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Molecular analysis of influenza A/H3N2 and A/H1N1pdm viruses circulating in the Democratic Republic of Congo, 2014

Edith Nkwembe[1], Roxana Cintron[2, 3], Wendy Sessions[2], Hugo Kavunga[1], Pelagie Babakazo[3], Leonie Manya[4] and **Jean Jacques Muyembe[1]**

[1]Institut National de recherches Biomédicales, DR Congo

[2]CDC Atlanta, USA

[3]Battelle Memorial Institute, USA

[4]Ecole de Santé Publique de l'UNIKIN, DR Congo

[5]Direction de la Lutte contre la Maladie, Senegal

[6]Centers for Disease Control and Prevention, DR Congo

Introduction & Aim: Influenza is a common human respiratory infection and a cause of high morbidity and mortality. However, not much is known about influenza viruses circulating in Democratic Republic of Congo (DRC). This study aimed to characterize genetically and antigenically those strains affecting patients in this particular country.

Methods: Nasal, throat and nasopharyngeal swabs from patients presenting with severe acute respiratory infections (SARI) or influenza-like-illness (ILI) were collected from August to December, 2014 in various surveillance sites selected in DRC and delivered to the National Institute of Biomedical Research (INRB) using the viral transport medium for molecular work. Viral RNA extraction and amplification by reverse transcription polymerase chain reaction (RT-PCR) were done and positive influenza samples with a Cycle threshold (Ct<30) were sent to the World Health Organization (WHO) Collaborating Center for Surveillance, Epidemiology and Control of Influenza at the US Centers for Disease Control and Prevention (CDC) in Atlanta for further genetic and antigenic characterization.

Results: A total of 32 samples were tested at INRB and were found to be positive to influenza A with Ct<30. These samples were shipped to the US CDC in Atlanta for further sub-typing: 26 samples were influenza A (H3N2), 2 were influenza A (H1N1) pdm09, two samples were negative for influenza by RT-PCR and two samples contained insufficient volume for testing. The majority of influenza A (H3N2) viruses tested from DRC was antigenically related to the A/Switzerland/9715293/2013 vaccine virus, while two influenza A (H1N1) pdm09 virus isolates were antigenically characterized as A/California/07/2009-like. All A (H3N2) and A (H1N1) pdm09 virus isolates characterized in this study from DRC were sensitive to oseltamivir and zanamivir.

Conclusion: Two genetically distinct influenza subtypes, A (H3N2) and A (H1N1) pdm09, were found to be circulating in the DRC during the study period. Based on these results, effective measures against influenza should be advised, including prevention of infection by either vaccination or administration of antiviral drugs prophylactically or therapeutically.

edithnkwembe1@gmail.com