

DOWNLOAD PDF 26. CRIMEAN-CONGO HAEMORRHAGIC FEVER, R. SWANEPOEL AND J.T. PAWESKA

Chapter 1 : Crimean-Congo hemorrhagic fever - Wikipedia

Crimean-Congo haemorrhagic fever (CCHF) is an acute disease of humans, caused by a tick-borne virus which is widely distributed in eastern Europe, Asia and Africa.

There are no host ribosomes within the virion. Each virion contains three copies of the genome. It has no protrusions. The L segment is 11 kb. The L segment encodes the RNA polymerase, the M segment encodes the envelope glycoproteins Gc and Gn, and the S segment encodes the nucleocapsid protein. Reassortment among genome segments during coinfection of ticks or vertebrates seems likely to have played a role in generating diversity in this virus. Tick species identified as infected with the virus include *Argas reflexus*, *Hyalomma anatolicum*, *Hyalomma detritum*, *Hyalomma marginatum marginatum* and *Rhipicephalus sanguineus*. Birds are generally resistant to CCHF, with the exception of ostriches. Domestic animals like sheep, goats and cattle can develop high titers of virus in their blood, but tend not to fall ill. Animals can transmit the virus to humans, but this would usually be as part of a disease cluster. When clusters of illness occur, it is typically after people treat, butcher or eat infected livestock, particularly ruminants and ostriches. Outbreaks have occurred in abattoirs where workers have been exposed to infected human or animal blood and fomites [citation needed] Humans can infect humans and outbreaks also occur in clinical facilities through infected blood and unclean medical instruments. Prevention of viral hemorrhagic fever Where mammalian tick infection is common, agricultural regulations require de-ticking farm animals before transportation or delivery for slaughter. Personal tick avoidance measures are recommended, such as use of insect repellents, adequate clothing, and body inspection for adherent ticks. Finding volunteers may prove challenging, given growing anti-vaccination sentiment, resistance of populations to vaccination against contagious diseases. The number of people to be vaccinated, and the length of time they would have to be followed to confirm protection would have to be carefully defined. Alternatively, many scientists appear to believe that treatment of CCHF with ribavirin is more practical than prevention, but some recently conducted clinical trials appear to counter assumptions of drug efficacy. Ribavirin is effective in vitro [17] and has been used by mouth during outbreaks,[citation needed] but there is no trial evidence to support its use. Turkey, Iran, Russia and Uzbekistan. He had earlier been admitted to Gartnavel General Hospital in Glasgow, after returning on a flight from Kabul in Afghanistan. The deaths of three other individuals in the northern region were suspected to have been caused by the virus. The Ministry of Health announced on the 19th that the outbreak was under control, but the second patient, a year-old woman from Nansana, died on the 21st. Ten people, including an ambulance crew, were admitted on to hospital in southern Kazakhstan with suspected CCHF. The eight patients, including a nurse and 6 Afghan nationals, died between April and July. In November, a doctor and a labourer in north Gujarat tested positive for the disease. In the following weeks, three more people died from CCHF. A year-old man, who had been bitten by a tick in Spain died on August 25, having infected a nurse. It was hypothesized that the festival could play an important part as people could come into contact with domestic or imported animals potentially infected with CCHF virus. It is thought that changing climate and agricultural practices near this time could be behind its evolution. In, against all principles of scientific nomenclature based on priority of publication, it was adopted as the official name, in possibly the first instance of a virus losing its name to politics and the Cold War.

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Chapter 3 : Viral hemorrhagic fever - Wikipedia

Crimean-Congo hemorrhagic fever virus (CCHFV; family Nairoviridae, genus Orthonairovirus) is a tickborne virus that causes human disease (). Humans can be infected through the bite of an infected tick, squashing of an infected tick, or contact with blood or tissues of infected humans or animals.

