International Journal of Infectious Diseases 38 (2015) 9–15

Contents lists available at ScienceDirect

International Journal of Infectious Diseases

journal homepage: www.elsevier.com/locate/ijid

Review

Consensus report: Preventive measures for Crimean-Congo Hemorrhagic Fever during Eid-al-Adha festival

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ARTICLE INFO

Article history:
Received 14 April 2015
Received in revised form 29 June 2015
Accepted 30 June 2015

Keywords:
Crimean Congo Hemorrhagic Fever
Eid-al-Adha
slaughtering
zoonosis
Eurasia
one health

ABSTRACT

Crimean-Congo hemorrhagic fever (CCHF) is endemic in Eurasian countries such as, Turkey, Pakistan, Afghanistan and Iran. CCHF virus is spread by the Hyalomma tick, which is found mainly on cattle and sheep. Muslim countries, in which these animals are sacrificed during Eid-Al-Adha, are among the countries where CCHF is endemic, and it has been observed that CCHF is associated with practices surrounding the Eid-ad-Adha festival. The dates for Eid-Al-Adha drift 10 days earlier in each year according to Georgian calendar. In previous years Eid-al-Adha occurred in autumn-winter months however in the next 10-15 years it will be take place in the summer months when CCHF is more prevalent. This may lead to a rise in the number of cases due to increased dissemination of CCHF virus with uncontrolled animal movements in and between countries. This consensus report focuses on the variable practices regarding animal handling in different regions and possible preventative measures to reduce the incidence of CCHF. Environmental hygiene and personal protection are essential parts of prevention. There is a need for international collaborative preparedness and response plans for prevention and management of CCHF during Eid-Al-Adha in countries where the disease is prevalent.

1. Introduction

Eid-al-Adha (the Muslim Festival of Sacrifice) occurs annually during the Hajj (annual pilgrimage to Mecca) and is an important Eid celebration for Muslims around the world. Animal sacrifices are performed during this festival in recognition of the willingness of Prophet Ibrahim (Abraham) to sacrifice his son Ismail for God's sake. Those who do not attend Hajj also sacrifice animals in their own countries. During these festivals, Muslims sacrifice animals such as cattle, sheep, goat, or share a camel. Generally Muslims slaughter animals by themselves, but a person who is not able to do so can appoint someone else to undertake the slaughter on their behalf.

The dates in the Islamic Calendar for Eid-Al-Adha are drifting 10 days earlier each year according to Georgian calendar. In the past Eid-al-Adha has occurred in the autumn – winter months but in the next 10-15 years the festival will occur in summer months when Crimean Congo Hemorrhagic Fever (CCHF) is more prevalent. This may cause increased number of cases with CCHF, due to inadequate knowledge about the disease, careless practices of slaughtering animals, and dissemination of CCHF virus (CCHFV) through uncontrolled animal movements in and between countries.

In 2015, although there are some regulations and policies for prevention of zoonotic diseases during slaughtering activities, there is no guideline or consensus report focusing for the prevention of CCHF during Eid-al-Adha. The goal of this consensus

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http://dx.doi.org/10.1016/j.ijid.2015.06.029

document is to summarize the relevant data, raise awareness of the risk of acquiring CCHFV during animal handling, and make recommendations for detection and prevention of CCHF, particularly during Eid-al-Adha and to identify future research priorities in this area.

We searched PubMed, ISI Citation Indexes from Jan 1, 1957, until June 15, 2015 without any language restrictions. Search strategy used included terms "hemorrhagic fever virus, Crimean–Congo [MeSH]", "hemorrhagic fever, Crimean [MeSH]", "Crimean–Congo hemorrhagic fever", "Crimean–Congo haemorrhagic fever", "Crimean–Congo", "Eid-al-Adha", "Eid-ul-Azha", "hajj" "pilgrimage", "epidemiology", "slaughtering" and "animal". References were imported into Endnote to be further analyzed. Further relevant articles were identified through cited references. Two authors (HL and MS) screened all abstracts of the articles for relevance of the topics for consensus. Article quality was evaluated using Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Strobe criteria.[1]

2. General overview of CCHF

Crimean-Congo hemorrhagic fever (CCHF) is caused by an arbovirus, which is in the Nairovirus genus of the family Bunyaviridae.[2] It can be transmitted to humans by ticks of *Hyalomma* spp. CCHF virus (CCHFV) may also be transmitted by contact with blood and other body fluids of viremic patients and animals. Its main hosts are domestic animals, such as cattle, sheep and goats and it has the potential to cause population – based outbreaks.[3] It is a life-threatening viral zoonosis with characterized by acute onset high fever and bleeding with thrombocytopenia.[2,4] The CCHF-induced mortality rate differs from country to country ranging from 2% to 80%, with early diagnosis and supportive management of disease essential.[3] Since there is no specific proven antiviral treatment for CCHF,[5] supportive therapy is essential and includes replacing blood components, fluids and electrolyte management and maintaining organ functions.[6]

