Early diagnosis of an acute HIV infection in a primary care setting: the opportunity for early treatment and prevention

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Introduction

Despite the fact that today over 40 million individuals worldwide are living with HIV, fewer than 1,000 cases have been diagnosed in the first month of infection [1].

Due to clinical reasons (acute retroviral syndromes mimic many common febrile illnesses) and because confirmatory HIV antibody tests will typically remain negative during the diagnostic window beyond the onset of acute retroviral symptoms, acute HIV infections are still missed [2, 3].

Case report

In May, 2005, a 54-year-old man, who had recently returned from a vacation in Cuba, presented to us with high fever (39.8 °C), tonsillopharyngitis, fatigue and myalgia of one week’s duration. No rash or lymphadenopathy was observed. At that point in time a lymphopenia (0.58 × 10^9 cells/µL), a thrombocytopenia (65 × 10^9 cells/µL) and elevated C-reactive protein (64.5 µg/mL) were encountered. Slightly elevated liver enzymes were noted (alanine aminotransferase 41.8; aspartate aminotransferase 56.7; alkaline phosphatase 174; gamma-GT 104 and total bilirubin 45.5 µmol/L).

In the control examination 3 days later, leukopenia (3.3 × 10^9 cells/µL), neutropenia (1.4 × 10^9 cells/µL), continuing thrombocytopenia (70 × 10^9 cells/µL) and an increase of lymphocyte count (1.05 × 10^9 cells/µL) were encountered. CD4 (467 cells/µL) and CD8 (332 cells/µL) count were found normal as was the CD4/CD8 ratio (1.41). After introduction of Moxifloxacin (Avalox; 1 mg twice daily) the patient became afebrile and his general condition improved, except for newly diagnosed aphthous ulcer on the left palatum molle.

Malaria, dengue, Streptococcus pyogenes group A, enteroviruses, Shigella, Salmonella, Epstein-Barr virus, cytomegalovirus, hepatitis B virus, hepatitis C virus and Treponema pallidum were excluded as causes of this clinical condition.

In the history at that time the patient denied any risk exposure known to be associated with HIV transmission.

Nevertheless, because of the lymphopenia and thrombocytopenia, an HIV screening test was suggested and the patient agreed. A third-generation HIV test gave a negative result and two fourth-generation HIV EIA Tests, which simultaneously detect antigen and antibodies, were reactive. A negative immunoblot test result was received from an external, designated confirmatory laboratory and a control testing in 3–6 months was suggested by them. In spite of this, we performed an HIV nucleic acid amplification test (NAT) on the first sample, which revealed a positive HIV-1 result of 4,150,000 copies/mL. Follow-up results are summarized in table 1.

At that point the patient confirmed an unprotected heterosexual contact on May 11 during his vacation in Cuba.

Discussion and conclusions

Many countries have recently placed significant emphasis on the identification of people with acute HIV infection [1, 4–6].

In our case we have shown that an early HIV infection can still be missed, in spite of clinical suspicion, by using immunoblot as the sole confirmatory method in patients with an early HIV infection in whom only the HIV antigen is detectable and antibodies have not yet been produced [5, 7, 8].

We can conclude that, in cases of leucopenia with thrombocytopenia and fever, an acute HIV infection has to be considered as the differential diagnosis and should be excluded.

For the diagnosis of an early HIV infection, fourth-generation EIA should replace the third-generation and NAT for HIV should be introduced into the confirmatory algorithm at the first sample stage in addition to the standard HIV fourth-generation EIA if the confirmatory immunoblot is negative.

In patients with reactive fourth-generation HIV EIA, with or without clinical illness, a negative immunoblot result should be followed by NAT.

This would optimise early HIV diagnosis without a significant cost increase, considering the benefits accruing in terms of opportunities for earlier treatment, source identification and introduction of preventive measures.

Table 1

<table>
<thead>
<tr>
<th>Collection Date</th>
<th>HIV 4th generation Antigen/Antibody test</th>
<th>HIV 4th generation Antigen/Antibody test</th>
<th>Immunoblot Inno-Lia HIV-Confirmation, Innogenetics</th>
<th>Cobas Amplicor HIV-1 Monitor</th>
<th>Roche Diagnostics</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 30, 2005</td>
<td>8.06</td>
<td>3.81</td>
<td>not done</td>
<td>4,150,000 copies / mL</td>
<td></td>
</tr>
<tr>
<td>June 3, 2005</td>
<td>5.25</td>
<td>4.89</td>
<td>negative</td>
<td>8,320,000 copies / mL</td>
<td></td>
</tr>
<tr>
<td>June 26, 2005</td>
<td>7.38</td>
<td>3.20</td>
<td>positive (p24, p31, gp41)</td>
<td>82,000 copies / mL</td>
<td></td>
</tr>
</tbody>
</table>

* cut off 1.0  ** cut off 0.25

References

8 Schupbach J, SHCS and the laboratory diagnosis of HIV infection – from the development of the HIV Western blot to virus quantification and clinically relevant individual virus characterization. Ther Umsch. 2004;61:603–7.

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