Ebola Virus: The Story

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During our evolution of thousands of years, Mankind has dealt with many foes; some of them have been "monsters" spanning many meters high, while others were not even evident with the naked eye. While Mankind learned and upgraded his knowledge to help him survive, microbes have adapted also, thanks to their smaller genetic material. We have encountered living organisms in extreme environments, such as in icy lakes or surrounding underwater volcanos. The fact that we can do PCR today is because we make use of the polymerase enzyme of one of these "extremophile" bacteria.

Although our ventures and technology have given us a wide-angle view of our nature, we still have many unknowns, hidden in various crevasses. In 1976, one such unknown made headlines by killing more than two-hundred people. It was a virus, named after the Ebola River, in Democratic Republic of Congo (previously Zaire) where it struck. At the time, the epidemic was contained by isolating positive cases, and not letting villagers involved from leaving their premises. Since then, Ebola showed itself again in 1994 with a similar death toll in villages and no urban involvement.

Viruses, unlike bacteria, need a host cell to multiply. Ebola is no different. It is part of the Filiviridae family of viruses (RNA single stranded), which also includes other deadly members like the Marburg Virus (Germany, 1967). Ebola is thought to exist in fruit bats and non-human primates like gorillas and monkeys who live in the jungles of Africa. Eating raw meat from these animals, or coming into contact with their saliva, urine or feces will lead to an infection. Most past cases involved people who went into caves and came in contact with the feces of cave bats. **One Ebola virus entity is enough to start infection! After infection, human-to-human transmission continues via all body fluids, including vomit and sweat, even 7 weeks after death.**

The scary thing about Ebola is its death rate: average of 50%. Similar to most other viruses, we don't have a magic-bullet treatment, and the mainstay of therapy is supportive, such as hydration. Logically, people with ample hydration, and a baseline good health have better chances, which is why in poorer areas of Africa, death rates reached up to 90%. There are no current licensed anti-virals or vaccines on the market, although two companies are hoping for an effective vaccine by mid-2015. As quoted by Peter Singer: "because its victims were poor, pharmaceutical companies had no incentive to develop a vaccine. Indeed, pharmaceutical companies could expect to earn more from a cure for male baldness". The good news is that it cannot be transmitted by air. Therefore, a person who has Ebola and is showing symptoms can't contaminate the air surrounding him. Incubation periods

for Filiviridae are between 2- 21 days. **The symptoms are usually similar to those encountered with Malaria and typhoid patients- sore throat, fever, malaise, fatigue-** therefore a thorough history of recent travel, in addition to rapid accurate tests to rule out malaria (Antigen) and Salmonella (Widal) are helpful. ELISA based IgG and IgM, or PCR for Ebola are the mainstay of Ebola diagnosis (Available at Rafik Hariri Gov. Hospital). Other routine lab tests show a decrease in WBC and platelets, and an increase in liver enzymes.

The main reason Ebola has struck so hard this year is due to the poor healthcare conditions of the countries it struck: Guinea, Sierra Leone, and Liberia. This in addition to the poor understanding of transmission of the virus (burial of the deceased, handling of patients in local hospitals) has led to its quick spread in urban cities. Insect bites do not transmit the virus. Ebola is said to be seasonal, following heavy rains in the affected areas. Ebola is deactivated by mild alcoholic products, like hand-gels; it is also "killed" by boiling for 5 minutes or drying completely or by diluted Chlorox (1/100) solutions.

In Lebanon, proper governmental measures were taken even from the start. Airport temperature scanners were in place for all flights from the area, considering the thousands of Lebanese citizens living there. Additionally, the Ministry of Health (MOH) prepared an isolation unit in the airport, trained Red Cross personnel, and even prepared the Rafik Hariri Governmental Hospital to receive possible future patients if necessary. Other major hospitals also followed in such preparations. To date, no Ebola cases have been registered in Lebanon.

In conclusion, **promises are made by developed countries that by April 2015 there should be anti-viral drugs &/or vaccine(s) available for general use.** The current epidemic has made Ebola a medical global priority that is wasn't before. So far it has killed 5700+ people, infecting more than 16,000 cases. As for us, with proper hygienic measure by healthcare workers, CME (continuous medical education) of primary contact personnel, and following safety guidelines set by the MOH, we may never see Ebola in Lebanon in the foreseeable future.