

CASE REPORT**Controversial HIV test results in a 36 years old man.****Indrias Lemma, MD¹**

Abstract: *A 36 years old man who was reported HIV – positive once and HIV – negative repeatedly is presented. The possible explanations for such results are discussed.*

Introduction

It goes without saying that the outcome of tests like human immunodeficiency virus (HIV) status is a serious phenomena both to the patient and to the attending health personnel. It is thus quite important to have dependable laboratory results before any formal or informal post - test counseling is considered.

On this line it is mandatory for any practicing health professional to know how to use and interpret the different laboratory tests available for the diagnosis of HIV infection. Prior to the identification of HIV 1 as a causative agent for Acquired immunodeficiency disease (AIDS), the diagnosis of HIV/AIDS was based mainly on clinical grounds. After HIV 1 was identified as a cause for AIDS in 1984, sensitive screening test for HIV infection was subsequently discovered (1).

The laboratory diagnosis of HIV depends on the detection of antibodies to HIV (which will appear 4-8 weeks after infection), isolation of the virus itself,

and/or detection of HIV antigens genetic material.

Diagnostic tests for HIV can be grouped as follows:

- a. Screening tests:
 - Enzyme linked immunoassay (EIA, ELISA) for HIV 1, HIV 2 or usually both.
 - Latex agglutination for HIV 1.
 - ELISA for HIV 1 detection in urine or saliva.
- b. Confirmatory tests
 - Western blot assay for HIV 1, HIV 2.
 - Indirect immunofluorescence antibody assay (IFA) for HIV 1.
 - Radioimmunoprecipitation antibody assay (RIPA) for HIV 1.
- c. Supplemental tests: viral culture, p-24 antigen capture assay and the polymerase chain reaction (PCR).

Of all these, only ELISA and western blot tests are currently licenced for making the diagnosis of HIV infection (1,2). The standard screening test for HIV is ELISA, which on the solid phase assay has a sensitivity of 99.5%. Although ELISA has such a very high sensitivity, its specificity is not optimal and needs additional and more specific confirmatory test (1). The most commonly used confirmatory test is the western blot test which has the advantage of testing for specific antibodies against multiple antigens of HIV. However, there are times where the western blot test can be indeterminate; usually due to cross reacting antibodies (1).

The other supplemental test like viral culture, p-24 antigen capture assay and PCR are commonly used in research

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laboratories. Moreover, the PCR, which detects HIV infection by amplification of viral genome, has provided a true gold standard for the diagnosis of HIV infection particularly in at risk neonates who could harbor maternal antibodies without being infected themselves. Similarly, P-24 antigen capture assay is used to test for HIV infection in patients suspected of having acute HIV syndrome in whom high levels of p-24 antigens are found prior to the development of antibodies (1).

Coming to local experiences, double ELISA Test is done prior to counseling a patient as having HIV infection. In Jimma Regional Laboratory, which is responsible for doing HIV tests, a patient is reported as positive for HIV and thus a candidate for post - test counseling when both a single ELISA and rapid heaf test are positive.

Case presentation

The initiative for this letter was a controversial ELISA report on a 36 years old married man from Jimma town. The patient had history of a single unprotected extramarital heterosexual relationship with someone having multiple sexual partners. He, then, visited a private clinic for a complaint of dysuria with out urethral discharge and was treated for probable sexually transmitted diseases, diagnosis unspecified, and was sent to Jimma Hospital for screening. According to the record of the screening clinic and the patient's chart, he was initially screened on 12/02/90 E.C, about three months after exposure. He was reported negative for HIV. The test was repeated in the same laboratory on 15/04/90 E.C. (five months after exposure) and reported as positive for HIV. After this the patient visited a private clinic in Addis Ababa and was given a laboratory result

paper stating that he is negative for HIV after rapid heaf test. He again visited Jimma Hospital for the third time and was screened on 11/02/91 E.C. (one year after the first test). The test was reported negative. There was no abnormal physical finding except bilateral shotty axillary lymphnodes. The patient was finally told that he has no HIV infection. It will not be difficult to imagine the agony the patient passed through in this one year period.

Discussion

Although the risk of acquiring HIV with a single heterosexual intercourse is low (less than 1%), especially for the male partner, screening such clients for possible HIV infection is justifiable and even recommended. Repeating ELISA negative test is also reasonable since seroconversion is theoretically possible up to a year after the exposure (3).

Though it is difficult to pin point the exact reason for the controversial ELISA report in this patient, for lack of confirmatory test, the possibilities can be discussed.

Since the sensitivity of ELISA is very high (99.5%), false negative results are very unlikely. When it occurs, possible reasons include:- patient in the window period (HIV infection prior to the development of antibodies), very advanced HIV disease where a patient may fail to produce antibodies, and mislabeled specimen. The first reason, patient in window period, is not acceptable in this patient as it was not substantiated by the subsequent tests which were negative way after the window period is over. Advanced HIV disease is also out as a possibility because the patient is only in the first year of exposure and has no clinical evidence for immunodeficiency.

Moreover, ELISA detects surface antibodies (anti - gp 120) which are usually maintained until patients' death (2,3). Mislabeled specimen/recording error is a possibility which can't be ruled out easily.

On the other hand, the specificity of ELISA is not as high as its sensitivity. Among low risk voluntary blood donors it was found that only 13% of ELISA positive individuals actually had HIV infection (1).

Possible causes for a falsely positive ELISA include:-

- Human leukocyte antigen antibodies (in multiparous women and multiple transfusion)
- Autoimmune disorders
- Alcoholic hepatitis, multiple myeloma, recent influenza vaccine, positive rapid plasma reagen and mislabeled specimen (2).

Except for the possibility of mislabeled specimen/recording error, the other disease states were not clinically evident in this patient.

Seroreversion, negative tests after demonstrable antibodies to HIV, is another issue to be raised. Although there are few confirmed reports of seroreversion in medical literature, true seroreversion rate is very minimal and can further be reduced if duplicate samples are tested from the same patient. At the same time it is not a phenomena that can be explained medically (2).

Thus the most plausible explanation for the controversial ELISA results in this patient seems to be mislabeled specimen, recording error, or false positive ELISA for reasons that may be difficult to explain.

In conclusion it is imperative to confirm all inconclusive or positive

ELISA results by using a more specific assay, which usually is the western blot test. The negligible false positivity (0.0007-0.01%) of sequential ELISA and western blot tests makes this procedure dependable for counseling or labeling a patient as having HIV infection. However, the cost of western blot test is a real constraint facing underdeveloped countries like Ethiopia. A possible alternative could be the use of double ELISA which can minimize the false positive results. Furthermore, common understanding should be there between screening laboratories, physicians and other health professionals on the number and type of tests to be done and their interpretations. The advantages of, and the need for, a simple and clear national guideline can not be overemphasized. Strict and confidential record keeping and labelling should be adhered to.

Acknowledgment

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References

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