

Suitability of a Rapid Immunochromatographic Test for Detection of Antibodies to Human Immunodeficiency Virus in Ghana, West Africa.

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Products Evaluated

Determine HIV-1/2 (Inverness Medical)
HIV SPOT test (Genelabs Diagnostics, Singapore)
Innotest HIV-1/2 (Innogenetics N.V., Ghent, Belgium)

This study was carried out during 1998 and 1999. Plasma and serum samples were collected from pregnant women, people with suspected HIV infection and blood donors from different locations in Ghana. These samples represent the type of population where rapid HIV testing would be utilised.

A total of 125 HIV positive and 75 HIV negative, the HIV status of the samples was determined by screening with the Serodia HIV-1/2 PA assay and further screening with the PEPTI LAV 1-2 and the WB assay (New LAV-blot 1 and New LAV-blot 2)

Abstract

In West African countries such as Ghana, efficient human immunodeficiency virus (HIV) testing is a priority in the fight against AIDS. A new immunochromatographic rapid test, Determine HIV-1/2 (Abbott Diagnostics, North Chicago, Ill.), that detects antibodies against HIV type 1 (HIV-1) and/or HIV-2 was evaluated using Ghanaian blood samples. Two hundred four serum and/or plasma specimens were tested. HIV screening was done by a particle agglutination test and confirmed by a Western blot (WB) test as the "gold standard." The results revealed 125 HIV-seropositive AIDS patients, 75 HIV-seronegative healthy individuals, and 4 individuals for whom the HIV-1 result was indeterminate. The results obtained by the Determine HIV-1/2 assay and Diagnostic HIV SPOT (Genelabs), which is currently widely used in many districts in Ghana, were compared with those of the WB test, excluding the four HIV-1-indeterminate samples. The sensitivity of the Determine HIV-1/2 assay was 100%, compared with 98.0% for the HIV SPOT assay. The specificity was 100% for both tests. Determine HIV-1/2 is a single-step assay and was found to be rapid and easy to perform without any special equipment. It was highly sensitive and specific. The kit can be applied without electricity and water supplies, making it suitable for the detection of HIV antibodies especially in the rural areas of Ghana, West Africa.

Results

This is a summary of the data reported in the paper.

| | Sensitivity | | | Specificity | | |
|--------------------------|-------------------|--------------------|--------------------|-------------------|--------------------|-------------------|
| | Serum (n = 65) | Plasma (n = 60) | Total (n = 125) | Serum (n = 40) | Plasma (n = 35) | Total (n = 75) |
| Determine HIV-1/2 | 100% | 100% | 100% | 100% | 100% | 100% |
| HIV Spot | 100% | 96.8% | 98.4% | 100% | 100% | 100% |
| Innotest HIV-1/2 | 100% | 98.4% | 99.2% | 97.6% | 97.2% | 97.4% |

In addition 4 indeterminate samples were tested and found to be positive by Determine HIV-1/2, 3 were positive by Innotest and 2 by HIV SPOT.

Discussion

"The Determine HIV-1/2 assay showed 100% sensitivity and 100% specificity for the detection of HIV-1 and HIV-2 with serum and plasma samples. The results completely agreed with the PEPTI LAV 1-2 assay and the WB 1 and 2 assays used as the "gold standard" in the present study. Furthermore, the four specimens indeterminate for HIV-1 by WB assay were all found positive by the Determine HIV-1/2 assay, indicating its sensitivity as a supplemental screening assay."