2.1. Geographic distribution of CCHF

The distribution of CCHFV covers the greatest geographic range of any tick-borne virus. The occurrence of CCHF correlates with the dissemination of the genus *Hyalomma marginatum*, which is the principal vector of the disease.[7] CCHF is endemic in parts of Africa, the Middle East, Asia and southeastern Europe.[2,8] The virus is present in over 30 countries in Africa, Asia, the Middle East and southeastern Europe (Figure 1). Since 2000, there have been outbreaks and an increasing number of case reports and outbreaks in Turkey, Kosovo, Albania, Bulgaria, Greece, Iran, Pakistan, Afghanistan, the Russian Federation, Kazakhstan, Tajikistan, Georgia, Mauritania, Kenya, Senegal and South Africa.[3,9,10]

2.2. CCHF in veterinary health

Animals play a critical role in the life cycle of CCHFV, with amplification of the virus before transmission to humans by ticks. Most animals infected with CCHFV do not display signs of clinical disease and CCHFV infection has been detected in a wide range of wild and domestic mammals.[11,12] Viremia in mammals can last for up to two weeks with no clinical signs,[13] and different serological prevalence rates have been reported in livestock in various countries (Egypt, Iran, Kosova, Niger, Saudi Arabia, Sudan, Turkey) i.e. 0.6% to 79% in cattle, 3.7% to 85.7% in sheep and 3.2% to 66.6% in goats.[14–24]

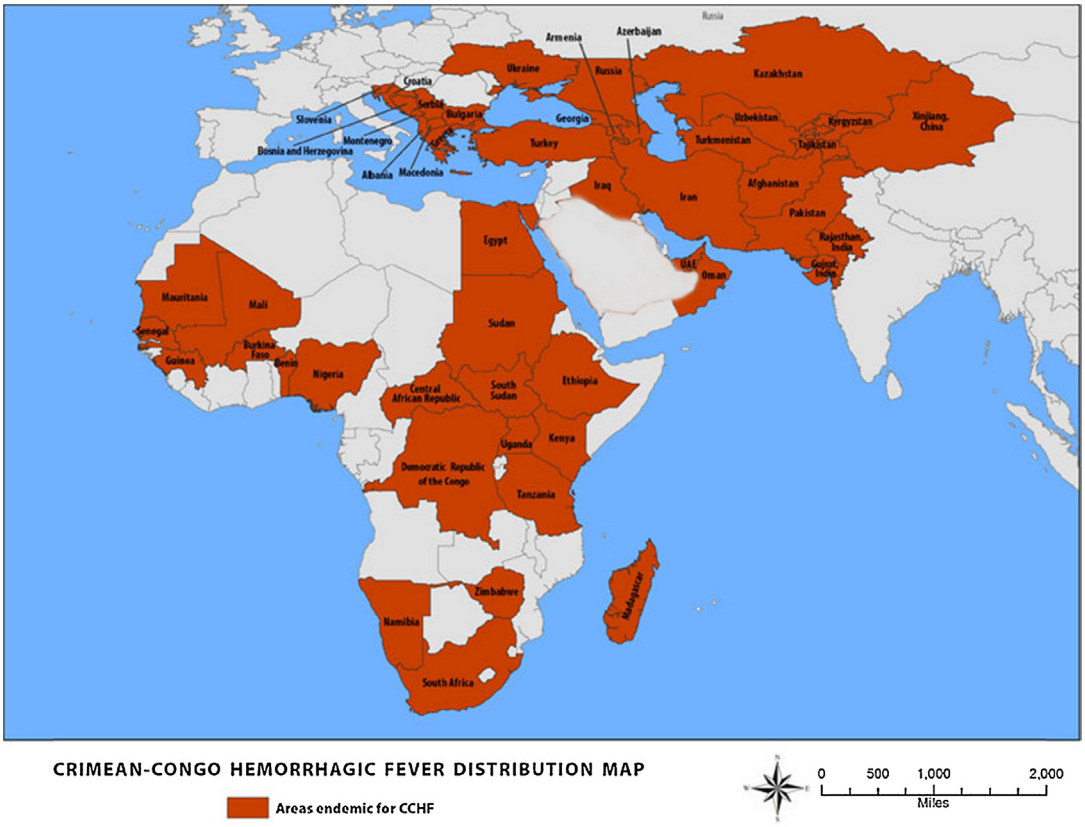

Figure 1. Endemic areas of Crimean-Congo Hemorrhagic Fever in the world.
(Updated from Center for Disease Control and Prevention http://www.cdc.gov/vhf/crimean-congo/resources/distribution-map.html).