AMERICAN JOURNAL OF RESEARCH IN MEDICAL SCIENCES, 2020
VOL 5, NO. 1, PAGE 1 – 2

MINI REVIEW

Open Access

Ebola Virus Disease

Godfrey Habil Mudhune*

Epidemiologist - Department of Medical Services & Public Health, County Government of Laikipia, Kenya.

ARTICLE HISTORY

Received June 30, 2020
Accepted July 30, 2020
Published August 05, 2020

KEYWORDS

Ebola virus, fever, infection

What we know about it?

Ebola virus disease is a highly infectious haemorrhagic fever disease whose outbreaks in the recent years have resulted in high fatalities. It was first recognized in 1976 in the former Zaire and Sudan and is mostly endemic in the West African countries of Sierra Leone, Guinea and Liberia, with some cases and fatalities also reported in Nigeria, Senegal, Uganda, Sudan and recently as far off as the USA and Spain. Ebola virus belongs to the Filoviridae family of viruses and despite its long period of existence, a lot of uncertainty still exists as to the actual source of the virus or its transmissibility but it is postulated that human infection of the virus originates from close contact with infected wildlife [1].

Upon human infection, the virus replicates resulting in multiple organ damage and suppression of the immune system. During this period, the virus is shed in bodily fluids such as saliva, sweat, blood, breast milk, semen, urine and stool, through which it is transmitted. The human to human transmission risk of the ebola virus varies widely during the course of the disease, it is less likely to occur in the early stages of the disease before symptom onset and the risk is significantly higher during active illness when there is a higher viral load coupled with vomiting and diarrhoea that increases chances of exposure. The transmission is majorly through direct contact with an infected and symptomatic person or a deceased victim but epidemiologic evidence also suggests that transmission can also occur through airborne droplets from an infected and symptomatic person without any contact occurring. A less likely route of transmission that has also been identified is through fomites where contact is made with a contaminated surface, this has been supported by the fact that the virus has been seen to persist in dried blood, on glass and other objects for several days after contact with an infected symptomatic person or a deceased victim [3].

Understanding the transmission of the virus is critical in controlling the disease as there is no known definitive cure and with enhanced research on this, there is hope in promptly controlling any future outbreaks of the disease.

Obstacles in the development of a vaccine

Ebola virus disease has been in existence since 1976 when the first outbreak was reported and despite the great advancements in medical research and enhanced technical capability witnessed globally over this period and the development of several vaccines such as the HPV vaccine against the human-papilloma virus that causes cervical cancer, ebola is yet to get a vaccine available in the market. It would be argued that ebola is classic case of the 10/90 gap, a concept in which 90 percent of the world's research funding and focus is directed at solving only 10 percent of the world's health problems, targeting mostly health challenges that are prevalent in the west and ignoring the health challenges in the so called underdeveloped countries [4]. This bias in health research is not only evident in ebola but also in the so called neglected diseases such as the African trypanosomiasis, leishmaniasis and chagas disease, that despite being in existence for many years still have no treatment available in the market, it has been argued that these diseases are in fact entirely avoidable and find their main cause in the consequences of poverty.

The pharmaceutical companies that are responsible for the development of such vaccines are largely market and profit-driven and it's only in the recent years that ebola has been seen as an issue of global dimension, this happening possibly only as a result of the recent cases of the disease that have been reported in the so called developed countries. It is evident that the multinational pharmaceutical companies have been reluctant in prioritising their research and development to invest in developing an ebola vaccine that would essentially only be used in one part of the world and whose cost might not be readily be met by the poor countries where ebola is endemic [5].

Looking to the future, this current realization of the potential global impact of ebola and the increased research and investment into developing a vaccine that has been witnessed in the recent years will possibly see the introduction of an ebola vaccine to the market sooner rather than later.

The public health management and prevention

The public health management and prevention of Ebola calls for a multi-faceted approach as no single intervention is adequate on its own. In the context of a resource limited setting with a relatively weak healthcare systems several measures can be put in place both for managing an outbreak and for preventing one from occurring.

Contact Godfrey Habil Mudhune ✉ mudhuneg@gmail.com Epidemiologist - Department of Medical Services & Public Health, County Government of Laikipia, Kenya.

In the Ebola outbreak in Sierra Leone in 2014, an example of such a resource-limited setting, two key public health strategies were used to manage and prevent transmission, the first was a widespread nationwide campaign to ensure maximum case isolation, this was done through the active identification of cases that was facilitated through engaging the community and an active screening programme, the identification was coupled with tracing of contacts in which all potential close contacts to the cases were quarantined and followed-up, this greatly reduced the transmission of the virus. The second approach was a similar nationwide campaign on the safe burial of ebola victims away from the traditional burial that involved washing and touching the body of the deceased, this approach has to be sensitive to cultural practices and a lot of community engagement, specifically the rural communities was necessary. It also greatly reduced transmission and together these two strategies played a great role in controlling the outbreak as was concluded on later analysis [6].

Additionally, in such a resource limited setting, healthcare workers are at a great risk of nosocomial transmission as they are highly likely to come into close contact with both known and unknown cases, the provision of adequate personal protective equipment and their correct use is vital in preventing infection [7].

A long-term and possibly permanent solution would be in addressing the root problem, which lies in strengthening the health systems in these countries and the socio-economic well-being being of its citizens. Capacity building is essential to ensure the availability of sufficient and adequately trained healthcare professionals, enhancing research and surveillance that would nip an outbreak in the bud or even prevent one from occurring, improving laboratory and diagnostic services and provision of modern medical equipment is vital [8] but these may not be effective if the socio-economic well-being of those likely to be affected is not equally addressed.

References

[1] Rewar S, Mirdha D. Transmission of Ebola Virus Disease: An Overview. Annals of Global Health. 2014;80(6):444-451.

[2] Klompas M, Yokoe D.S. The Ebola transmission paradox. American Journal of Infection Control. 20105;43(8):786-787.

[3] Judson S, Prescott J, Munster V. Understanding Ebola Virus Transmission. Viruses. 2015;7(2):511-521.

[4] Kilama W.L. The 10/90 gap in sub-Saharan Africa: resolving inequities in health research. Acta Tropica. 2009;112:S8-S15.

[5] Siew A. Ebola and the Vaccine Race. Pharmaceutical Technology Europe; Cleveland. 2014;26(11):6.

[6] Fang L-Q, Yang Y, Jiang J-F, Yao H-W, Kargbo D, et al. Transmission dynamics of Ebola virus disease and intervention effectiveness in Sierra Leone. Proceedings of the National Academy of Sciences. 2016;113(16):4488-4493.

[7] Pandey A, Atkins KE, Medlock J, Wenzel N, Townsend J.P, et al. Strategies for containing Ebola in West Africa. Science. 2014;346(6212):991-995.

[8] Bréchot C. Train Africa's scientists in crisis response. Nature; London. 2015;524(7563):7.