Patients with fatal disease, as well as in patients in the first few days of illness, do not usually develop a measurable antibody response and so diagnosis in these individuals is achieved by virus or RNA detection in blood or tissue samples. Tests on patient samples present an extreme biohazard risk and should only be conducted under maximum biological containment conditions. However, if samples have been inactivated e. Treatment General supportive care with treatment of symptoms is the main approach to managing CCHF in people. The antiviral drug ribavirin has been used to treat CCHF infection with apparent benefit. Both oral and intravenous formulations seem to be effective. Furthermore, the tick vectors are numerous and widespread, so tick control with acaricides chemicals intended to kill ticks is only a realistic option for well-managed livestock production facilities. For example, following an outbreak at an ostrich abattoir in South Africa noted above, measures were taken to ensure that ostriches remained tick free for 14 days in a quarantine station before slaughter. This decreased the risk for the animal to be infected during its slaughtering and prevented human infection for those in contact with the livestock. There are no vaccines available for use in animals. Reducing the risk of infection in people Although an inactivated, mouse brain-derived vaccine against CCHF has been developed and used on a small scale in eastern Europe, there is currently no safe and effective vaccine widely available for human use. In the absence of a vaccine, the only way to reduce infection in people is by raising awareness of the risk factors and educating people about the measures they can take to reduce exposure to the virus. Public health advice should focus on several aspects. Reducing the risk of tick-to-human transmission: Reducing the risk of animal-to-human transmission: Reducing the risk of human-to-human transmission in the community: Controlling infection in health-care settings Health-care workers caring for patients with suspected or confirmed CCHF, or handling specimens from them, should implement standard infection control precautions. These include basic hand hygiene, use of personal protective equipment, safe injection practices and safe burial practices. As a precautionary measure, health-care workers caring for patients immediately outside the CCHF outbreak area should also implement standard infection control precautions. Samples taken from people with suspected CCHF should be handled by trained staff working in suitably equipped laboratories. Recommendations for infection control while providing care to patients with suspected or confirmed Crimean-Congo haemorrhagic fever should follow those developed by WHO for Ebola and Marburg haemorrhagic fever. WHO also provides documentation to help disease investigation and control, and has created an aide-memoire on standard precautions in health care, which is intended to reduce the risk of transmission of bloodborne and other pathogens.

Chapter 4 : An Update on Crimean Congo Hemorrhagic Fever

Crimean-Congo haemorrhagic fever (CCHF) is a widespread disease caused by a tick-borne virus (Nairovirus) of the Bunyaviridae www.nxgvision.com CCHF virus causes severe viral haemorrhagic fever outbreaks, with a case fatality rate of %.

The family Flaviviridae include dengue , yellow fever , and two viruses in the tick-borne encephalitis group that cause VHF: Omsk hemorrhagic fever virus and Kyasanur Forest disease virus. In September scientists writing in the journal PLOS Pathogens reported the isolation of a member of the Rhabdoviridae responsible for 2 fatal and 2 non-fatal cases of hemorrhagic fever in the Bas-Congo district of the Democratic Republic of Congo. The non-fatal cases occurred in healthcare workers involved in the treatment of the other two, suggesting the possibility of person-to-person transmission. The pathogen that caused the coccoliztli epidemics in Mexico of and is still unknown, and the epidemic may have been bacterial rather than viral. In most VHFs, it is likely that several mechanisms contribute to symptoms, including liver damage, disseminated intravascular coagulation DIC , and bone marrow dysfunction. In DIC, small blood clots form in blood vessels throughout the body, removing platelets necessary for clotting from the bloodstream and reducing clotting ability. For filoviral hemorrhagic fevers, there are four general mechanisms for pathogenesis. The first mechanism is dissemination of virus due to suppressed responses by macrophages and dendritic cell antigen presenting cells. The second mechanism is prevention of antigen specific immune response. The third mechanism is apoptosis of lymphocytes. The fourth mechanism is when infected macrophages interact with toxic cytokines , leading to diapedesis and coagulation deficiency. From the vascular perspective, the virus will infect macrophages, leading to the reorganization of the VE-cadherin catenin complex a protein important in cell adhesion. This reorganization creates intercellular gaps in endothelial cells. The gaps lead to increased endothelial permeability and allow blood to escape from the vascular circulatory system. The reasons for variation among patients infected with the same virus are unknown but stem from a complex system of virus-host interactions. Dengue fever becomes more virulent during a second infection by means of antibody dependent enhancement. After the first infection, macrophages display antibodies on their cell membranes specific to the dengue virus. Diagnosis[edit] Definitive diagnosis is usually made at a reference laboratory with advanced biocontainment capabilities. The findings of laboratory investigation vary somewhat between the viruses but in general there is a decrease in the total white cell count particularly the lymphocytes , a decrease in the platelet count, an increase in the blood serum liver enzymes , and reduced blood clotting ability measured as an increase in both the prothrombin PT and activated partial thromboplastin times PTT. The hematocrit may be elevated. The serum urea and creatine may be raised but this is dependent on the hydration status of the patient. The bleeding time tends to be prolonged. Prevention of viral hemorrhagic fever With the exception of yellow fever vaccine neither vaccines nor experimental vaccines are readily available. Prophylactic preventive ribavirin may be effective for some bunyavirus and arenavirus infections available only as an investigational new drug IND. VHF isolation guidelines dictate that all VHF patients with the exception of dengue patients should be cared for using strict contact precautions, including hand hygiene, double gloves, gowns, shoe and leg coverings, and faceshield or goggles. Airborne precautions should be utilized including, at a minimum, a fit-tested , HEPA filter-equipped respirator such as an N mask , a battery-powered, air-purifying respirator, or a positive pressure supplied air respirator to be worn by personnel coming within 1,8 meter six feet of a VHF patient. Groups of patients should be cohorted sequestered to a separate building or a ward with an isolated air-handling system. Environmental decontamination is typically accomplished with hypochlorite e.

