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Review Article

The Epidemiology Study on Ebola Virus and its Complete Treatment; A Narrative Review

Gulafsha Fatima[1]*, Nazima Fatima[1], Noor US Sabah[1], Mohammad Gayoor Khan[2], Umama Yezdani[1], Karthikeyan Lakshmanan[3], Hari Baskar[4], Mukilan D[5] and Shareefa Habeeba[1]

[1]Department of Pharmacy Practice, MRM College of Pharmacy, Hyderabad, Telangana, India

[2]Department of Pharmacy, Truba Institute of Pharmacy, Bhopal, Madhya Pradesh, India

[3]Department of Pharmaceutical Chemistry, College of Pharmacy, Madras Medical College, Chennai, Tamil Nadu, India

[4]Department of Pharmacy, KMCH College of Pharmacy, Coimbatore, Tamil Nadu, India

[5]Department of Pharmacy Practice, Vels Institute of Science Technology and Advanced Studies, Chennai, Tamil Nadu, India

***Corresponding Author:** Gulafsha Fatima, Department of Pharmacy Practice, MRM College of Pharmacy, Hyderabad, Telangana, India.

Received: April 29, 2020; **Published:** May 07, 2020

Abstract

According to WHO Ebola virus is also considered a Pandemic for South African region, this virus is life-threatening even mortal rate 50% if a person suffering from Ebola 50% chances to cure it expand very fast in South African region, EVD (Ebola Virus Disease) first time is shown in the 1970s in Zaire from 35 - 87% it expands to till 2018. The Republic of Congo is reported firstly. Then after 2018 till most region it expands especially in Central Africa region including Sudan, Uganda even more than 63k cases till now registered Ebola is a second most dangerous disease after covid19 because Pandemic corona virus target all over world Ebola is serious after covid19 for Ebola virus favipiravir drug is very familiar and 4th phase clinical trial is passed this drug is designed by Japan. In this review, we are elaborating on epidemiology, treatment, management of Ebola virus disease EVD.

Keywords: *Ebola Virus; Epidemiology; World Health Organization; Central Africa; Japan; Infectious Disease*

Abbreviation

EVD: Ebola Virus Disease; WHO: World Health Organization; HIV: Human Immune Virus

Introduction

Ebola Virus is a very dangerous infectious disease and it belongs to the Filoviridae family This causes fatal infection in the human body it shows multiple, non-specific symptoms like high fever, headache, vomiting, diarrhea, or bleeding in the nose, eye, gums, gut occurred in advance stage. The first time the Ebola virus was reported in 1976 in the Republic of Congo, Small area outbreak also in the list such as Uganda, Sudan, Central Africa, South Africa. Ebola hemorrhagic fever (EHF) is another name of Ebola virus its sign and symptoms may be seen in 1 - 3 week after direct contact with virus people suffering high fever, muscular pain, sour of the throat, headache, rashes, diarrhea, vomiting, pain in the chest, bleeding internally as well externally, decrease the function of internal organs such as lungs kidney, heart, etc. The disease has a high risk for mortal 50% of people who are mortal after infected 28 - 90% around people are infected in the sub-Saharan area. The main reason for people's diet because fluid loss and low BP typically follow 7 - 14 days after symptoms appear in the body. Ebola hemorrhagic fever by direct contact and it expand person to person drastically. The virus expands from person to person, body fluid, blood of an infected person, sneezing. Also, it spread contaminated by body fluid. Breast milk of a person even also carries the virus for longer months after diagnosed as well. Bats fruit believes that to be the normal carrier in nature able to spread the virus without being affect.

other diseases such as malaria, typhoid, meningitis. Blood samples are tested for antibodies, RNA. Medical services coordination is essential for control the virus. It includes rapid detects those are exposed, quick response laboratory services that are infected. Prevention includes the sensitizer, protective dress, soap, cooking isolation, mask, and gloves, social distance, washing hands when person around infected area. Ebola vaccine is approved by the United States in 2019 while because there is no approved treatment of early 2019 of the Ebola virus. While there is two treatment available mAb114 and REGN-EB3 for outcome improvement purpose. That includes ORS (Oral Rehydration Salt), intravenous fluid for treatment purpose giving to the person.

Signs and symptoms

Figure A

Onset

The incubation period for Ebola virus disease EVD the length of exposing virus signs and symptoms that period is called incubation period it may 21 days approximately and usually 5 - 13 days based on mathematical model predict that approximately around 6%. symptoms seeing suddenly with influenza in that feeling tired, sickness, weakness, fever, headache, vomiting, joint pain, sour throat, muscle pain, Abdominal pain, etc. The usual fever is higher than 38°C Similarly to coronavirus Covid19 symptoms for fever and body temperature. The combination of severe vomiting and diarrhoea often leads to dehydration.

