Editorial:

Ebola virus disease: an emerging global threat

The humankind has periodically been ravaged with outbreaks of new and emerging infections causing global panic. In recent times the world has witnessed outbreaks of severe acute respiratory syndrome (SARS), Chikungunya fever, avian influenza and swine flu. The year 2014 has witnessed outbreaks of Middle East Respiratory Syndrome (MERS) caused by Corona Virus (MERS-CoV)[1] and Ebola Virus Disease (EVD). The recent Ebola outbreak, considered to be the largest since the initial discovery of the virus in central Africa in 1976, has been named by the World Health Organization (WHO) on August 8, 2014 as a "public health emergency of international concern".[2]

The first outbreak occurred in 1976 in Africa in the form of an unusually lethal haemorrhagic fever. On request of the government of Zaire (now called Democratic Republic of Congo [DRC]) scientists at the then U.S. Center for Disease Control together with an international group of scientists had elucidated the aetiological cause and had helped in controlling the outbreak.[3,4] The disease derives its name from Ebola River present in the village where the outbreak had occurred. Ebola virus is an enveloped non-segmented negative stranded ribonucleic acid (RNA) virus belonging to the Filovirus family.[5] Ebola virus is a zoonotic pathogen and is not commonly encountered in humans. Outbreaks are thought to originate from an animal reservoir (most likely fruit bat) and possibly involve additional intermediary species. Transmission to humans is thought to have resulted through direct contact with tissue or bodily fluids from an infected animal. Direct contact with infected bodily fluids like faeces, vomit, or blood is necessary for transmission of EVD. Ebola virus is postulated to enter the human host through mucosal surfaces, breaks, and abrasions in the skin, or by parenteral route. Cultural practices, such as bathing of corpses before burial, are thought to have facilitated transmission.[5] Available data do not support transmission from person to person through the air or by casual contact.[5]

EVD is considered to be the prototype pathogen causing viral haemorrhagic fever and causes severe disease and high case-fatality rates.[5] As the clinical manifestations of EVD are protean and non-specific, the diagnosis of EVD is challenging. A carefully elicited travel history can be helpful. The incubation period of EVD is 5 to 7 days (range 2-21 days) days. Salient clinical manifestations include fever, prostration, gastrointestinal manifestations like anorexia, nausea, vomiting, abdominal pain, diarrhoea; and respiratory symptoms like chest pain, shortness of breath, cough, nasal discharge. Other observed clinical manifestations include conjunctival injection, postural hypotension, oedema, and neurological manifestations like headache, confusion and coma. An erythematous macropapular rash may be evident by day 5-7 of the illness. This manifestation is considered to be a valuable differential diagnostic feature and desquamation is usually evident in survivors. Haemorrhagic manifestations, seen in less than half of infected persons, occur during the peak of the illness. These include petechiae, ecchymoses, uncontrolled oozing from venepuncture sites, mucosal haemorrhages. Post-mortem evidence of visceral haemorrhagic effusions may be present.[5] When haemorrhagic manifestations are present, it is clinically difficult to differentiate EVD from other causes of haemorrhagic fevers.

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Salient laboratory abnormalities at presentation include leucopenia with lymphopenia, thrombocytopenia, elevation of serum transaminases with aspartate aminotransferase elevation typically exceeding elevation of alanine aminotransferase; hyperproteinaemia, proteinuria and findings of diffuse intravascular coagulopathy. Patients with fatal disease develop rapid onset of symptoms and die typically between day 6 and 16 with hypovolaemic shock and multiorgan failure. Non-fatal cases improve typically around day 6 to 11; convalescence is usually prolonged and may be associated with sequelae such as myelitis, recurrent hepatitis, psychosis, uveitis. Real time - polymerase chain reaction (RT-PCR)-based diagnostic tests yield positive results 1 day before the appearance of symptoms.[6] Some of the other diagnostic tests include antigen detection by enzyme linked immunosorbent assay (ELISA), electron microscopy and virus isolation by cell culture. There is no specific treatment or vaccine available for clinical use for EVD.[5]

A rapidly increasing numbers of cases of EVD have been observed in the African countries of Guinea, Liberia, and Sierra Leone, spread of EVD to Nigeria and the recent evacuation of two American health care workers with EVD to the United States have attracted global attention to the problem. As per the recent report by the WHO Ebola response Team,[7] detailed subset analysis of data on 3343 confirmed and 667 probable Ebola cases collected in Guinea, Liberia, Nigeria, and Sierra Leone as of September 14, 2014, case-fatality rate was 70.8% (95% CI 69-73) among persons with known clinical outcome of infection. The authors[7] concluded that without a drastic improvement in control measures, the numbers of cases of and deaths from EVD are expected to continue increasing several fold in the coming months. As on September 18, 2014,[8] 5335 identified cases of EVD with more than 2622 associated deaths have been documented, and this figure, considered to be an underestimate, is more than that observed in all previous Ebola outbreaks combined. With increasing international travel, EVD is threatening to emerge as a global pandemic.

Most of the countries affected by EVD in Africa are resource-poor countries with an inadequate health infrastructure that are already coping with major health challenges. Isolation facilities, personal protection equipment are seldom available in these countries.[6] Even in countries with advanced health care facilities, like the United States EVD cases are a challenge to treat. Given this background and a similar crunch in health care facilities available in rural India, the effects of EVD can be devastating if the epidemic spreads to India. The case definitions, various preventive and control measures have been issued by the Government of India[9] and there is a need for wide spread dissemination of this information nation-wide and strict implementation of the guidelines. There is a pressing need for capacity building in establishing accredited laboratories that can help with diagnosis of viral diseases in India.[10] Further, it is time for the global health care community to co-operate and act decisively to bring this dangerous epidemic under control or else, this epidemic is in grave danger of spiralling out of control.

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