canyon, cities such as Çorum, Tokat, Yozgat and Sivas are located and most of the cases of CCHF Disease are reported from these cities [1]. In this mini-review, based on the fact that physicians must be aware of the endemic diseases in the region they work, we aimed to review some of the studies from this region and underline the importance of the disease in order to reduce morbidity and mortality.

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2. Properties of Ticks and the Disease

Crimean-Congo Hemorrhagic Fever Disease is reported to be endemic in Turkey, particularly since 2002. The disease is transmitted via hyalomma ticks carrying CCHF viruses belonging to bunyaviridae family. The virus can be transmitted either by tick bite directly or contact with blood and body fluids of infected people and animals. Different domestic and wild animals have been identified as a reservoir for this virus, including cattle, sheep, goats, hedgehogs and hares. In patients admitted to the Emergency Departments (EDs) due to either tick bite or contact with contaminated fluids, clinical and laboratory findings may help making an appropriate diagnosis, however, the definite diagnosis is based on transcriptase-polimerase (PCR) test [1].

The disease occurs in 4 clinical stages. The first stage is the incubation period which lasts shorter than a week. Then, prehemorrhagic stage shorter than a week follows. In this clinically silent period; fever, malaise, fatigue, myalgias, skin eruptions, headache and nausea may be seen. Hemorrhagic stage is even shorter. Petechia, conjunctival hemorrhage, hematuria, hematemesis and melena may be determined. In this stage, additionally, central nervous system findings ranging from delirium to coma. A possible disseminated intravascular coagulation (DIC) or shock may be lethal for the patient. Ten days after the onset of the disease, recovery stage begins. In this stage; patients may either experience tachycardia, polyneuritis, respiratory distress and blurry vision or remain asymptomatic. Generally, a hospitalization for 9-10 days is required [2].

The stages of the disease is summarized in Table 1.

Table 1 Clinical Stages of Crimean-Congo Hemorrhagic Fever Disease [2]

Stage 1. Incubation Period	Stage 2. Prehemorrhagic Period	Stage 3. Hemorrhagic Period	Stage 4. Recovery Period
2-9 days	1 week	<1 week	10-20 days after onset

Until today, scientists failed to develop a vaccine for the disease. Strategies for prevention and prophylaxis are mainly based on education, limiting the habitat of the tick, disinfection of houses and use of personal insecticides [3]. Although there are studies showing the usefulness of early ribavirin therapy, main treatment of the disease is conservative and supportive [1].

3. Emergency Department Approach

Emergency physicians particularly in the endemic regions must keep in mind that the disease is seen in summer months. Dry and hot climate of the middle Anatolia creates a favorable environment for ticks to live. Although the disease is thought to be seen commonly in farmers and agriculturists, it was determined that people living in the city center are also under great risk [1].



Figure 1 A tick removed in the ED by an ED physician

In a study Başol et al. underlined that EDs play an critical role in diagnosis and treatment initiation of the disease particularly in endemic regions. EDs are the places where patients with tick bite have the first contact with the healthcare providers. Ticks are generally removed by the ED physicians and initial physical examination is performed by ED physicians [2]. A tick removed in the ED is shown in figure 1.

Laboratory findings of the disease are leukopenia, thrombocytopenia, elevated AST, ALT, LDH and CPK levels [4]. Patients commonly present by fever, nausea, diarrhea, headache, myalgia and various bleeding sites. In the physical examination; petechiae, ecchymosis, melena, gingival bleeding, hematemesis, hematuria and hematomas may be determined. The important thing is that the most common type of bleeding related to the disease may be epistaxis. In a study, epistaxis was determined in 26.1% of the patients [1].

If the initial examination and laboratory findings of the patients are normal, patients are discharged from the ED and strongly advised to revisit the ED if symptoms like fever, fatigue and nausea occur. Also, in endemic regions, even if there is no history of tick bite, CCHF must be kept in mind if fever of unknown origin emerges [2].

4. Conclusion

Crimean-Congo Hemorrhagic Fever disease is a public health problem, particularly in endemic regions. Early diagnosis and treatment play a crucial role in reduction of morbidity and mortality. At this point, ED physicians have an important task. Suspicion of the physician has the key role in early diagnosis of the disease in the ED the first contact with the patient and the healthcare provider occurs. Since the disease presents with non-specific symptoms, the appropriate approach begins with suspicion of the physician, a detailed physical examination, timely laboratory analyses and informing the patients without abnormalities prior to leaving the ED. It must be remembered that tick bites may be observed not only in individuals dealing with farmery but also in those living in the city center due to picnics, visits to rural areas and park walks. The disease must be kept in mind when a patient presents with fever and bleeding. It also creates risk for healthcare providers and, when suspected, protective clothings and equipments must be available in the ED.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare no conflict of interest.

References

- [1] Erenler AK, Kulaksiz F, Ülger H, Çapraz M, Tomak L, Baydin A. Predictors of Crimean-Congo hemorrhagic fever in the Emergency Department. *Eur Rev Med Pharmacol Sci*. Oct 2015; 19(20): 3811-6.
- [2] Başol N, Duygu F, Ayan M. Detailed evaluation of patients admitted to emergency department with a tick bite complaint. *Medicina (Kaunas)*. 2013; 49(8): 367-71.
- [3] Guven O, Satilmis D, Sonmez FT, Demir B, Erdogan Ö. Tick Infestation: A 200-Patients' Series. *Afr J Infect Dis*. 8 Jun 2017; 11(2): 62-67.
- [4] Erenler AK, Kulaksiz F, Ülger H, Erdem M, Koçak C, Söylemez F, Öztürk Ö, Baydin A. Characteristics of patients admitted to the emergency department due to tick bite. *Trop Doct*. Apr 2014; 44(2): 86-88.