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Drug resistance mutations in human immunodeficiency virus type 2 (HIV-2) strains from patients in Ghana

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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.

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