Implications of p24 antigen in HIV testing

Dear Editor,

HIV is a lentivirus that causes AIDS. Many factors such as host susceptibility, immune function, health care and co-infections, as well as factors relating to the viral strain may affect the rate of clinical disease progression.[1] WHO staging system for HIV infection and disease was first introduced in 1990 and updated in 2005. There are different ways to test for HIV. Almost all laboratories usually use ELISA kits/Rapid test, which detect HIV antibodies and confirm with Western blots.

We would like to narrate a case of a 65-year-old male taking treatment for systemic hypertension and coronary artery disease admitted with 5–6 episodes of fresh bleeding per rectum per day for 2 days. HIV serology was sought in view of oesophageal candidiasis. Patient’s consent was obtained. Institutional ethical clearance was also obtained. The test was done using chemiluminescence microparticle immuno assay (Abbot Architect, USA) and was found to be positive. Based on NACO guidelines, two other principles (Rapid test and ELISA) were used to test and they were found to be negative. He was treated with Fluconazole, proton pump inhibitors, intravenous fluids and other supportive therapy. He improved clinically; haemoglobin and platelet count started recovering. Since, one test for HIV was positive and two other tests (ELISA and Rapid) were negative, Western blot was done. Only p55/p51 bands were positive, hence the result was given as indeterminate.

In view of clinical suspicion the test was repeated. We used Minividas (bioMerieux, France), which identifies p24 antigen and HIV antibodies separately. In this case, p24 antigen was positive, but antibodies to HIV were negative. HIV viral load was 50,102 IU/ml. Absolute CD4 count was 103/μL.

Patient has AIDS Stage IV of the WHO clinical staging.[2] Usually, p24 antigen is a marker of the disease. It rises again after HIV antibody levels fall as there will be immune complex formation and elimination. Based on NACO guidelines, we need to test the patients using three different principles. In this case among the three tests, only one was positive. This particular test (Abbot Architect) does not differentiate whether it is p24 antigen or HIV antibody positive. The p24 antigen test can detect the p24 protein within 10–14 days after infection with HIV.[3,4] p24 antigen levels peak at around 3–4 weeks after exposure to HIV and are usually not detectable after 5–6 weeks. The p24 antigen test is one of the tests developed to detect HIV infection early, because levels of p24 antigen fall as antibody develops and do not rise again until late in the course of HIV infection. There are few cases when HIV antibodies are not detectable viz., people who have a severely impaired immune system may take longer to develop HIV antibodies and those who have taken post-exposure prophylaxis (PEP). If PEP does not successfully prevent HIV infection, the presence of the PEP drugs may still reduce HIV replication. This may delay the time it takes for a person’s body to create HIV antibodies.

This is a very rare case where a patient is already having full blown AIDS tested negative by two commonly used tests. Hence, it is a must for all labs to use kits which can detect p24 antigen and antibodies in the event of strong clinical suspicion.

References


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