

A CASE STUDY OF HIV DETECTION FOLLOWING POST-EXPOSURE PROPHYLAXIS

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Introduction: The study of antiretroviral initiation during “hyperacute” HIV infection may provide insights into a functional cure. We report a case from an individual who initiated HIV post-exposure prophylaxis (PEP) at 36 hours post sexual exposure. Guidelines recommend PEP initiation within 72 hours of sexual exposure. Baseline HIV-antigen was negative, however at two weeks the HIV-antigen remained negative the HIV-antibody was positive and western blot indeterminate. Three weeks after PEP initiation, analysis for HIV DNA was positive. To date the patient is asymptomatic and remains on antiretroviral therapy (ART).

Methods: To investigate the presence of virus, plasma samples were collected for HIV RNA quantification at 4, 7, 9 and 17 weeks after initiation of PEP. Real-time PCR assay was used with single HIV RNA copy sensitivity (Palmer et al., JCM 2003) to measure viremia. In addition, each time point HIV DNA quantification and HIV sequence analysis was conducted.

Results: A single-copy assay used to detect and quantify persistent viremia in the samples collected at 4, 7, 9, and 17 weeks where the HIV-1 RNA was suppressed to <20-50 copies/ml (as determined by standard clinical methods). As of 17 weeks, all HIV RNA levels were measured at the limit of the single-copy assay: <0.3-0.5 copies/ml for 7-4 ml plasma samples respectively.

Conclusion: The detection of HIV DNA indicates that PEP initiation during hyperacute infection in this case did not prevent HIV infection. This individual had no known sexual HIV risk prior to the 72 hour time limit for initiation of PEP and also maintained full adherence to the PEP regime. Plasma HIV RNA <1 copy is indicative of successful ART and smaller viral reservoir. Further follow-up is needed to fully evaluate the intracellular HIV reservoir size: such as HIV DNA/RNA amplification from current and subsequent blood and tissue samples.

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