

Letter-to-Editor II

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EBOLA VIRUS DISEASE

ABSTRACT

- Ebola virus disease (EVD), also known as Ebola hemorrhagic fever, is a severe, often fatal illness of human beings having a case fatality rate of up to 90%.
- Ebola virus disease outbreaks occur primarily in remote Central and West Africa, near the tropical rainforests.
- The virus is transmitted to humans from wild animals and spreads in the human beings through physical contact.
- It does not transmit through vectors or air-borne droplets.
- Severely ill patients require intensive supportive care. No specific treatment or vaccine is available for use.

INTRODUCTION

Ebola first appeared in Nzara, Sudan, and in Yambuku, Democratic Republic of Congo in 1976 in two simultaneous outbreaks. The latter was in a village situated near the Ebola River, from where the disease takes its name.¹

Genus Ebolavirus is a member of the Filoviridae family (filovirus) and comprises of five distinct species:

1. Bundibugyo ebolavirus (BDBV)
2. Zaire ebolavirus (EBOV)
3. Reston ebolavirus (RESTV)
4. Sudan ebolavirus (SUDV)
5. Taï forest ebolavirus (TAFV).

BDBV, EBOV, and SUDV have been associated with large EVD outbreaks in Africa, whereas RESTV and TAFV have not. The RESTV species are usually found in Philippines and China and can infect humans, but no illness or death in humans has been reported to date from this species.

Transmission

Ebola is introduced into the human population through close personal contact with the blood, body secretions or organs of infected animals. It then spreads in the community through person-to-person transmission with infection resulting from direct contact (through broken skin or mucous membranes) with the blood, secretions, organs or other bodily fluids of the infected people, and indirect contact with environment contaminated with such fluids. Even burial ceremonies in which mourners have direct contact with the body of the deceased person can play a role in the transmission of Ebola. Men who have recovered from the disease can still transmit the virus through their bodily fluids, especially semen for up to 7 weeks after recovery from illness.¹

However, it does not get transmitted by the air-borne route from droplets or other means. There are also no known vectors that can transmit it from one individual to another.

Healthcare workers can get infected while treating patients with suspected or confirmed EVD. This can occur through close contact with patients, when infection control precautions are not strictly practiced.

Signs and Symptoms

Ebola virus disease is a severe acute viral illness, usually characterized by the sudden onset of fever, intense weakness, muscle pain, headache and sore throat. This is followed by vomiting, diarrhea, rash, impaired kidney and liver function, and in some cases, both internal and external bleeding. Laboratory findings mostly include low white blood corpuscle (WBC) and platelet counts and elevated liver enzymes.

People are infectious as long as their blood and secretions contain the virus. Ebola virus has been isolated from the semen 61 days after onset of illness in a patient.

The incubation period ranges between 2 and 21 days.²

Diagnosis

Other diseases that can present with similar features should be ruled out before a diagnosis of EVD can be made. They include: malaria, dengue, enteric fever, shigellosis, cholera, leptospirosis, plague, rickettsiosis, Lassa fever, relapsing fever, meningitis, hepatitis and other viral hemorrhagic fevers.

Ebola virus infections can be diagnosed definitively in a laboratory through several types of tests:³

- Antibody-capture enzyme-linked immunosorbent assay (ELISA)
- Antigen detection tests
- Serum neutralization test
- Reverse transcriptase polymerase chain reaction (RT-PCR) assay
- Electron microscopy
- Virus isolation by cell culture.

Samples from patients are biohazardous and therefore testing should be conducted under maximum biological containment conditions.

Vaccine and Treatment

No licensed vaccine for EVD is available. Several vaccines are under trial, but none are available for clinical use.

Severely ill patients require intensive supportive care. Patients are frequently dehydrated and require oral rehydration with electrolyte solutions, if possible, or intravenous fluids. Vigorous treatment of shock should be undertaken, keeping in mind the likely possibility of vascular leak in the pulmonary and systemic circulation.⁵ The myocardial function can also be compromised.

No specific treatment is available. New drug therapies are being under evaluation in clinical trials.

Natural Host of Ebola Virus

In Africa, fruit bats, particularly species of the genera *Hypsignathus monstrosus*, *Epomops franqueti* and *Myonycteris torquata*, are considered possible natural hosts for Ebola virus. As a result, the geographic distribution of Ebola viruses may overlap with the range of the fruit bats.

Ebola Virus in Animals

Although non-human primates have been a source of infection for humans, they are not thought to be the reservoir but rather an accidental host like human beings.

Awareness

Educational public health messages are essential for risk reduction. They should focus on the following:

- Reducing the risk of animal-to-human transmission from contact with infected fruit bats or monkeys/apes and the consumption of their raw meat. Animals should be handled with gloves and other appropriate protective clothing. Animal products (blood and meat) should be thoroughly cooked before consumption.
- Reducing the risk of human-to-human transmission in the community arising from direct or close contact with infected patients, specially their bodily fluids. Close physical contact with Ebola patients should be avoided. Gloves and other appropriate personal protective equipment should be worn when taking care of ill patients at home. Regular hand washing is required after visiting patients in the hospital or at home.⁴
- Communities affected by Ebola should inform the population about the nature of the disease and about outbreak containment measures, including burial of the dead. People who have died from Ebola should be promptly and safely buried.

REFERENCES

1. Ebola virus disease. Fact sheet N 103, Updated April 2014, World Health Organisation.
2. Ebola Virus Infection. Web MD.
3. Ebola Hemorrhagic Fever. Diagnosis. Centers for Disease Control and Prevention.
4. Ebola Virus Disease. Wikipedia.
5. Ebola and Marburg Viruses. Harrison's Principles of Internal Medicine. Volume 1. 18th Edition. McGraw Hill Publications. Chapter 197 p. 1636.