BLAST FROM THE PAST

Commentary on “Ebola Haemorrhagic fever in Sudan, 1976”
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Abstract (original article):

A large outbreak of haemorrhagic fever (subsequently named Ebola haemorrhagic fever) occurred in southern Sudan between June and November 1976. There was a total of 284 cases; 67 in the source town of Nzara, 213 in Maridi, 3 in Tembura, and 1 in Juba. The outbreak in Nzara appears to have originated in the workers of a cotton factory. The disease in Maridi was amplified by transmission in a large, active hospital. Transmission of the disease required close contact with an acute case and was usually associated with the act of nursing a patient. The incubation period was between 7 and 14 days. Although the link was not well established, it appears that Nzara could have been the source of infection for a similar outbreak in the Bumba Zone of Zaire.

In this outbreak Ebola haemorrhagic fever was a unique clinical disease with a high mortality rate (53% overall) and a prolonged recovery period in those who survived. Beginning with an influenza-like syndrome, including fever, headache, and joint and muscle pains, the disease soon caused diarrhoea (81%), vomiting (59%), chest pain (83%), pain and dryness of the throat (63%), and rash (52%). Haemorrhagic manifestations were common (71%), being present in half of the recovered cases and in almost all the fatal cases.

Two post mortems were carried out on patients in November 1976. The histopathological findings resembled those of an acute viral infection and although the features were characteristic they were not exclusively diagnostic. They closely resembled the features described in Marburg virus infection, with focal eosinophilic necrosis in the liver and destruction of lymphocytes and their replacement by plasma cells. One case had evidence of renal tubular necrosis.

Two strains of Ebola virus were isolated from acute phase sera collected from acutely ill patients in Maridi hospital during the investigation in November 1976. Antibodies to Ebola virus were detected by immunofluorescence in 42 of 48 patients in Maridi who had been diagnosed clinically, but in only 6 of 31 patients in Nzara. The possibility of the indirect immunofluorescent test not being sufficiently sensitive is discussed.

Of Maridi case contacts, in hospital and in the local community, 19% had antibodies. Very few of them gave any history of illness, indicating that Ebola virus can cause mild or even subclinical infections. Of the cloth room workers in the Nzara cotton factory, 37% appeared to have been infected, suggesting that the factory may have been the prime source of infection.

Ebola epidemic first occurred in 1976 in Sudan in Africa, when the exact epidemiology was hardly known. It was found to be similar Marburg disease or Lassa fever. With detailed study mentioned in the above article, epidemiology was learnt. Fortunately, the disease subsided with little harm only to come back with a greater effect after over 30 years. The origin of the disease was in a cotton factory in Nzara. With detailed study it was found that, nursing a clinical case transmitted the infection to others, which is why the disease spread rapidly.

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in a hospital in Maridi, and less severe in the original place Nzara. This study also considered the possibility of involvement of rodents, which could have been there in the cotton factory. However, it was not proved. All efforts were made to reduce the spread by isolation of patients and practicing barrier nursing. The diagnosis was mainly clinical; however, confirmation was done using immunofluorescence tests and virus isolation. The study ultimately found that the disease spreads by contacting human body fluids, had high attack rate and relatively low secondary attack rate (12%) indicating that airborne transmission was not possible.1

Over the years, with continuous research, current knowledge says Ebola virus disease is caused by Ebola Filovirus. It is highly infectious, rapidly fatal, with a high mortality rate, but it can be prevented. It is spread through direct contact with body fluids (blood, stool, vomit, saliva, urine, sperm, etc.) of an infected person and by contact with contaminated surfaces or equipment, including linen soiled by body fluids from an infected person. The Ebola virus can be easily eliminated from the environment with heat and commonly used disinfectants2.

After the first outbreak in Sudan, virus did appear in many places involving small pockets and subsiding on its own. There were almost 25 outbreaks across the world before this massive outbreak stuck in West Africa in December 2013, for which it was the first experience. The epidemic in West Africa is unlike any we have seen since the disease was first identified. It is by far larger in terms of numbers, geographic spread, but also more unpredictable in the behaviour of its spread than any other previous outbreak. Epidemic is mainly involving three countries, Guinea, Sierra Leone, and Liberia, and overall nine countries reported Ebola. As of 16th August 2015, totally 27,988 cases (Suspected, Probable, Confirmed), and 11,299 deaths have been reported worldwide4. The current virus has around 60% case fatality among hospitalized patients and health care workers are at high risk.

