FALSE POSITIVE ELISA RESULTS IN HUMAN IMMUNODEFICIENCY VIRUS INFECTION (A Case Report)

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Introduction

Screening for the identification of HIV infected patients is done by various direct and indirect serological tests [1]. These include conventional ELISA, rapid tests like spot ELISAs and agglutination tests. Accurate identification of HIV infected individuals is most essential since it has long-term social and ethical implications. For the last 2 years we have been using ELISA test kits (Biochem, UBI-40, Immunocomb-Bispot, HIV-Trispot and Dot ELISA) and sometimes latex agglutination test kits.

Such serological assays form the cornerstone for routine screening of samples for clinical and blood bank purposes [2]. Most antibody screening assays use the well-known, rapid, simple and easy to perform ELISA formats. Specimens that are reactive by ELISAs require confirmation by Western blot (WB) or alternately by another ELISA test that employs a different test principle [3].

Case Report

A healthy, asymptomatic, 32-year-old serving soldier returning from an overseas assignment was subjected to screening for HIV infection. No risk factor or risk behaviour could be elicited during the pretest counselling. Chronology of test results pertaining to him for the last 2 years are depicted in Table 1. The table shows equivocal or positive ELISA results and negative or positive rapid test results on 5 occasions during Oct 93 to Sep 95. WB test done on 4 occasions was negative. CD4 count was not done.

Discussion

The subject of this case report showed fluctuat-

ing positivity for HIV-1 and HIV-2 by various screening tests and negative WB test results. Notwithstanding the latter, he was advised repeat testing for HIV at punctuated intervals mainly because of equivocal or strongly positive or negative screening test results. He was ultimately declared uninfected in view of repeated WB negativity.

False positive results are not uncommon in ELISA for HIV [4], specially in studies of low-risk individuals. In one such study only 13 per cent of ELISA-positive individuals among voluntary blood donors actually had HIV infection [5].

Currently available ELISAs for HIV have sensitivity and specificity of over 99.5 per cent and 98 per cent respectively [6]. They are combination ELISAs in that they detect both anti-HIV1 and anti-HIV2 antibodies. Chemically synthesized peptides of both the agents are used as antigens in the test kits [7]. ELISA tests are generally scored as positive (highly reactive), negative (non-reactive) or indeterminate (partially reactive) [5]. The ELISA reactivity in our patient was positive and indeterminate on 2 occasions each.

The accuracy of detecting HIV specific antibody with the combination of ELISA and WB has been convincingly demonstrated. In one study [8], only 1 out of 15 serum samples positive by both ELISA and WB was negative by independent screening assays. This signifies the confirmatory negative or positive value of WB specially so in cases with dubious screening test results. Thus, it

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TABLE 1

Sr No	Date	Screening Result		Reference lab result			Remarks
		ELISA	Rapid test	ELISA	Rapid test	WB	
1.	26.10.93	+	+ HIV-2	±	ND	—	Rpt after 3 months
2.	15.2.94	+	+ HIV-2	—	ND	ND	
3.	20.9.94	+	+ HIV-2	+HIV-2	ND	—	
4.	10.1.95	+	ND	+	± HIV-2	—	
		±			+ HIV-2		
5.	12.9.95	—	± HIV-2	ND	ND	—	Declared infected

+ Positive; — Negative; ± Equivocal; ND - Not done; WB - Western blot

is imperative to give due credence to the Western blot result, regardless of the screening test result. Not giving such credence was the major pitfall in this case.

Evident from Table 1 is the lack of concordance between screening assays done repeatedly. Such a discrepancy is explained on the basis of ELISAs requiring a smaller quantum of antibodies for positivity as compared to WB [9]. Hence, WB is not positive in early seroconversion and cannot be used for routine screening. However, unlike ELISA, a positive WB is highly prognostic of AIDS.

Western blot is only indicated in high-risk group subjects. It was resorted to in our subject due to repeated discordant results of his screening tests and ELISAs, so that the individual could definitively be declared either infected or uninfected.

The message this case report conveys is that it is necessary to interpret ELISA and even WB results in HIV infection in conjunction with the risk group and not in isolation. Further we underscore Western blot's confirmatory value.

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