

EBOLA HEMORRHAGIC FEVER: A REVIEW ON GLOBAL FACTS, CONCEPTS AND PUBLIC HEALTH ISSUES

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ABSTRACT

Ebola hemorrhagic fever, also known as Ebola virus disease is a disease of humans and other mammals caused by Ebolavirus. Fruit bats are believed to be the normal carrier in nature, able to spread the virus without being affected. Humans become infected by contact with the bats or a living or dead animal that has been infected by bats. Once human infection occurs, the disease may spread between people as well. Male survivors may be able to transmit the disease via semen for nearly two months.

KEYWORDS: Ebola hemorrhagic fever, Prevention, Transmission.

INTRODUCTION

Ebola virus disease in humans is caused by four of five viruses in the genus *Ebolavirus*. The four are Bundibugyo virus, Sudan virus, Tai Forest virus and Ebola (formerly Zaire Ebola virus)^[1] Filovirions can be seen and identified in cell culture by electron microscopy due to their unique filamentous shapes, but electron microscopy cannot tell the difference between the various filoviruses despite there being some length differences^[2]. Signs and symptoms typically start between two days and three weeks after contracting the virus. These include sore throat, muscle pain, fever, and headaches. There occurs decreased function of the liver and kidneys followed by vomiting, diarrhea and rash. There are signs of both internal and external bleeding^[3]. Fluid loss leads to low blood pressure^[4]. The virus is acquired by contact with blood or other body fluids of an infected human or other animal. This may also occur by direct contact with a recently contaminated item. Spread through the air has not been documented in the natural environment^[3].

Transmission of the Infection

The spread of Ebola between people occurs only by direct contact with the blood or body fluids of an infected person. Body fluids that may contain ebola viruses include saliva, mucus, vomit, feces, sweat, tears, breast milk, urine, and semen. Entry points include the nose, mouth, eyes, or open wounds, cuts and abrasions. Contact with objects contaminated by the virus, particularly needles and syringes may also transmit the infection. The virus is able to survive on objects for a few hours in a dried state and can survive for a few days within body fluids. Ebola virus may be able to persist in the semen of survivors for up to seven weeks after recovery, which could give rise to infections via sexual intercourse. Handling infected dead bodies is a risk, including embalming. Because dead bodies are still infectious, traditional burial rituals may spread the disease.

Diagnosis

Isolating the virus by cell culture, detecting the viral RNA by polymerase chain reaction (PCR) and detecting proteins by enzyme-linked immunosorbent assay (ELISA) works best early and in those who have died from the disease.^[5] When the diagnosis of EVD is suspected, the travel and work history along with exposure to wildlife are important factors to consider. The diagnosis is confirmed by isolating the virus, detecting its RNA or proteins, or detecting antibodies against the virus in a person's blood. During an outbreak, virus isolation is often not feasible. The most common diagnostic methods are therefore real-time PCR and ELISA detection of proteins, which can be performed in field or mobile hospitals^[6].

Differential Diagnosis

Early symptoms of EVD may be similar to those of other diseases common in Africa including malaria and dengue fever^[7]. The symptoms are also similar to those of Marburg virus disease and other viral hemorrhagic fevers^[8]. The complete differential diagnosis is long and includes many other infectious diseases such as plague, Q fever, candidiasis, histoplasmosis, trypanosomiasis, typhoid fever, shigellosis, rickettsial diseases, cholera, sepsis, borreliosis, EHEC enteritis, leptospirosis, scrub typhus, visceral leishmaniasis, measles, and viral hepatitis among others^[9]. Non-infectious diseases that can be confused with EVD include acute promyelocytic leukemia, hemolytic uremic syndrome, hereditary hemorrhagic telangiectasia, Kawasaki disease, snake envenomation, clotting factor deficiencies/platelet disorders, thrombotic thrombocytopenic purpura, and warfarin poisoning among others^[10-12].

Laboratory Testing

Changes on laboratory tests as a result of Ebola virus disease include a low platelet count in the blood, an initially decreased white blood cell count followed by an increase in the white blood cell count, elevated levels of the liver enzymes alanine aminotransferase (ALT) and aspartate aminotransferase (AST), and abnormalities in clotting often consistent with disseminated intravascular coagulation (DIC) such as a prolonged prothrombin time, partial thromboplastin time, and bleeding time^[13].

Therapy

There exists no specific treatment for the disease. Supportive therapy includes oral rehydration therapy or intravenous fluids. This supportive care improves outcomes. The disease has a high risk of death with mortality rate averaging to 50%.

Prevention and Control

Outbreak control requires a coordinated series of medical services, along with a certain level of community engagement. The necessary medical services include rapid detection and contact tracing, quick access to appropriate laboratory services, proper management of those who are infected, and proper disposal of the dead through cremation or burial. Prevention includes decreasing the spread of disease from infected animals to humans. This may be done by only handling potentially infected bush meat while wearing proper protective clothing and by thoroughly cooking it before consumption. It also includes wearing proper protective clothing and washing hands when around a person with the disease. Samples of body fluids and tissues from people with the disease should be handled with special caution^[3].

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