Editorial

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African threats

Refat Sadeq
Department of Medical Microbiology and Immunology, Port-said Faculty of Medicine, Egypt

Correspondence: Refat Sadeq, Department of Medical Microbiology and Immunology, Port-said Faculty of Medicine, Port Said University, Egypt, Email egyrefat@gmail.com

Abbreviations: EBOV, Ebolaviruses; EVD, Ebola Virus Disease; GP, Glycoprotein; FDA, Food and Drug Administration; VSV, Vesicular Stomatitis; HPIV-3, Human Para Influenza Vectors

Editorial

The current Ebola virus outbreak is a significant test for those concerned with global health care. The rapid spread of the disease in Western and Central Africa countries has highlighted the appalling global health inequalities. Many months in the course of the current outbreak it has become clear that poverty, ignorance and lack of resources are the main causes in such rapid spread. It appeared these 3 factors collected together in these areas to promote spread of this wild virus. In the absence of proven antiviral drugs and vaccines for the disease; symptomatic treatment is the mainstay.

Ebola virus is one of five known viruses within the genus ebolavirus. Four of the five known ebolaviruses, including EBOV, cause a severe and often fatal hemorrhagic fever in humans and other mammals, known as Ebola virus disease (EVD). Ebola represents a complex situation, because it affects more than one African country and is characterized by continuous population migration of citizens of those countries. By the beginning of Dec. 2014, 20000 individuals in Africa had been infected by Ebola which resulted in 6,000 deaths, a mortality rate higher than both the swine and avian flu epidemics. Because of its high mortality rate, Ebola virus was list as a select agent by the US Federal government, and was list as risk group 4 pathogen by the World health organization. Risk group 4 pathogen (requiring bio safety level 4-equivalent containment).[1]

Ebola virus carries a negative- sense RNA genome in virions that are cylindrical/ tubular, and contain viral envelope, matrix and nucleocapsid components. The virus begins its attack by attaching to host receptors through glycoprotein (GP) surface peplomer and is endo cytosed into macropinosomes in the host cell.[2] Ebola virus is a zoonotic pathogen. Intermediary hosts have been reported to be "various species of fruit bats throughout central and sub Saharan Africa".[2] End hosts are humans and great apes.[3] The virus can take up to three weeks for the overt disease symptoms to show up. An infected person incubating the virus, without showing any symptoms could very well be on his way to any country at any moment of time. The symptoms resembled malaria, and subsequent patients received quinine. The illness is characterized with a high temperature of about "39oC", hematemesis, diarrhea with blood, retrosternal and abdominal pain, prostration with heavy articulations, and rapid evolution death after a mean of three days. There are no programmed method to evaluate early detection and treatment of patients. Also no approved safe method to dispose dead victims.

Based on the current knowledge, transmission occurs only when patients are symptomatic, and has been attributed to reuse of unsterilized needles and close personal contact, body fluids and places where the person has touched. So, in theory, it can be easily contained via strict isolation of infected patients in Healthcare Facilities especially designed for that. Even one mishandled Ebola case can potentially initiate a huge outbreak, which doesn't only come with a high fatality rate 70%, but also with severe economic consequences. But in true means, steps to prevent Ebola are so difficult because the disease thrives off poverty, lack of understanding and malfunctioning healthcare systems. These are exactly the reasons why the ongoing outbreak is spiraling out of control in the affected West African countries. For example Ministry of health in Egypt satisfied only by sending letters to all hospitals in Egypt to inform doctors about Ebola and appropriate treatment in the cases that are detected.

The World Health Organization has assessed that Egypt is safe from Ebola virus, which is rampant in West and Central Africa (guinea, sierra leonne, Nigeria and Liberia). Official spokesperson for the World Health Organization in Egypt said that the Ebola virus does not represent a threat to Egypt and Arab countries and differs completely from the Coranavirus, which has spread across Saudi Arabia and affected large numbers in neighboring countries. In our opinion Ebola virus is easy to spread across African countries. Most of African countries complain of these triad, poverty, ignorance and lack of resources.

The lack of clinically approved treatment and vaccines has further hindered the efforts to contain the disease. Many Ebola vaccine candidates had been developed in the decade prior to 2014,[4] but as of October2014, none had yet been approved by the USA food and drug administration (FDA) for clinical use in humans.[5] Several promising vaccine candidates that integrate viral subunits have been shown to protect nonhuman primates (usually macaques) against lethal infection.[6] These include replication-deficient adenovirus vectors, replication-competent vesicular Stomatitis (VSV) and human parainfluenza (HPIV-3) vectors, and virus- like particle preparations. In response to the urgent need for Ebola vaccine the FDA has granted immunity to vaccine makers' trials on human volunteers. The use of placebo in half the volunteers may be considered unethical in the face of the high mortality rate of the disease. It is expected that supplies of

the vaccine will be available by mid 2015. If this materializes it will help forming a shield around the severely affected areas to prevent further spread of the disease.

Ebola is not going to be the last global health crisis. There are a lot of lessons to be learnt from the current crisis. It has become abundantly clear in the current crisis that the sluggish response has led to the catastrophic number of fatalities in the initial stage of the outbreak. Perhaps the time has come for the WHO and UN to form a rapid response strategy to deal promptly with such crisis in the future. The emphasis of these strategies should be on educating and informing the affected population which would help early detection and isolation of infected cases and halt the spread of the disease. Not only Ebola but also other African crises.

Acknowledgments

Conflicts of interest

None.

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