



› Crimean-Congo haemorrhagic fever

Factsheet

for health practitioners



Name and nature of infecting organism

Crimean-Congo haemorrhagic fever (CCHF) is a viral infection described in parts of Africa, Asia, south-eastern Europe, and the Middle East. The causative agent, CCHF virus, belongs to the genus *Nairovirus*, Bunyaviridae family. It causes severe disease in humans with a risk of nosocomial transmission and a high fatality rate. The occurrence of the disease is linked to the geographical distribution of its hard tick vectors, mostly from the *Hyalomma* genus. The name of the virus linked the clinical recognition of the disease in Crimea in 1944 and the first isolation of the virus in Congo in 1956.

The geographic range of CCHF virus is known to be the most extensive of the tick-borne viruses important to human health. In Europe, cases have been reported from Albania, Bulgaria, Kosovo, Turkey and the former Soviet Union. In Greece, the first human case of CCHF infection was reported in the summer of 2008.

Transmission

Reservoir

CCHF virus circulates in an enzootic tick-vertebrate-tick cycle, and there is no evidence that the virus causes any disease in animals. Ticks from the *Hyalomma* genus are the principal vectors of CCHF virus; *Hyalomma marginatum* is the main vector for CCHF in southern Europe. Hares and hedgehogs act as amplifying hosts for the immature stages of the ticks. Domestic animals (cattle, goats, sheep, etc.) are the usual hosts for adult ticks. Domestic animals do not present any symptoms of infection.



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Humans are not the preferred hosts of *Hyalomma* ticks and are infrequently bitten in comparison to livestock. When infected, ticks can transmit CCHF virus throughout their life. In the northern hemisphere, *Hyalomma marginatum* is usually activated by the

increasing temperature in spring (beginning of April), and the immature stages are active in summer between May and September.

Transmission mode

Humans become infected through bites of infected ticks or by contact with infected blood or other tissues of livestock. Humans can also become infected by detaching or crushing ticks from animals. Nosocomial transmission may occur through direct contact with infected blood or body fluids of humans or through contaminated medical equipment or supply.

Risk groups

The major risk groups are farmers, veterinarians and abattoir workers in endemic areas and most of the affected cases deal with agriculture and/or domestic animal husbandry and slaughtering activities. Meat itself is not the source of infection because the virus is inactivated by post-slaughter acidification of the tissue; and CCHF virus does not survive cooking.

Healthcare workers are the second most affected group when nursing CCHF patients with severe bleeding and haemorrhages in a hospital setting without strict barrier nursing procedures.

Outdoor activities in endemic areas are a risk factor for tick exposure.

Clinical features

After an incubation period, usually of 3-7 days (ranging from 1 to 13 days), the disease is characterised by a sudden onset of febrile illness with headache, myalgia, backache and joint pain, abdominal pain and vomiting.

- This is frequently followed by haemorrhagic manifestations that may range from petechiae to ecchymoses appearing on the mucous membranes and the skin; the most common bleeding sites are the nose, gastrointestinal system, uterus, urinary and respiratory tract. Necrotic hepatitis may occur. Large ecchymosis and uncontrolled bleeding from venipuncture sites are common features. The convalescent period begins in survivors about 10–20 days after the onset of illness.
- The length of the incubation period varies depending on several factors including the viral dose and the route of exposure, and it is often shorter following nosocomial infection.



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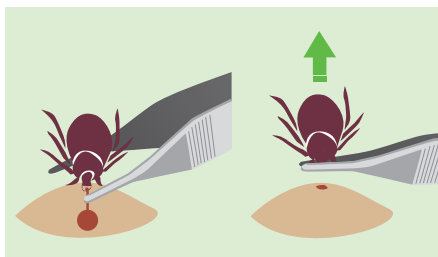


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Prevention measures

Prevention and control of CCHF infection is achieved by avoiding or minimising the exposure to infected ticks, animals or patients and their body fluids.



Insect repellents and wearing protective clothing are effective in protecting against ticks. Early and correct removal of ticks is also recommended because ticks can harbour other pathogens.

Since nosocomial cases of CCHF are quite common and often result in high mortality, strict universal precautions, including

barrier nursing, should be taken with hospitalised cases, as with other haemorrhagic fevers.

A vaccine derived from inactivated mouse brain is used in Bulgaria, but it is not widely available, and efficiency and safety have to be re-evaluated, as well as specific human immunoglobulin used for post-exposure prophylaxis.

In endemic areas, a measure of tick control has been achieved by environmental sanitation of underbrush habitats. Acaricides may be useful on domestic animals to control CCHF virus-infected ticks if used 10–14 days prior to slaughter or to export of animals from enzootic regions.



Diagnosis

CCHF direct diagnosis is done by detection of viral genome by RT-PCR up to 10–15 days post onset of illness. Serological detection of specific IgM antibodies can be done starting day five. CCHF IgG seroconversion or 4-fold titre increase can help the diagnosis (but it is delayed). As CCHF is considered a highly hazardous pathogen, sample shipment and handling require specific protocol.

Management and treatment

Since there is no validated specific antiviral therapy for CCHF, treatment relies on supportive care, including the administration of thrombocytes, fresh frozen plasma, and erythrocyte preparations. Oral or intravenous ribavirin has been used with reported success, although not confirmed benefit. The value of human immunoglobulins from recovered patients for treatment has to be re-evaluated.



Key areas of uncertainty

The understanding of the cycle of CCHF virus transmission needs further field investigations as well as information on the detailed geographical spread of the disease, especially in Europe. Treatment with ribavirin is recommended by WHO; although many reports indicate that the drug may be beneficial, the real efficacy would require additional evaluation. There is no safe and effective human vaccine available.



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