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Drug resistance mutations in human immunodeficiency virus type 2 (HIV-2) strains from patients in GhanaChristopher Z Abana¹, Kwamena W C Sagoe¹, Evelyn Y Bonney¹, Edward K Maina^{1,2}, Ishmael D Aziati¹, Esinam Agbosu¹, Gifty Mawuli¹, Linda M Styer³, James A M Brandful¹ and William K Ampofo¹¹University of Ghana, Ghana²Kenya Medical Research Institute, Kenya³Bloodborne Viruses Laboratory, USA

Statement of the Problem: Antiretroviral therapy (ART) and drug resistance studies worldwide have focused almost exclusively on HIV-1. In Ghana, the HIV epidemic is characterized by the domination of HIV-1 with few HIV-2 co-circulating. As a result, there is limited information on ART and drug resistance in HIV-2 patients. We therefore sought to determine viral load and drug resistance mutations in HIV-2 patients in Ghana to inform the clinical management of such individuals.

Methods: We used purposive sampling to collect blood from 16 consented patients confirmed as HIV-2 and HIV-1/2 dual infections by serology. A real-time RT-PCR assay was used to determine the viral load of patients by using an HIV-2 RNA standard as a reference. Nucleic acid (RNA and DNA) were extracted from plasma and peripheral blood mononuclear cells (PBMC) respectively. The reverse transcriptase (RT) and protease (PR) genes of HIV-2 were amplified, sequenced and then analyzed for drug resistance mutations and HIV-2 group.

Findings: Nine patients comprising 7 ART-naïve and 2 ART-experienced had detectable HIV-2 viral loads (range: 2.35–5.45 logIU/mL). Five of the patients were identified as HIV-2 group B and two as HIV-2 group A. HIV-2 drug resistance mutations (M184V, K65R, Y115F) were identified in one ART-experienced patient.

Conclusion & Significance: This is the first report of HIV-2 viral load determination and drug resistance mutations in HIV-2 strains in patients in Ghana. The results indicate the need for continuous monitoring of HIV-2 drug resistance to improve clinical management of HIV-2 infected patients in a setting focused on HIV-1 patients.

Biography

Christopher Z Abana has his research experience in Virology such as HIV, influenza and viral hemorrhagic fevers. He also has laboratory experience with molecular biology techniques such as genome extraction and purification, polymerase chain reaction (conventional and real time), restriction fragment length polymorphism, agarose gel electrophoresis and sequencing. The lack of an HIV-2 viral load assay in Ghana for the management of such patients on therapy urged him to win a grant from the HIV Research Trust to undertake training on the HIV-2 viral load assay in New York, USA. His current research focusses on optimizing the first HIV-2 viral load assay in Ghana and determining the association between gut microbiota and Ghanaian HIV infected individuals. He has won several awards notable among them include Best Young Scientist 2016 (College of Health Sciences, Ghana) and Best Poster Presentation (Feb 2017, Noguchi Research Conference, Ghana).

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