Chapter 5 : Crimean-Congo haemorrhagic fever

Crimean Congo hemorrhagic fever (CCHF) is one of the deadly hemorrhagic fevers that are endemic in Africa, Asia, Eastern Europe, and the Middle East. It is a tick-borne zoonotic viral disease caused by CCHF virus of genus Nairovirus (family Bunyaviridae).

This article has been cited by other articles in PMC. CCHF not only forms an important public health threat but has a significant effect on the healthcare personnel, especially in resource-poor countries. India was always a potentially endemic area until an outbreak hit parts of Gujarat, taking four lives including the treating medical team. The current review is an attempt to summarize the updated knowledge on the disease particularly in modern era, with special emphasis on nosocomial infections. The knowledge about the disease may help answer certain questions regarding entry of virus in India and future threat to community. India was always under the potential threat of CCHF viral infection until an outbreak hit parts of Gujarat, taking four lives including the treating medical team in recent past. With regard to questions on the importation of virus in the region, acquisition of virus by the index case and the viral status in India are yet to be revealed. The endemic potentiality of the country poses a challenge in controlling the CCHF viral infection not only for India but also for its neighboring countries. The present review is an attempt to summarize the updated knowledge on the disease. The disease has a wide distribution that correlates with the global distribution of *Hyalomma* tick, the vector responsible for viral transmission. The disease is generally asymptomatic in infected animals but highly fatal in humans. The disease in humans begins as non-specific febrile symptoms, which progress to hemorrhagic syndrome. Although tick is a major vector in transmission of the disease, further secondary cases are frequently seen due to human to human transmission via percutaneous or per mucosal exposure to blood and body fluids containing the virus. This uncommon transmission takes place most often among healthcare workers in hospital settings, thus posing a significant nosocomial hazard. The virus was isolated from blood and tissues of patients using intracerebral inoculation of suckling mice. Hence, linking the two names led to new nomenclature of the CCHF virus. A total of 52 countries have been recognized as endemic or potentially endemic regions, reporting substantial number of cases every year. The distribution of *Hyalomma* spp. In the initial years after the virus was first described in , a majority of cases were reported from the former Soviet Union Crimea, Astrakhan, Rostov, Uzbekistan, Kazakhstan, Tajikistan and Bulgaria. A majority of these outbreaks are seen in the community; also, contact with livestock animals infested with ticks is noted. However, in some outbreaks, nosocomial spread was documented where contact with blood and other body fluids from patients have been the main mode of transmission. Between and , nearly 80 cases of CCHF infection have been described among healthcare personnel. Individuals who come in direct contact with the patient, such as clinicians, nurses and other hospital staff, are at a greater risk. This happens more when the knowledge about the disease is lacking. Thus, it becomes essential to train healthcare personnel in endemic and potentially endemic regions to manage such situations in order to minimize the nosocomial spread of the infection. Emphasis on standard and universal precautions should be given, especially in resource-poor countries. Table 1 Open in a separate window India: CCHF viral infection had not been reported in humans from India before, though previous seroprevalence studies have shown viral antibodies both in animals and humans. In the same study, 34 of serum samples collected from sheep, horse, goat, and domestic animals from all over India showed evidence of CCHF virus. Subsequently, in , Kaul et al. This virus has veterinary importance in India and has been demonstrated in mosquitoes, man, and sheep. The infection can also be acquired by percutaneous and permucosal route by contact with animal blood or tissues and drinking unpasteurized milk. The possibility of aerosol transmission is suspected in few cases in Russia, but no definite evidence exists. In addition, possible horizontal transmission from a mother to child has been reported.

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Chapter 6 : Rift Valley fever - Oxford Medicine

Crimean Congo haemorrhagic fever virus (CCHFV) is a bunyavirus with a single-stranded RNA genome consisting of three segments (S, M, L), coding for the nucleocapsid protein, envelope glycoproteins and RNA polymerase, respectively.

Chapter 7 : Crimean-Congo haemorrhagic fever - Oxford Medicine

Crimean-Congo hemorrhagic fever (CCHF) is a highly contagious viral tick-borne disease with case-fatality rates as high as 50%. We describe a collaborative evaluation of the characteristics, performance, and on-site applicability of serologic and molecular assays for diagnosis of CCHF.

Chapter 8 : frequency of M - CORE

Crimean-Congo hemorrhagic fever (CCHF) is a viral disease. Symptoms of CCHF may include fever, muscle pains, headache, vomiting, diarrhea, and bleeding into the skin. [1] Onset of symptoms is less than two weeks following exposure. [1].