A preliminary report on Crimean-Congo haemorrhagic fever in Turkey, March - June 2008

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Introduction

Crimean-Congo haemorrhagic fever (CCHF) is a disease caused by a virus belonging to Bunyaviridae family. CCHF virus isolation and/or disease have been reported from more than 30 countries in Africa, Asia, south-eastern Europe, and the Middle East [1]. The main transmission routes of the virus are tick-bite and contact with tissues, body fluids and blood of infected animals [1-4]. Nosocomial transmission is another important route of infection [1]. The incubation period is generally described as 1-3 days after tick-bite and 5-6 days after exposure to infected animal or human blood or body fluid, but it can be longer. Fever, chills, headache, fatigue and myalgia are the most common symptoms in the pre-haemorrhagic period. The disease progresses to haemorrhagic form in severe cases [1]. The fatality rate of disease is reported between 7.5-50% in hospitalised patients [4-7]. This wide range may due to phylogenetic variation of the virus, transmission route and different treatment facilities [4-7].

Epidemiological situation in Turkey

Although confirmed CCHF patients or serological evidence of the virus were being reported from neighboring countries, there had been no evidence of CCHF case before 2002 in Turkey. The first cases were detected in the town of Tokat in Kelkit Valley region in northern Turkey (Figure 1) in 2002 [8].

Between 2002 and 2007, a total of 1,820 confirmed cases, including 92 deaths, were reported to the Ministry of Health (MoH) of Turkey, showing an increasing trend over the years (Figure 2). The majority of cases (95%) were reported from middle and eastern Anatolia, particularly from the cities of Tokat, Sivas, Yozgat, Çorum, and Erzurum [9]. Most of the cases were diagnosed between March and October with peak levels in June and July, which corresponds with the tick season. The average case fatality rate between 2002 and 2007 was 5%, (range 4.5%-6.2) [9]. Seventy percent of the cases had a history of tick contact, while most of the remaining 30% had a history of contact with livestock, and three cases were attributed to nosocomial transmission [9].

Studies on ticks performed in areas where human cases had been reported found CCHF in *Hyalomma marginatum marginatum* pools (10,11).

Since December 2003, CCHF is a notifiable disease in Turkey. Cases with epidemiological risk factors, clinical symptoms and laboratory findings compatible with CCHF are reported to the Ministry of Health (MoH) as probable cases.

The case definition for probable cases includes:

Epidemiological risk factors: Tick-bite or tick contact; work in animal husbandry or farm; contact with the body fluid of a CCHF patient; work at a laboratory; close contact with a CCHF case.

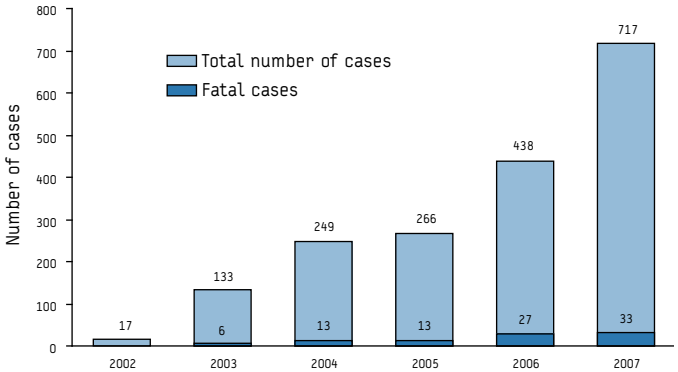
Clinical symptoms: Fever, haemorrhage, headache of acute onset, myalgia/arthralgia, lethargy, nausea/vomiting, or abdominal pain/diarrhea.

Figure 1

Kelkit valley region in Turkey where most of the cases of Crimean-Congo haemorrhagic fever have been reported from (2002-2008)

Figure 2

Number of cases of Crimean-Congo haemorrhagic fever reported in Turkey in 2002-2007 (n=1,820)



Laboratory findings: Thrombocytopenia (platelet <150.000/mm3) and/or leucopenia (WBC <4000/mm3), elevated levels of alanine aminotransferase (ALT), aspartate aminotransferase (AST), lactate dehydrogenase (LDH) and creatine phosphokinase (CK).

Cases with confirmed CCHF virus RNA in the blood or body fluid samples through RT-PCR evaluation or IgM positivity through ELISA are considered confirmed CCHF cases. The laboratory diagnostics for CCHF is done on the national level in the Virology Laboratory of Refik Saydam Hygiene Center in Ankara.

Preliminary results in 2008

The first CCHF case in 2008 was detected and notified to the MoH on 24 March. As of 30 June, 688 confirmed cases have been reported: four in March, 57 in April, 282 in May and 345 in June (Figure 3). Of these, 41 patients have died due to CCHF, corresponding to a case fatality of 5.96 %.

As in previous years, most of the cases were from Middle and Eastern Anatolia region (91%). Sporadic cases (9% of the total) have been reported from south-eastern and western parts of Turkey, as well.

The male to female ratio was 1.07. The mean age of the patients was 44.3 ±19.5 years (range: 2-93 years). The proportion of cases was highest among patients of working-age, especially adults from rural areas. The distribution of patients according to occupations was 51.8% farmers followed by 18.9% homemakers (who in rural areas generally work in agriculture and animal husbandry), and 16.5% those working in animal husbandry sector.