In August 2014, WHO drafted the Ebola Response Roadmap to set out the core strategy for stopping this unprecedented outbreak and to provide the basis for a significantly increased response5. This was the basis for the UN system’s Overview of Needs and Requirements (ONR) and STEPP Strategy (STOP the outbreak, TREAT the infected, ENSURE essential services, PRESERVE stability and PREVENT outbreaks in countries currently unaffected) that followed5. This has successfully brought down the peak numbers of cases in the epidemic over 800 cases per week in the October 2014 to less than 50 cases per week since March 2015. Similarly, CDC had started The Road to Zero response to the Ebola outbreak in West Africa6. Multiple national and international agencies contributed to the relief with capacity and resources in their purview.

Key strategies suggested and followed by all the relief teams were safe and dignified burials, infection prevention and control by promoting hand hygiene and distribution of PPEs, opening rapid isolation and treatment centers, setting up mobile laboratories, surveillance and contact tracing, entry and exit screening at airports and other borders, community engagement and safe reactivation of essential health services and increasing resilience7. Health system was strengthened by continued training of health care workers, sending Rapid Ebola Preparedness (REP) teams to various health facilities by CDC to assess their readiness to handle Ebola cases5,6.

The huge magnitude of the current epidemic in West Africa is attributed to various things. Equatorial Africa was aware of Ebola and clinicians suspect the same in case of any mysterious disease, whereas West Africa was not aware or rather not prepared to suspect Ebola. It took nearly three months to confirm Ebola virus after the appearance of the first case. Past outbreaks were usually confined to remote rural areas and spread was less, but in the current outbreak due to the delay in diagnosis, it had already hit capital cities of all three countries which have been the epicenter of intense virus transmission. The three badly hit countries, Guinea, Liberia, and Sierra Leone are socioeconomically poor and only recently emerged from years of civil war and unrest that left basic health infrastructure and other basic amenities severely damaged. There was no proper system to diagnose the cases, transfer blood samples or transfer sick patients for the treatment, no sufficient beds for treatment, no sufficient health personnel especially trained for Ebola case management, etc. Overcrowded houses, no sufficient place for isolation of
patients, inadequate water supply, poor roads, electricity and other basic amenities in the community worsened the condition. There was also high population mobility across these porous borders especially people moving out of these countries for earning or better living conditions. These people would come to visit their loved ones when they are sick and thus carry the virus back to their place. The traditional custom of returning to native village to die and be buried near ancestors was another dimension of population movement that carried high transmission risk. Some cultural practices regarding burial like mourners bathing water from washing of corpses or prominent members of their secret society sleeping near the corpses for several nights believing that allows the transfer of powers, etc… carried very high transmission. Therefore, safe burial strategies helped tremendously in cutting short the transmission. Other reasons were reliance on traditional healers, community resistance for the health measures, strikes by health care workers for better pay or making them work in high risk places, public health messages that fuelled hopelessness and despair, spread by international air travel, background noise from endemic infectious diseases in these areas like Malaria, Cholera, Lassa fever, which all mimic early symptoms of Ebola, involvement of wide geographic area made international response capacity difficult at all levels, long duration of the outbreak made the spread even more worse

The West African Ebola epidemic is a vivid reminder that even in the 21st Century; disease can still threaten not only people’s health, but also the very foundations of national and international economies. With all the external assistance from WHO, CDC, UNICEF, MSF, UNESCO etc… it was possible to stop the epidemic in Liberia and are working to stop it in Guinea and Sierra Leone. WHO and its partners have been working in mobilizing construction of treatment centres, fast tracking vaccine development, and creating new guidelines to respond to a fast changing situation, implementing a global Ebola preparedness plan, all at an unprecedented speed and scope. Two vaccines already have been launched for pilot testing by WHO. A disease anywhere is a disease threat everywhere, and the Ebola has shown how easily infectious diseases can cross borders – lands, rivers, and even oceans. Therefore, all the countries should be prepared to tackle Ebola, especially developing and underdeveloped countries, since we have seen that the low socio-economic status, poor knowledge and awareness of the people and lack of basic amenities were the main reasons for widespread outbreak. So let us be prepared to fight Ebola.

REFERENCES
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5. Ebola Virus Disease Outbreak: Overview of needs and requirements. UNICEF. September 2014.