EDITORIAL

Ebola- New Vampire of Modern Era

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Gone are the days when we used to watch horror movies of Vampire Count Dracula who used to suck and bleed individuals to death. We now have a disease which is bleeding the mankind and is much more terrifying, frightening and horrifying than any of the horror movies. During last few months this disease has literally made hostage to whole of the medical community across the world. It is proving to be one of the most fatal diseases in the history of mankind. It is a tragedy, the rate at which Ebola Virus is spreading in West Africa. The exponential rate at which this disease has been spreading in the last couple of months has jolted even the superpowers of the world. God has been very kind that we in Pakistan are not exposed to this deadly disease but we need to know and beef up our preventive and preparedness level, should we encounter any such case in future.

Ebola belongs to family filoviridae and is rare and deadly infectious disease caused by infection with one of the four Ebola virus strains (Zaire, Sudan, Reston & Cote d'Ivoire)[1]. Medical science has first encountered the filo viruses when Marburg virus appeared in 1967. During that time some laboratory workers were hospitalized with unusual and severe form of disease. The detailed investigations of the cases revealed that those laboratory workers were handling African green monkeys imported from Africa as part of research and vaccine production. The strange morphology of virus, high mortality rate and failure to identify natural history of virus created lot of fear and panic among the scientists. Fortunately, disease was controlled and effective quarantine measures were adopted in many countries to ward off the recurrence of disease introduced by African monkeys[2].

The international community was once again stunned and surprised by the discovery of another virus called Ebola from the family filoviridae during the late 1970's. It was in 1976, when Ebola (named after the Ebola River in Zaire) first emerged in Sudan and Zaire (Now Democratic republic of Congo). The first outbreak of Ebola (Ebola-Sudan) infected over 284 people, with a mortality rate of 53%. A few months later, second Ebola virus emerged from Yambuku, Zaire, Ebola-Zaire (EBOZ) which had the highest mortality rate of any of the Ebola viruses (88%), infected 318 people. Majority of the affected people had severe hemorrhagic manifestations.[3], [4]. Most of the medical facilities in the affected areas had to be closed due to high rate of death among health care workers. This in fact was blessing in disguise, as closure of hospitals and clinics eliminated the possibility of disease transmission through use of unsterililised syringes and lack of barrier nursing. Most of the affectees of Ebola were segregated by traditional method of Quarantine which proved to be effective source of containing the disease.

Despite tremendous efforts of experienced and dedicated researchers, Ebola's natural reservoir was never identified. The third strain of Ebola, Ebola Reston (EBOR), was first identified in 1989 when infected monkeys were imported into Reston, Virginia, from Mindanao in the Philippines[5]. Fortunately, few people who were infected with EBOR never developed Ebola hemorrhagic fever (EHF). The last known strain of Ebola, Ebola Cote d'Ivoire (EBO-CI) was discovered in 1994 when a female ethologist performing a necropsy on a dead chimpanzee from the Tai Forest, Cote d'Ivoire, accidentally infected herself during the necropsy[6].

As of October 29 , 2014, a total of 13567 confirmed and probable cases of Ebola virus disease (EVD), which include 7728 laboratory confirmed cases with 4960 deaths from the virus, had been reported from five countries in West Africa - Guinea, Liberia, Nigeria, Senegal, and Sierra Leone (Figure 1). As far as reported morbidity and mortality is concerned, current epidemic of EVD is much larger than all previous epidemics combined[7].

Figure 1

Map showing affected countries of West Africa (Adapted from and available at CDC website)

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This epidemic began in Guinea during December 2013, and the World Health Organization (WHO) was officially notified of the rapidly evolving EVD outbreak on March 23, 2014. On August 8, WHO declared this epidemic to be a "public health emergency of international concern.[8] Now after almost 11 months after the first case appeared the numbers of reported cases and deaths were still rising from week to week even with best of multinational efforts to control the spread of infection. This epidemic has now grown to such large proportions that the three most-affected countries - Guinea, Liberia, and Sierra Leone face mammoth challenges in executing control measures at the scale required to stop transmission and to provide clinical care for all persons with EVD [9].

