

DELAYED HIV-1 SEROCONVERSION IN AN INDIVIDUAL RECEIVING PRE-EXPOSURE PROPHYLAXIS (PrEP) – A CASE STUDY

McNally L¹, Carrera A¹, Cunningham P^{1,2}, Carr A¹

¹ NSW State Reference Laboratory for HIV, St Vincent's Hospital, Sydney, ² St Vincent's Centre for Applied Medical Research, St Vincent's Hospital, Sydney

Background: Pre-exposure prophylaxis (PrEP) usage is providing new challenges to the laboratory diagnosis of recently acquired HIV-1 infection due to the interruption of viral replication dynamics and the immune response to infection. We describe the case of HIV-1 seroconversion observed in an individual receiving PrEP.

Methods: A sample for HIV serology was referred to the St Vincent's Reference Laboratory for confirmatory testing following an initially reactive screening test. Follow up samples were requested following repeat reactive supplemental fourth generation HIV tests and an indeterminate western blot showing reactivity to one envelope glycoprotein, (gp160) which was highly suggestive of HIV-1 seroconversion. The sample tested non-reactive for the presence of HIV-1 Ag. Clinical information was conveyed to the laboratory that the patient had resumed PrEP after a brief adherence interruption.

Results: A follow up sample taken after seven days showed identical serology test results, with an undetectable HIV-1 RNA/DNA qualitative assay. Retrospective HIV-1 RNA viral load (VL) testing was detectable although below the limit of quantification (<20 copies/mL). A third sample taken after 42 days returned a positive HIV-1 western blot result with two envelope glycoproteins, gp160 and gp120, a detectable HIV-1 qualitative RNA/DNA and HIV-1 RNA (421 copies/mL). A further sample collected at day 44 was sequenced and the HIV drug resistance profile returned a Nucleoside Reverse Transcriptase Inhibitor (NRTI) resistance mutation M184V which confers high-level resistance to emtricitabine (FTC), one of the two anti-retroviral components of PrEP.

Conclusion: Laboratories and clinicians should be alerted that specimens with indeterminate serology and undetectable HIV-1 nucleic acid tests may suggest a delayed HIV-1 seroconversion in individuals receiving antiretroviral therapy such as PrEP, and such results should be followed up with subsequent samples and detailed clinical history.

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