



Preparedness for Prevention of Ebola Virus Disease

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Ebola virus (EBOV) is the causative agent of Ebola virus disease (EVD; formerly known as Ebola hemorrhagic fever). EBOV has not been reported to be present endemically in Korea. Fruit bats, known to be a natural host for the virus, have not been discovered in Korea, and the only channels through which EBOV can circulate in Korea are through importation of infected animals, products manufactured from them, or through contact with infected humans. Even so, the recent outbreaks of EVD in West Africa have drawn considerable attention worldwide including in Korea, because of concerns over the virus propagating to neighbor nations or even to other continents. In fact, sensationalist media coverage has led some members of the Korean public to resort to drastic measures in order to avoid encounters with those from Africa.

Generally speaking, there is a wide variety of weapons with which to battle microorganisms, including vaccines, anti-microbial chemicals, biological active components, and immunological therapeutic modality. For EVD, however, there is no specific treatment, licensed antiviral drugs or vaccines available, heightening the public fear of the disease. The nature of the EBOV itself, which has highly glycosylated surface glycoproteins and preferentially infects monocytes, macrophages and dendritic cells (1), makes it difficult to make an effective vaccine. Although a non-licensed antiviral drug under animal experiments can be granted for patient administration, successful treatment is not entitled in all the cases.

Early detection and quarantine of persons with EVD are essential to prevention of an epidemic. Suspected and confirmed cases, although the terminology of suspected and confirmed has yet to be clearly defined, must be isolated immediately and cared for according to standard protocols.

Health care workers are extremely susceptible to catching EVD from infected patients. The risk of infection increases as the extent and the frequency of contact increase. Early experiences during the 1976 Sudan EBOV (SEBOV) outbreak revealed that 81% of persons working to provide active nursing care to patients were infected, while only 23% of family members sleeping in the same room with the patients were affected (2). A viral dose via needlestick exposure from an acute-phase patient would likely be 1,000 plaque-forming units (pfu) or higher if the pres-

ence of virus is extrapolated to the experimental results of viremias in infected nonhuman primates, which often reach levels as high as 10^7 to 10^8 pfu/mL in serum (3). The extreme infectivity of the EBOV was illustrated in another experimental report, which indicated that cynomolgus macaques exposed to an intramuscular challenging dose of Zaire EBOV as low as 10 pfu died 8 to 12 days post-infection (4). Extreme care should thus be taken with infected blood, secretions, excretions, tissues, hospital materials and waste. Although aerosol or droplets is not regarded as a natural mode of the transmission of EBOV, health care workers should wear an appropriate protective mask when attending to suspected or confirmed patients.

In order for medical staff and health care workers to avoid unnecessary infections when caring for patients with EVD, it would be crucial to develop and institute a set of standard protocols to be followed by all involved personnel. An immediate quarantine and thorough examination should be performed on suspected cases to rule out EVD, while also making sure that proper protective equipment is readily available and utilized.

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