Bleeding

In some cases, internal-external bleeding occurs. That shown after the first sign 5 - 7 days later. The infected individual shown bleeding from mucous membranes or sites of needle punctures has been reported in 40 - 50% of cases. That includes coughing with blood, stool with blood, etc. Bleeding from eyes, nose, etc as well. Heavy bleeding is uncommon; if it occurs, it is usually gastrointestinal tract GIT. The bleeding GIT was ~58 reported in Gabon 2001 outbreak in the US.

Recovery and death

Recovery may begin after isolation or quarantine 14 days later after the first symptoms. Death occurs 6-16 days after the first symptoms due to low blood pressure or fluid loss, bleeding, loss of blood cause death. Those who survive often have ongoing muscular and joint

pain, loss of hearing, tiredness, weakness, loss of appetite, difficulty to regain body weight, etc. Survivors develop antibodies for fighting Ebola for future their immunity strong and ready for infected diseases related to the virus. But it is unclear whether they are immune to additional infections.

Cause

This is a combination of four or five viruses of the genus these four are Sudan Virus (SUDV), Tai Forest Virus (TAFV), Bundibugyo Virus (BDBV) and one is called Ebola virus (EBOV). The species Zaire is the most dangerous Knowing EVD Causing viruses which is responsible for higher no. of outbreak. Viruses are closely related to Marburg viruses.

Virology

Ebolaviruses incorporate unmarried-stranded, non-infectious RNA genomes. Ebolavirus genomes contain seven genes along with 3'-UTR-NP-VP35-VP40-GP-VP30-VP24-L-five'-UTR. The genomes of the five specific ebolaviruses (BDBV, EBOV, RESTV, SUDV and TAFV) differ in sequence and the quantity and location of gene overlap. as with any filoviruses, ebolavirus virions are filamentous debris which can seem inside the shape of a shepherd's crook, of a "U" or a "6," and they'll be coiled, toroid or branched In widespread, ebolavirus is eighty nanometers (nm) in width and may be so long as 14,000 nm Their lifestyles cycle is idea initially a virion attaching to precise cellular-floor receptors such as C-type lectins, DC-signal, or integrins, that's observed by way of fusion of the viral envelope with cellular membranes. The virions are taken up through the mobile then tour to acidic endosomes and lysosomes where the viral envelope glyco-protein GP is cleaved. This whole process is shown and it slow to the virus to bind the cell of protein and fuse with intercellular membrane after that release the virus in the site of nucleocapsid, EVD Structure of Glyco- Protein (GP1, 2) is accountable for the virus' ability to bind to and infect focused cells. The viral RNA polymerase, encoded via the L gene, in part uncoats the nucleocapsid and transcribes the genes into fantastic-strand mRNAs, which might be then translated into structural and nonstructural proteins. The most plentiful protein produced is the nucleoprotein, whose awareness in the host cellular determines when L switches from gene transcription to genome replication. Replication of the viral genome effects in complete-duration, tremendous-strand anti genomes which are, in turn, transcribed into genome copies of negative-strand virus progeny. Newly synthesized structural proteins and genomes self-assemble and acquire close to the internal of the cellular membrane. Virions bud off from the cellular, gaining their envelopes from the cell membrane from which they bud. The mature progeny debris then infects different cells to copy the cycle. The genetics of the Ebola virus is hard to have a look at because of EBOV's virulent characteristics which are shown in figure 1.