Natural reservoir of Ebola virus has not yet been confirmed, however bats are thought to be the most likely candidate species. Bats were known to perch in the cotton factory where initial cases of the 1976 and 1979 out breaks of Ebola were observed. Out of 24 plant and 19 vertebrate species experimentally inoculated with Ebola virus, only bats became infected. The bats showed no clinical signs of disease, which is considered evidence that these bats are reservoir species of Ebola virus. It was found in Bangladesh that antibodies against Zaire and Reston viruses were present in fruit bats thus suggesting that these bats are also likely hosts of the virus and that the filoviruses are also present in Asia[10]. Bats can infect the other wild animals like monkeys and surprisingly bats are also source of food in many African countries. So, initial human infection occurs through contact with infected bat or other wild animals. Human to human transmission is a predominant feature of epidemic. The transmission of Ebola virus is primarily through close and direct contact with infected body fluids of infected person. The most infectious body fluids are blood, stool and vomit of infected persons. The virus has also been found in urine, breast milk and semen for up to 70 days but these fluids are considered to be less infectious. In addition, saliva, tears and sweat may also carry the risk of transmission. It is extremely unlikely for the virus to be transmitted through air because the only way virus gets into the air is in large droplets of vomit or saliva. These droplets are heavy and thus cannot travel very far. People may be able to catch virus if infected person directly coughs or sneezes directly onto them, but it has been observed that Ebola infected person generally do not cough or sneeze[11]. Health care workers can get the virus through objects contaminated with virus like needles or medical equipment. Ebola virus can only spread to others after symptoms appear in affected individual. Symptoms can appear from 2-21 days after exposure and these include fever, headache, fatigue, vomiting, diarrhea, aches and muscular pains, unexplained bleeding or bruising from any site. In the severe form of disease (Ebola hemorrhagic fever), bleeding can occur from any site of the body. The case fatality rate in the latest epidemic has been found to be 70.8% and New England Journal of medicine in latest issue of October 2014 concluded "Without drastic improvements in control measures, the numbers of cases of and deaths from EVD are expected to continue increasing from hundreds to thousands per week in the coming months9. World has become a global village. Increased travel around the world and the fact that Pakistan has UN peace keeping troops in West African countries especially Liberia poses a potential risk of contacts of Ebola patients to come in the country. It is mandatory that strict infection control practices are followed to limit the transmission of virus. Key elements pertaining to handling such patients as outlined by Centre of Disease Control (CDC) prevention are as follows [12].

a. Patient should be placed in a single patient room containing private bathroom with the door closed.
b. The facilities should maintain log of all the persons entering the patient's room.
c. Full personal protective equipment should be worn which includes surgical cap, goggles, rubber boots, medical mask, double gloves, apron / overalls made up of impervious material and even respirator if available.
d. All patient care medical equipment should be preferably disposable. All non dedicated and non disposable medical equipment should be cleaned and disinfected according to manufacturer's instructions or hospital policies. Hypochlorite solution or liquid bleach is considered very effective disinfectant.
e. Phlebotomy procedures and laboratory tests should be limited to minimum necessary for essential diagnostic evaluation and patient care.
f. Use of needles and sharps should be minimal and should be disposed off in puncture proof, sealed containers.
g. Meticulous hand hygiene practices should be followed before and after contact with patient, contact with infectious material and before and after use of PPE.
h. Health care workers with percutaneous or mucocutaneous exposures to blood, body fluids, secretions, or excretions from a patient with suspected EVD should stop working and immediately wash the affected skin surfaces with soap and water.

We as Muslims believe in Allah's will and control, yet we have to remain vigilant and well prepared for any eventuality. The only way we can fight Ebola is to have sufficient knowledge about the disease and determination

to implement the strict infection control practices in our hospitals.

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