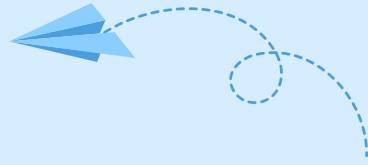




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Ebola Virus

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| EBOLA VIRUS

Ebola is a viral disease that was discovered in 1976 through outbreaks in the Democratic Republic of Congo (formally Zaire) and Sudan. The Ebola disease is commonly known as Ebola hemorrhagic fever or the Ebola fever. This rare disease is fatal. It affects humans and nonhuman primates such as gorillas and monkeys when they are exposed to the virus. The Ebola virus is said to be transmitted from the wild animals and spreads to people through human-to-human contact. The Ebola virus is found in Africa and West Pacific Region (Philippines), but the one from Philippines does not appear to cause any infection to people. The Ebola virus requires immediate medical attention when symptoms appear (Marshall Cavendish Corporation, 2007, p. 302). The paper focuses on the Ebola disease, its causes, affects on the immune system, symptoms, diagnosis, treatment and its prevention.

| Pathophysiology

Ebola viruses are related to the family of organisms which are called *Filoviridae*, which can be recognized through an extended filamentous structure. Five subtypes of the virus have been identified. These are Ebola-Zaire, Ebola-Ivory Coast, Ebola-Sudan, Ebola-Bundibugyo, and Ebola-Reston. The first four viruses are predominantly found in Central Africa and known to cause fatal hemorrhagic fever. The Reston virus belongs to the Western Pacific Region. It is especially spread in Philippines. Even though it is vastly pathogenic among nonhuman species, there is no evidence that it causes any harm to humans. One of the transmission methods involves humans getting in contact with



infected animals like monkeys or animal materials. Humans can infect one another when a close contact with body fluids occur or by touching/getting exposed to infected needles in the hospital (Lamunu, et.al, 2004, p. 28).

The Ebola virus destroys the endothelial cells which are responsible for the stiffening of the lining of the blood vessels, and also impedes the clotting of the blood of the infected person. When the vessel walls continue disintegrating, the platelets are unable to clot causing the patient to suffer hypovolemic shock or drastic low blood pressure. The Ebola virus is known to have more than 90% mortality rate among the people who get infected. In addition, modern discoveries pinpoint that there are three species of fruit bats found in Central Africa that are responsible for carrying the Ebola-Zaire virus. These bats do not die from the virus because they are just carriers and have been found in areas where the outbreak occurred. These bats eat fruits which fall or remain in the tree and the monkeys or gorillas consume them. The animals catch the virus and transmit it to other animals or humans, and it results in an outbreak. Many families in Africa are known to get into contact with a dead body which can transmit the virus. Also fruits from the forests are a delicacy for many. These fruits can contain the virus and family members get exposed to the disease without knowing about it (Marshall Cavendish Corporation, 2007, p. 302).



| Clinical Manifestation

The Ebola virus is recognized because of severe hemorrhagic fever that occurs and results in high mortality rate. In essence, the initial signs of the virus are analogous to those of other illnesses such as malaria. Therefore, it could easily be misdiagnosed. The diagnosis remains unclear until nosocomial transmission leads to an outbreak in the region. The Ebola virus retains a gestation period of two to twenty one days after contact. The initial symptoms include flu-like signs that result in fever, headaches, sore throat, lethargy, and myalgia. After these symptoms, gastrointestinal symptoms occur which include abdominal pain, diarrhea, nausea and vomiting. The final stages of the virus are characterized by maculopapular rash, nosebleed and mouth bleeding, eye hemorrhage, intestinal bleeding shown by blood in the stool, and also internal bleeding. The disease proceeds to dispersed intravascular clotting, hypovolemic shock, damage to kidney and liver which can lead to death. In essence, since the Ebola virus damages the liver and blood vessel endothelium cells, laboratory results connected to these systems are related to Ebola diagnosis. The tests of liver enzyme indicate increased Aspartate Aminotransferase (AST) and Alanine Aminotransferase (ALT), while urine tests show signs of proteinuria. It becomes apparent that blood tests specify the presence of leukopenia, hyperproteinemia, and also thrombocytopenia (Benson, n.d.).

Diagnostic tests include laboratory tests, which are conducted to pinpoint the presence of Ebola virus. At the initial stage of the disease, antigen-capture enzyme-linked immunosorbent assay (ELISA) has the potential to identify the existence of antigens. The other step is to detect antibodies through IgM ELISA testing. A reverse transcription polymerase chain reaction (RT-PCR) assay ensures the identification of viral



Ribonucleic Acid (RNA). Additionally, because of the fast development of this fatal disease, post-mortem diagnosis is always recommended. The tissue from the victim is passed through immunohistochemistry tests, Polymerase Chain Reaction (PCR), and also virus isolation. The samples from patients or victims of the disease pose extreme biohazard risk. It means that testing should be conducted using maximum biological controlled environment (Lamunu, et.al, 2004, p. 31).

| Medical Management

The Ebola disease does not have any treatment, but there are methods and techniques of managing it. Treatment options include alleviating the symptoms of the disease and pain of the patient. It includes blood transfusion to preserve the volume and electrolyte balance because of the hemorrhage that occurs in these cases. There is no cure found for this disease and it makes the virus highly pathogenic. It means quarantine is the first step when the contamination is suspected. It is paramount for the clinical staff to be informed of the possible symptoms and indicators of the disease so that affected patients can be isolated immediately. There is also the need for barrier nursing. Nurses and medical staff who have to attend to the patients need to wear disposable gowns, masks, gloves, and also goggles. In addition, the laboratory staff dealing with diagnostic testing for the disease needs to observe caution especially while dealing with the samples. In reality, sterilization of all equipment, clothing, linen and tools used with the infected patients should be prioritized. Where sterilization cannot be done, the involved materials have to be burned. The infected corpses should not come into direct contact with people. It means relatives, as well as family members, need to be advised of the

appropriate ways to handle or bury the deceased (Marshall Cavendish Corporation, 2007, p. 303).

There are no vaccines that have been found to prevent the spread of Ebola among people since the natural reservoir for the virus has not been identified. It is clear that there is no person with immunity for the disease. Avoiding contact with infected humans or animals or even their carcass appears to be the only way to prevent Ebola. Currently, a vaccine against Ebola viruses is in the process of preparation to ensure that it can be controlled in case it reappears. There are other species besides primates that carry the virus such as antelopes and fruit bats and it would be effective to avoid direct contact with them (Benson, n.d.).

| Conclusion

Ebola is a viral disease that is predominant in Africa. It has severe symptoms that lead to death. The virus is transferred from animals like monkeys to humans. It continues to spread among people through human-to-human contact. Humans infect one another through transmission of body fluids or by coming into contact with infected equipment like syringes. The symptoms of Ebola begin with fever headaches and evolve into severe hemorrhage. Today, treatment of Ebola has not been found and no medicines are available for curing the disease. Treatment options include alleviating the symptoms through blood transfusion, taking antibiotics to curb bacterial infection and avoiding contact with infected people.

