



OUTBREAK OF EBOLA VIRUS DISEASE: A HEMORRHAGIC FEVER (HF)

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Article Received on 15/02/2015

Article Revised on 12/03/2015

Article Accepted on 04/04/2015

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ABSTRACT

Ebola hemorrhagic fever (Ebola HF) is a severe often-fatal disease in humans and nonhuman primates (monkeys and chimpanzees) that has appeared sporadically since its initial recognition in 1976. The disease is caused by infection with Ebola virus. An outbreak of Ebola virus disease (EVD) in West Africa with onset in early February 2014 is

evolving in Guinea and Liberia. This is the first such outbreak in this area. The first cases were reported by the Ministry of Health in Guinea 151 clinically compatible cases of EVD 54 of which were laboratory-confirmed by PCR. Ninety-five of these patients died. Clinically these are diagnosing by PCR, ELISA and Virus isolation. CDC in conjunction with the World Health Organization has developed a set of guidelines to help prevent and control the spread of Ebola HF.

KEYWORDS: Ebola HF, PCR and ELISA.

INTRODUCTION

Ebola hemorrhagic fever (Ebola HF) is one of numerous Viral Hemorrhagic Fevers. It is a severe often fatal disease in humans and nonhuman primates (such as monkeys, gorillas and chimpanzees). Ebola HF is caused by infection with a virus of the family Filoviridae, genus Ebolavirus. When infection occurs symptoms usually begin abruptly. The first Ebolavirus species was discovered in 1976 in which is now the Democratic Republic of the Congo near the Ebola River. Since then outbreaks have appeared sporadically. There are five identified subspecies of Ebolavirus. Four of the five have caused disease in humans.

1. Ebola virus (Zaire ebolavirus)
2. Sudan virus (Sudan ebolavirus)

3. Taï Forest virus (Taï Forest ebolavirus, formerly Côte d'Ivoire ebolavirus)
4. Bundibugyo virus (Bundibugyo ebolavirus).

The fifth Reston virus (Reston ebolavirus) has caused disease in nonhuman primates but not in humans. The natural reservoir host of ebolaviruses remains unknown. However on the basis of available evidence and the nature of similar viruses researchers believe that the virus is zoonotic (animal-borne) with bats being the most likely reservoir. Four of the five subtypes occur in an animal host native to Africa. A host of similar species is probably associated with Reston virus which was isolated from infected cynomolgous monkeys imported to the United States and Italy from the Philippines. Several workers in the Philippines and in US holding facility outbreaks became infected with the virus but did not become ill.

TRANSMISSION

Because the natural reservoir of ebolaviruses has not yet been proven the manner in which the virus first appears in a human at the start of an outbreak is unknown. However researchers have hypothesized that the first patient becomes infected through contact with an infected animal. When an infection does occur in humans there are several ways in which the virus can be transmitted to others. These include.

- ✓ Direct contact with the blood or secretions of an infected person.
- ✓ Exposure to objects (such as needles) that have been contaminated with infected secretions.

The viruses that cause Ebola HF are often spread through families and friends because they come in close contact with infectious secretions when caring for ill persons. During outbreaks of Ebola HF the disease can spread quickly within health care settings (such as a clinic or hospital). Exposure to Ebola viruses can occur in health care settings where hospital staffs are not wearing appropriate protective equipment such as masks, gowns and gloves.

Proper cleaning and disposal of instruments such as needles and syringes is also important. If instruments are not disposable they must be sterilized before being used again. Without adequate sterilization of the instruments virus transmission can continue and amplify an outbreak.

Signs and Symptoms of Ebola HF typically include:

Some patients may experience: Table no.1

Fever	Headache
Joint and muscle aches	Weakness
Diarrhoea	Vomiting
Stomach pain	Lack of appetite
A Rash	Red Eyes
Hiccups	Cough
Difficulty breathing	Difficulty swallowing
Bleeding inside and outside of the body	Chest pain

Symptoms may appear anywhere from 2 to 21 days after exposure to ebolavirus though 8-10 days is most common. Some who become sick with Ebola HF are able to recover, while others do not. The reasons behind this are not yet fully understood. However it is known that patients who die usually have not developed a significant immune response to the virus at the time of death.

Risk of Exposure in Africa confirmed cases of Ebola HF have been reported in.



