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Title: Electroencephalography (EEG) findings in Human Immunodeficiency Virus (HIV) patients followed at an outpatient neuro-infectious disease clinic

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**Introduction:**EEG has been proposed as a promising tool for the assessment of global brain function in HIV patients. Previous research has shown that HIV patients exhibit abnormalities of resting-state EEG rhythms that are proportional to CD4 count, and those with advanced HIV infection demonstrate an overall higher frequency of EEG abnormalities in the clinical setting.

**Methods&Results:**We present 22 consecutive HIV patients who had routine outpatient EEGs at BUMC between June 2012 and August 2016. Indications for obtaining an EEG included seizures and cognitive decline. Twenty-one out of the 22 patients were on highly active anti-retroviral therapy (HAART) at the time of the EEG recording. The age range was 33-68 years and 10 of the patients were men. CD4 counts ranged from 33-1427 cells/mm<sup>3</sup> with HIV viral load ranging between undetectable to 123,262 copies/ml. Ten of the patients were on AED therapy at the time of the EEG. Twelve of the patients had normal EEG. Among 12 patients who were seen in clinic for concern of cognitive decline, 5 had an abnormal EEG. Three out of those 5 patients had diffuse background slowing and 2 had focal slowing. Five out of 12 patients who were referred for cognitive decline had Montreal Cognitive Assessment (MoCA) done and the mean score was 12.4/30. Among 11 patients referred for EEG evaluation for concern of seizures, 7 had an abnormal EEG with only 3 patients demonstrating epileptiform discharges. Other abnormalities included non-specific generalized (3/11) and/or focal (3/11) background slowing.

**Conclusions:**This is a pilot, descriptive study of EEG findings among patients with HIV followed at a tertiary center. We aim to describe EEG findings in HIV patients and explore associations between these findings and clinical measures of cognitive decline and epilepsy in order to determine the role of the EEG in the assessment of HIV-related neurological complications in the new era of prolonged survival on HAART.