

Dengue virus infection during an outbreak of chikungunya virus in Democratic Republic of Congo
Infection du virus de la Dengue survenue lors d'une épidémie du virus Chikungunya en République démocratique du Congo

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Summary

Background. Dengue virus (DENV) is a positive single-stranded RNA virus belonging to the genus Flavivirus, family Flaviviridae. The vectors of DENV are *Aedes aegypti* and *Ae. albopictus* mosquitoes, and the latter species is inhabiting not only in tropical countries but also in subtropical and moderate zones. The virological nature of DENV is relatively well characterized especially in South East Asia where the large number of people suffer from dengue fever every year. To the contrary, not much information is available in Africa perhaps due to a presumably less frequent DENV infection. The lack of adequate research facilities may be another reason for very limited information on DENV in the continent.

Methods. Hundreds of non-malaria patients visited hospitals in Kinshasa, the capital city of Democratic Republic of Congo (DRC), between March and June in 2012. They were initially suspected to be infected with chikungunya virus (CHIKV) based on their feverish symptoms. Thus the stored sera were first tested by a CHIKV IgM kit and RT-PCR, and then the specimens were examined by a rapid test for DENV NS1 antigen detection. Some of them were tested by RT-PCR for the PrM-E and NS5 regions.

Results. Out of 96 examined, 10 were positive for CHIKV IgM antibodies and 5 were positive for CHIKV by RT-PCR, and actually CHIKV was isolated by tissue culture using Vero cells. Surprisingly 3 different specimens were found to be positive for DENV NS1 antigens. One of them was positive by RT-PCR for DENV. Genetic analysis has revealed that this DRC strain can be classified into the group of DENV serotype 1 but its phylogenetic position was unique showing some similarity with the group of DENV serotype 3.

Conclusion. There was surely an outbreak of CHIKV in Kinshasa in 2012. But the present results have also indicated that a simultaneous DENV infection did also occur during the outbreak of CHIKV. We have learned a lesson that we need to test both viruses when either of two is suspected. This is the first genetic report of DENV from DRC and neighboring central African countries.

Keywords: Dengue virus, Chikungunya virus, outbreak, Kinshasa, DR Congo

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