Molecular detection of Rift Valley fever virus in serum samples from selected areas of Tanzania

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Accepted: 9 January 2014

Abstract

Rift Valley fever (RVF) is an acute mosquito-borne viral zoonotic disease affecting domestic animals and humans caused by the Rift valley fever virus (RVFV). The virus belongs to the genus *Phlebovirus* of the family *Bunyaviridae*. The main aim of this study was to detect the presence of antibodies to RVFV as well as the virus in the serum samples that were collected from livestock during the 2006/07 RVF outbreaks in different locations in Tanzania. Analysis of selected samples was done using a RVF-specific Inhibition Enzyme-Linked Immunosorbent Assay (I-ELISA) and Reverse Transcription Polymerase Chain Reaction (RT-PCR). Genomic viral RNA was extracted directly from serum samples using a QIAamp® Viral RNA Mini Kit (QIAGEN) and a one-step RT-PCR protocol was used to amplify the S segment of RVFV. Positive results were obtained in 39.5% (n=200) samples using the RVF I-ELISA and 17.6% (n=108) of samples were positive by RT-PCR. I-ELISA detected 41 (38.7%), 32 (39.0%) and 6 (50.0%) positive results in cattle, goats and sheep sera respectively whereas, the RT-PCR detected 11 (0.2%), 7 (0.2%) and 1 (0.1%) positive results in cattle, goats and sheep sera respectively. These findings have demonstrated the presence of RVFV in Tanzania during the 2006/07 RVF outbreaks. According to our knowledge this is the first report to detect RVFV in serum samples from domestic animals in Tanzania using PCR technique. Therefore, a detailed molecular study to characterize the virus from different geographical locations in order to establish the profile of strains circulating in the country and develop more effective and efficient control strategies should be done.

Keywords: Rift valley fever, RVF outbreaks, Domestic animals, Mosquitoes, ELISA, RT-PCR.

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