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Editorial

Is Crimean Congo Haemorrhagic Fever an Emerging and Re-Emerging Viral Metazoonosis?

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In recent past, several viral zoonotic diseases such as avian influenza, chikungunya fever, contagious ecthyma, Crimean Congo haemorrhagic fever, dengue fever, Ebola disease, Hanta virus disease, Hendra virus infection, Marburg disease, monkey pox, Nipah virus infection, Rift Valley fever, severe acute respiratory syndrome, swine fever, West Nile fever, and Yellow fever have emerged and re-emerged from many countries of the world causing significant morbidity and mortality in humans and a wide variety of animals. Among these, Crimean Congo haemorrhagic fever is an important major life threatening, emerging and re-emerging viral metazoonosis of worldwide distribution. The disease gets its name from Crimea and Congo where it was first reported in 1944 and 1969, respectively. The disease has been reported from many countries of Africa, Asia, Eastern Europe, and Middle East. The first outbreak of Crimean Congo haemorrhagic fever in Gujarat, India was recorded in 2011. The serological evidence of infection has been recorded in goats, sheep and horses from India. The disease is caused by Crimean Congo haemorrhagic fever virus (an enveloped single stranded negative sense RNA virus), which belonged to the genus *Nairovirus* and family *Bunyaviradae*. Congo haemorrhagic virus is transmitted by the bite of ticks mainly of the genus *Hyalomma*. In ticks, there is transovarian and trans-stadial transmission of the virus. The virus can penetrate through abraded skin during the act of crushing ticks with hands. Humans can also acquire the infection by direct contact with diseased animals while killing and skinning. During the acute phase of the disease, the blood of patients is highly infectious and direct transmission may occur through contact. The infection may spread to other regions through the migratory birds parasitized by ticks. The role of ticks belonging to other genus such as *Amblyomma, Boophilus, Dermacenter, Haemaphysalis* and *Rhipicephalus* in the maintenance and transmission of virus to humans and livestock should be further investigated. The incubation period of disease in man is 1 - 9 days. The affected patient exhibits signs of high fever, headache chills, diffuse myalgia, nausea, vomiting, abdominal cramp, diarrhea, weakness, red eyes, red throat, flushed face, epistaxis, haematuria, bleeding from gums and gastric mucosa, bradycardia, mental confusion, vertigo, and death due to shock as a result of blood loss. It affects all age groups, and both sexes with more number of cases in males probably due to frequent chance to exposure. The disease is asymptomatic in animals such as cattle, goat, hare, horse, pig, sheep, and birds but it causes serious threat to humans. It is an occupational health hazards to abattoir workers, livestock handlers, hide preparers, butchers, and tanners. The diagnosis requires laboratory confirmation by using virological (isolation of virus in newborn mice, cell culture), immunological (complement fixation, serum neutralization, indirect immunofluorescent assay, enzyme linked immunosorbent assay) and molecular (reverse transcriptase polymerase chain reaction) techniques. As virus is highly pathogenic, it is imperative to create bio-security level 4 facilities in the laboratory for isolation. The disease should be differentiated from dengue fever, Ebola disease, Kyasanur forest disease, leptospirosis, Lyme disease and malaria. In hospitalized patients, the case fatality may reach from 9 to 50%. There is no specific treatment of disease. However, supportive therapy, which consists of correcting fluid and electrolyte imbalance, preventing blood loss, providing oxygen, and checking bacterial infections, are suggested to save the life of patient. In South Africa, ribavirin, an antiviral drug has been tried to treat human cases with promising results. This drug is also recommended as prophylaxis in persons working with patients in hospital setting. However, further clinical trials of this antiviral drug for prophylactic use on large number of persons regarding its dose, duration and efficacy should be conducted. Currently, no commercial vaccine is available to immunize the humans. Therefore, prevention and control depends on isolation of sick person

to avoid inter-human transmission, proper disposal of blood, and excretions from patients either by heat or chlorinated disinfectant, use of protective wear by health professionals while attending patients, avoid visiting tick infected areas, control of ticks by using acaricides, maintenance of hygienic environment at livestock farms and care during sacrificing or skinning of animals. As it is an acute deadly disease with high fatality, attempts should be made to recognize it at an early stage to institute the ribavirin and other supportive treatment to save the life of patients. It is emphasized to undertake further research on the effect of climate change, transmission dynamic, impact of disease on livestock, and development of cheap, safe and effective chemotherapeutic agent. As Crimean Congo haemorrhagic fever is wide spread in over 30 countries, therefore, attempts should be directed to invent safe, potent and low-priced vaccine, which can be easily afforded by poor resource nations to immunize the people.

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