# Crimean-Congo Hemorrhagic Fever

**Susceptible species**

Crimean-Congo Hemorrhagic Fever Virus (CCHFV) is transmitted from ticks to humans and causes Crimean-Congo Hemorrhagic Fever (CCHF). Infections of animals, with the exception of ostriches, are asymptomatic.

**Distribution area**

CCHFV is endemic in Asian, African, and Southern European countries. Its distribution is closely associated with the *Hyalomma marginatum* tick as vector. Imported human cases of disease are rare.

**Causative agent**

CCHFV belongs to the order *Bunyavirales*, family *Nairoviridae*, genus *Orthonairovirus*. It is an arbovirus transmitted by ticks. Based on the regulation on biological substances it is classified into risk group 4.

**Transmission**

Ticks of the genus *Hyalomma* are the pathogen reservoir and the vector for CCHF. Other transmission routes are contact with blood, other body fluids, and tissue material of viremic animals or humans. Nosocomial human infections particularly occur in countries with poorer hygienic and health systems. Laboratory infections are also possible.

**Clinical picture**

The first symptoms of CCHF infection in humans are non-specific and begin with high fever, dizziness, headache, and aching limbs. In addition, gastrointestinal symptoms and muscle pain are common. Furthermore, in some cases reduced heart rate and low blood pressure may occur. The hemorrhagic phase usually only lasts 2 to 3 days and is mainly characterized by bleeding of various organs (mainly skin, gastrointestinal tract, urogenital tract).

As the disease progresses, various organ manifestations (mainly hepatitis, pneumonia and cardiovascular disorders) or even death due to multiple organ failure are possible. The mortality rate depends on the virus strain and the medical care available and can range from 5 % to over 40 %. The incubation period depends

on the transmission route. After tick bites the incubation period is 1 to 3 days; after blood or tissue contact the infection will only become manifest after 5 to 6 days. Patients who survive the hemorrhagic phase recover slowly. CCHF is particularly common among farm animal owners, veterinarians, slaughterhouse staff, laboratory personnel and medical staff.

**Diagnostics**

Pathogen detection in blood and other clinical material is performed by RT-PCR, virus cultivation or inoculation of newborn mice. Serological detection of specific antibodies is first possible on day 7 to 9 of disease. Test materials are highly contagious. Laboratory diagnostics of human cases should be done at the Bernhard Nocht Institute for Tropical Medicine (Consiliary Laboratory) and in suspected cases in animals at the FLI (National Reference Laboratory for CCHFV Infections of Animals).

**Similar clinical pictures**

Similar clinical pictures may occur in cases of malaria, typhoid fever, other hemorrhagic fevers and septic diseases.

**Control**

Currently, there is no licensed prophylactic vaccination for humans or animals. In individual human cases, post exposure prophylaxis with ribavirin may be considered after confirmed exposure. A favorable effect of ribavirin, in particular if applied shortly after infection, is assumed. Supportive intensive care measures and symptomatic treatment by activation of blood coagulation, stabilization of blood circulation and, if necessary, shock treatment are indicated. Patients must be isolated as soon as acute CCHF is suspected. After confirmation of CCHF infection, treatment should take place in one of the specialized treatment centers for highly contagious diseases (e.g. University Hospital Hamburg-Eppendorf). Suspected and confirmed cases of disease and deaths are notifiable.

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