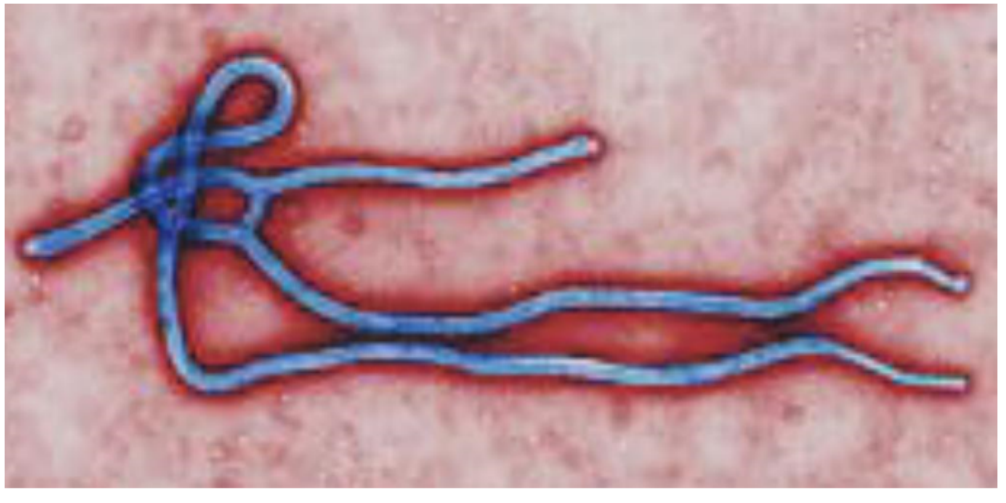

Figure 1: *Electron monograph of Ebola virus.*

Transmission

Figure B

It is believed that among people, Ebola sickness spreads most effectively through direct touch with the blood or other body fluids of a person that has developed signs of the disease. Body fluids that could contain Ebola viruses encompass saliva, mucus, vomit, feces, sweat, tears, breast milk, urine and semen. According to WHO states that only those who are very sick can spread Ebola sickness in saliva and the whole virus has no longer been suggested to be transmitted through sweat. Many people expand the virus through blood, sneeze, vomit. access points for the virus consist of the nostril, mouth, eyes, open wounds, cuts, and abrasions. Ebola can unfold via massive droplets; but, this is believed to occur most effectively whilst someone could be very unwell. This contamination can appear if someone is splashed with droplets. contact with surfaces or gadgets infected via the virus, in particular needles and syringes, can also transmit the infection. The virus can live to tell the tale on objects for some hours in a dried state and can live to tell the tale for a few days within body fluids outside of a person.

Initial case

Even though it isn't completely clear how Ebola to begin with spreads from animals to human beings, the spread is believed to involve direct contact with an infected wild animal or fruit bat. Except for bats, different wild animals sometimes infected with EBOV include several monkey species, chimpanzees, gorillas, baboons, and duikers. Animals may additionally become inflamed once they eat fruit partially eaten with the aid of bats sporting the virus. Fruit production, animal conduct and other factors might also cause outbreaks among animal populations. Proof indicates that both domestic puppies and pigs can also be infected with EBOV. dogs do now not seem to expand signs and symptoms when they carry the virus, and pigs appear to be capable of transmitting the virus to at least a few primates. Although a few puppies in an area in which a human outbreak took place had antibodies to EBOV, it's far unclear whether or not they played a role in spreading the disorder to human beings.

Treatment

As of July 2017, no medicinal drug has been proven safe and effective for treating Ebola. by the time the Ebola virus epidemic in West Africa commenced in 2017, there have been at least nine different candidate treatments. several trials have been performed in past due

2018, and early 2019, however, some have been deserted because of lack of efficacy or lack of humans to have a look at. as of August 2019, experimental treatments referred to as REGN-EB3 and mAb114 were determined to be ninety% powerful.

Diagnostic assessments

The diagnostic exams currently available require specialized gadgets and notably educated employees. because there are few appropriate testing centers in West Africa, this results in postpone in diagnosis.On 29 November 2017, a brand new 15-minute Ebola take a look at turned into pronounced that if successful, "now not handiest offers patients a higher threat of survival, but it prevents transmission of the virus to different human beings." the new equipment, about the scale of a pc and solar-powered, allows testing to be carried out in faraway areas.On 29 December 2017, the U.S. meals and Drug Administration (FDA) authorized the LightMix Ebola Zaire rRT-PCR to check for patients with symptoms of Ebola.

Disease model

Animal models and especially non-human primates are being used to observe distinct aspects of the Ebola virus disease. trends in organ-on-a-chip generation have caused a chip-based totally version for Ebola hemorrhagic syndrome [1-30].

Conclusion

We've got defined present-day knowledge of EVD based totally on an evaluation of The literature. With the knowledge we've got so far, it seems that it'll be tough to expect the volume and results of EVD epidemics in the future. however, about 30 years ago, human immunodeficiency virus (HIV) infection all of sudden emerged and unfold at some point of the sector, and Now, thanks to continuous efforts with the aid of the scientific community, powerful treatment methods towards HIV infection are to be had, despite the fact that the disease cannot yet be eradicated. EBOV and EVD are poorly understood at present, however, there may be hope that powerful treatment strategies to combat EVD will soon be evolved.

Acknowledgment

I would like to thank my co-authors for time to time study during the study. Especially Umama Yezdani Department of Pharmacy Practice, MRM College of Pharmacy, Hyderabad Telangana India.

Conflict of Interest

Authors declared that there is no conflict of interest.

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Volume 3 Issue 6 June 2020