Regarding possible modes of transmission, 71% of the cases had a history of tick bite; 21.9% reported unprotected contact with blood or body fluids of domestic animals. Five healthcare workers exposed to patients' blood and body fluids by mucosal contact have been diagnosed as nosocomial CCHF cases until the end of June. None of them died.

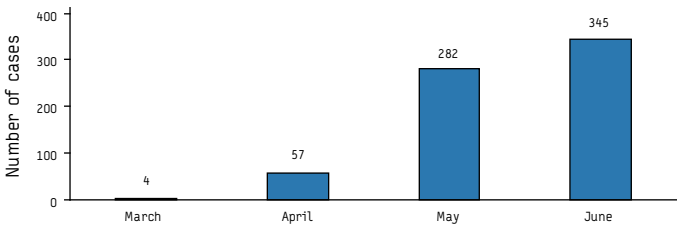
Control measures

A scientific advisory commission was set up by MoH in 2003. This commission meets regularly and its recommendations regarding treatment options, isolation measures, suggestions for disinfection, and approach in handling the deceased have been put in action.

In 2004, MoH in collaboration with the Ministry of Agriculture and Rural Affairs (MARA) initiated a surveillance and control programme including education regarding the disease and its transmission routes, tick removal, handling tick-bite cases, protected contact with animals, prevention of nosocomial infections and early detection of cases. This programme has been conducted throughout the whole country, and especially intensively in the epidemic region. It has been updated in 2007.

FIGURE 3

Number of cases of Crimean-Congo haemorrhagic fever reported in Turkey in 2008 (n=688; as of 30 June 2008)



In 2008, brochures, posters and TV spots informing about the risk of CCHF infection were updated and distributed to educate the public and the health-care workers. In the epidemic area, education programmes have been conducted door to door by provincial health directorates under the MoH. These included information regarding inspecting body for ticks, removing ticks as soon as possible, limiting exposure to body fluids or blood of livestock and using permethrine repellent 0.5% for treating clothes. The MoH collaborates closely with the MARA regarding tick combat in livestock on the central and provincial level.

Conclusion

Cases of CCHF have been reported in Turkey since 2002, mostly in spring and summer and in middle and eastern Anatolia. This has been associated with factors such as climatic features (temperature, humidity, etc.), changes of vector population, geographical conditions, flora, wild life and animal husbandry sector [12]. The number of cases has been increasing over the years, which may also be due to better awareness of health care personnel and public about the disease in addition to the above factors [9].

References

1. Whitehouse CA. Crimean-Congo Hemorrhagic Fever. Antivir Res. 2004;64(3):145-60.
2. Hoogstraal H. The epidemiology of tick-borne Crimean-Congo haemorrhagic fever in Asia, Europe and Africa. J Med Entomol. 1979;15:307-417
3. Schwarz TF, Nsanze A, Ameen AM. Clinical features of Crimean-Congo Haemorrhagic Fever in the United Arab Emirates. Infection. 1997;40:364-7.
4. Ozkurt Z, Kiki I, Erol S, Erdem F, Yilmaz N, Parlak M, et al. Crimean-Congo hemorrhagic fever in Eastern Turkey: clinical features, risk factors and efficacy of ribavirin therapy. J Infect. 2006;52(3):207-15.
5. Ergonul O, Celikbas A, Baykam N, Eren S, Dokuzoguz B. Analysis of risk-factors among patients with Crimean-Congo haemorrhagic fever virus infection: severity criteria revisited. Clin Microbiol Infect. 2006 Jun;12(6):551-4
6. Cevik MA, Erbay A, Bodur H, Gulderen E, Bastug A, Kubar A, et al. Clinical and laboratory features of Crimean-Congo Hemorrhagic Fever: predictors of fatality. Int J Infect Dis. 2008;12(4):374-9.
7. Centers for Disease Control and Prevention. Crimean-Congo Haemorrhagic Fever. Factsheet. Available from: http://www.cdc.gov/ncidod/dvrd/spb/mnpages/dispages/cchf.htm
8. Gozalan A, Esen B, Fitzner J, Tapar FS, Ozkan AP, Georges-Courbot MC, et al. Crimean-Congo haemorrhagic fever cases in Turkey. Scand J Infect Dis. 2007;39(4):332-6.
9. Yilmaz GR, Buzgan T, Irmak H, Safran A, Uzun R, Cevik MA, et al. The epidemiology of Crimean-Congo Hemorrhagic Fever in Turkey: 2002-2007. Int J Infect Dis. In press 2008.
10. Tonbak S, Aktas M, Altay K, Azkur AK, Kalkan A, Bolat Y, et al. Crimean-Congo Hemorrhagic Fever Virus: Genetic Analysis and Tick Survey in Turkey. J Clin Microbiol. 2006;44(11):4120-4.
11. Whitehouse CA, Hottel H, Deniz A, et al. Molecular detection of Crimean-Congo Haemorrhagic Fever virus in ticks from Turkey. In: American Society of Tropical Medicine and Hygiene 55th Annual Meeting, November 12-16, 2006, Atlanta, Georgia, USA.
12. Estrada-Peña A, Vatansever Z, Gargili A, Aktas M, Uzun R, Ergonul O, et al. Modeling the spatial distribution of Crimean-Congo Hemorrhagic Fever outbreaks in Turkey. Vector Borne Zoonotic Dis. 2007;7(4):667-78.

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