Lack of Increased Frequency of Human Immunodeficiency Virus Infection in Individuals with Dengue-like Illness in South India

Dear Editor,

The WHO/UNAIDS estimates 5.1 million individuals infected with human immunodeficiency virus (HIV) in India.\(^1\) It is estimated that 60-80% of the HIV infected individuals can have seroconversion illness which may mimic an acute viral infection with fever and rash.\(^2,3\) India has an ongoing HIV epidemic with seasonal outbreaks of dengue fever, one of the most common causes of fever with rash. The objective of this study was to determine the frequency of HIV infection among patients clinically presenting with dengue-like illness, to determine the need for testing HIV antibodies in dengue-like illness.

An anonymous unlinked testing was carried out during May 2005-Jan 2006 on 326 out of 906 archived serum samples received during the year 2003 January through 2005 March at the Clinical Virology department of a tertiary care center in Tamil Nadu for dengue antibody testing. Dengue antibody testing was carried out by the Dengue Duo IgM and IgG rapid strip /cassette test (PANBIO limited, Columbia, MA, USA). This test helps the presumptive differentiation of primary and secondary dengue virus infection. The HIV antibody was screened by a third generation HIV enzyme-linked immunosorbent assay (ELISA), the Genscreen (BioRad, Marnes La Coquette, France). Since this kit is a third generation ELISA it could pickup IgM antibody apart from IgG. The same ELISA in duplicate retested all the positive samples wherever sample volume was sufficient. Samples which were of insufficient volume but had tested positive either once or more than once in ELISA, were tested by an immunoblot (CHIRON RIBA, HIV-1/ HIV-2 SIA, Chiron Corporation, CA, USA) assay for confirmation of HIV status.

Among 326 samples, 292 were negative for dengue IgG and IgM antibodies while the remaining 34 samples were positive for dengue IgM antibodies. Nine (3.1%) of the 292 dengue negative samples were reactive for HIV by ELISA, only 3 (1%) were confirmed by immunoblot. Four (11.8%) of the 34 dengue IgM antibody positive samples were reactive for HIV by ELISA. All these four samples were positive only of primary and secondary dengue virus infection. The HIV antibody was screened by a third generation HIV enzyme-linked immunosorbent assay (ELISA), the Genscreen (BioRad, Marnes La Coquette, France). Since this kit is a third generation ELISA it could pickup IgM antibody apart from IgG. The same ELISA in duplicate retested all the positive samples wherever sample volume was sufficient. Samples which were of insufficient volume but had tested positive either once or more than once in ELISA, were tested by an immunoblot (CHIRON RIBA, HIV-1/ HIV-2 SIA, Chiron Corporation, CA, USA) assay for confirmation of HIV status.

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<table>
<thead>
<tr>
<th>Category</th>
<th>n</th>
<th>Human immunodeficiency virus immunoblot reactivity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Negative*</td>
</tr>
<tr>
<td>Dengue IgM / IgG negative</td>
<td>292</td>
<td>289</td>
</tr>
<tr>
<td>Dengue IgM positive</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>Dengue IgM / IgG positive</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>Total</td>
<td>326</td>
<td>321</td>
</tr>
</tbody>
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*Include ELISA negative samples
for dengue IgM antibody. The immunoblot confirmed two of these samples as HIV negative and the remaining two as indeterminate. The data is shown in the Table.

In this study we used HIV antibody assays (ELISA and immunoblot) that can detect IgM antibodies. The immunoblot detects the IgM antibody as the conjugate used in the assay was peroxidase-labeled goat anti-human IgG against heavy and light chains. A frequency of 0.92% HIV antibody positive status was observed among individuals presenting with dengue like illness. During the same period an HIV frequency of 2.22-1.38% was seen in a hospital-based population. In a recent community based study conducted in Vellore district and in the urban wards of Vellore town 1512 serum samples were tested from subjects residing in rural areas and 1358 samples from urban areas collected during 1999-2000 for HIV antibodies. The overall HIV prevalence was 1% with a lower seropositivity among rural samples (0.66%) than urban (1.4%).

Though the seroconversion illness can present as dengue like illness we could not find any increase in the frequency of HIV infection. Among the dengue IgM positive samples, two showed indeterminate results. Those two patients may have been in the seroconversion period as both showed reactivity to P24 antibody by immunoblot. It is known that some individuals who exhibit indeterminate results (e.g. reactivity to p24 and p55) later seroconvert, demonstrating that a p24 and p55 immunoblot profile can indicate early infection. However, these findings have to be viewed carefully as this may be a false positive reactivity. There are reports of HIV false reactivity in dengue positive patients. In conclusion, our study failed to show any increase in frequency of HIV infection among individuals presenting with dengue-like illness and it may not be necessary to screen for HIV seroconversion illness. However, primary HIV infection can be established by retesting for HIV antibody after about one month following sero-conversion illness. This may be an approach for individuals who belong to HIV risk groups including sexually promiscuous individuals.

References

A Photometric Screening for Significant Bacteriuria
Dear Editor,

To predict the outcome of urine cultures, several screening methods have been developed. In photometric screening, diluted urine specimen is added to the broth in microplate well and incubated; if the specimen contains at least 10^5 bacteria/mL, optical density (OD) in the well increases significantly within five hours. The aim of this study was to verify this method using a kinetic microplate reader.

Four hundred thirty midstream urine specimens were tested by the standard culture method. Specimens with counts ≥ 10^5 cfu/mL were considered positive. The specimens were also evaluated using a photometric screening. Urine specimens (100 μL) were inoculated in to 100 μL of brain heart infusion (Oxoid, Basingstoke, UK) enriched with 8% of concentrated tissue culture medium E-199 (Sevapharma Prague, Czech Rep) in microtitre wells. The plate was placed on a photometer (MRX HD; Dynex Laboratories, Chantilly, VA). The temperature of the microplate chamber was maintained at 36°C. The optical density (OD) of inoculated wells was measured every ten minutes at a wavelength of 420 nm. Wells with an OD increase of ≥7% in four hours were considered as positive. Curves of turbidity increase were also received and those that contained an exponential segment were considered positive. The quantitative culture test and photometric screening thus resulted in three logical values: significant/ insignificant bacteriuria; presence/ absence of 7% increase in OD in four hours; and presence/ absence of an exponential segment in curve. Relation among those logical values was expressed as sensitivity and specificity, positive and negative predictive values of the screening.

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