Figure no. 1

- Democratic Republic of the Congo (DRC)
- Gabon
- South Sudan
- Ivory Coast
- Uganda
- Republic of the Congo (ROC)
- South Africa (imported)

The natural reservoir host of ebolaviruses and the manner in which transmission of the virus to humans occurs remain unknown. This makes risk assessment in endemic areas difficult. Currently all cases of illness or death have occurred in Africa no case has been reported in the United States. During outbreaks of Ebola HF those at highest risk include health care workers and the family and friends of an infected individual. Health care workers in Africa should consult the Infection Control for Viral Hemorrhagic Fevers in the African Health Care Setting to learn how to prevent and control infections in these setting. Medical professionals in the United States should consult the Interim Guidance for Managing Patients with Suspected Viral Hemorrhagic Fever in U.S. Hospitals. Diagnosing Ebola HF in an individual who has been infected for only a few days is difficult because the early symptoms such as red eyes and a skin rash are nonspecific to ebolavirus infection and are seen often in patients with more commonly occurring diseases. However if a person has the early symptoms of Ebola HF and there is reason to believe that Ebola HF should be considered the patient should be isolated and public health professionals notified. Samples from the patient can then be collected and tested to confirm infection. Laboratory tests used in diagnosis include

Table no. 2

Timeline of Infection	Diagnostic Tests Available
Within a few days after symptoms begin	-Antigen-capture-enzyme-linked immunosorbent Assay (ELISA) Testing - IgM ELISA - Polymerase Chain Reaction (PCR) - Virus Isolation
Later in disease course or after recovery	- IgM and IgG antibodies
Retrospectively in deceased patients	- Immunohistochemistry Testing - PCR -Virus Isolation

Treatment Standard treatment for Ebola HF is still limited to supportive therapy. This consists of,

- Balancing the patient's fluids and electrolytes
 - Maintaining their oxygen status and blood pressure
 - Treating them for any complicating infections
- Timely treatment of Ebola HF is important but challenging since the disease is difficult to diagnose clinically in the early stages of infection. Because early symptoms such as headache and fever are nonspecific to ebolaviruses cases of Ebola HF may be initially misdiagnosed.



Figure No. 2: Effect of Ebola Virus

However if a person has the early symptoms of Ebola HF and there is reason to believe that Ebola HF should be considered the patient should be isolated and public health professionals notified. Supportive therapy can continue with proper protective clothing until samples from the patient are tested to confirm infection. Experimental treatment has been tested and proven effective in animal models but has not yet been used in humans. Prevention The prevention of Ebola HF presents many challenges. Because it is still unknown how exactly people are infected with Ebola HF there are few established primary prevention measures. When cases of the disease do appear there is increased risk of transmission within health care settings. Therefore health care workers must be able to recognize a case of Ebola HF and be ready to employ practical viral hemorrhagic fever isolation precautions or barrier nursing techniques.

They should also have the capability to request diagnostic tests or prepare samples for shipping and testing elsewhere. Barrier nursing techniques include.

- Wearing of protective clothing (such as masks, gloves, gowns and goggles)
- The use of infection-control measures (such as complete equipment sterilization and routine use of disinfectant)
- Isolation of Ebola HF patients from contact with unprotected persons the aim of all of these techniques is to avoid contact with the blood or secretions of an infected patient. If a patient with Ebola HF dies it is equally important that direct contact with the body of the deceased patient be prevented. CDC in conjunction with the World Health Organization has developed a set of guidelines to help prevent and control the spread of Ebola HF. Entitled Infection Control for Viral Hemorrhagic Fevers In the African Health Care Setting the manual describes how to.

- Recognize cases of viral hemorrhagic fever (such as Ebola HF)
- Prevent further transmission in health care setting by using locally available materials and minimal financial resources.

Key facts

- ✓ Ebola virus disease (EVD) formerly known as Ebola haemorrhagic fever is a severe, often fatal illness in humans.
- ✓ EVD outbreaks have a case fatality rate of up to 90%.
- ✓ EVD outbreaks occur primarily in remote villages in Central and West Africa near tropical rainforests.
- ✓ The virus is transmitted to people from wild animals and spreads in the human population through human-to-human transmission.
- ✓ Fruit bats of the Pteropodidae family are considered to be the natural host of the Ebola virus.
- ✓ Severely ill patients require intensive supportive care. No licensed specific treatment or vaccine is available for use in people or animals.

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