Oligoclonal Immunoglobulins in HIV-ANTIBODY-POSITIVE
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An association between HIV infection and the presence of 
oligoclonal immunoglobulin bands (OIB) in serum has been 
reported. The incidence of OIB in HIV-antibody-positive 
sera ranges from 9% to 63% (1–4). These bands are usually 
IgG κ, although IgA κ, IgM κ, and IgG λ bands have been 
found (3–5), and one study has demonstrated specificity of 
oligoclonal immunoglobulin bands to HIV antigens (6).

Here we report a 43% incidence of OIB in HIV-antibody- 
positive sera and demonstrate a positive correlation be- 
tween the presence of bands and the degree of anti-HIV 
antibody positivity.

We analyzed 44 random heat-treated (56 °C, 0.5 h) sam- 
ple of HIV-antibody-positive serum, by high-resolution 
agarose gel electrophoresis. We found that 19 of 44 (43%) 
of samples had oligoclonal immunoglobulin bands, five of 
which were "prominent" as judged by visual inspection. 
Heat-treated samples were utilized in the interest of safety, 
but we confirmed that heat treatment was not deleterious 
to the detection of oligoclonal bands by comparing electropho-
retic results on serum samples with known paraproteins 
(IgG κ, IgG λ, IgM κ) with paraprotein concentrations 
ranging from <1 to 6.9 g/L. We saw no significant changes 
in the concentration of the paraproteins (scanning densitom-
etry) or the pattern of bands in the immunoglobulin region 
in appearance or disappearance of bands.

The HIV sera were subdivided according to degree of 
antibody positivity as measured by the absorbance to cutoff 
or ELISA testing (Abbott Laboratories or Genetic 
System, HIV antibody screening tests). This allowed for 
comparison of the positivity of sera tested at different times. 
The samples were divided into positive and strongly positive 
sera (absorbance to cutoff ratio 1.0–8.0 and >8.0, respecti- 
vely). We saw a positive correlation between the presence of 
bands and antibody positivity; i.e., 18 of 19 of the sera 
were strongly positive for HIV antibody:

<table>
<thead>
<tr>
<th>HIV antibody status</th>
<th>Western blot</th>
<th>Oligoclonal bands (prominent)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Positive</td>
<td>Equivocal</td>
</tr>
<tr>
<td>Positive</td>
<td>11</td>
<td>4</td>
</tr>
<tr>
<td>Strongly positive</td>
<td>33</td>
<td>32</td>
</tr>
<tr>
<td>Totals</td>
<td>44</td>
<td>36</td>
</tr>
</tbody>
</table>

*Positive reaction with p-41 or p-33 only.

All samples with prominent bands were in the strongly 
positive group and all were positive by Western blot (7). 
Bands were not detected in any of the Western blot negative 
or equivocal samples. Immunofixation of the sera showing 
prominent bands identified both IgG κ and IgG λ immuno-
globulins.

The discrepancy in the incidence of OIB among studies 
may reflect differences in the stage of the HIV infection in 
the various individuals tested. The time intervals between 
the initial infection, antibody seroconversion, and the 
appearance of OIB has not been established. Fluctuations in 
the density of bands with time also requires investigation, 
particularly as it may relate to the progression of disease 
and provide a means to monitor candidate therapies.

Our findings indicate a relatively high incidence of OIB in 
HIV-antibody-positive serum. The incidence of oligoclonal 
bands in a healthy population (age 22–65 y) is estimated to 
be 5% (8) and the incidence of paraproteins in a young 
population (age <40 y) is <0.3% (9). Thus the presence of 
oligoclonal bands in the serum of a patient younger than 40 
y should be regarded with suspicion and HIV testing consid-
ered.

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Automated Method for Measuring Cystine in Urine, 
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Cystinuria, a heritable disorder of amino acid transport, is 
expressed clinically by formation of cystine urinary calculi. 
On adequate therapy with penicillamine the excretion of 
cystine may be decreased, to minimize stone formation (1).

Here we describe a method for measuring cystine in 75 μL 
of urine. The method is based on the qualitative cyanide-
nitroprusside test (2, 3). We used a "Multistat III plus" micro 
centrifugal analyzer (Instrumentation Laboratory Inc., Lex-
ington, MA). In each run we included five calibrators 
prepared in pooled normal urines: blank, 0.2, 0.4, 0.8, and 
1.6 mmol of cystine per liter, respectively. The reagents 
were aqueous solutions of sodium cyanide, 50 g/L (R-1), 
and sodium nitroprusside, 20 g/L (R-2), prepared just before use. 
The latter reagent has to be protected against light. Only 2 
μL of R-1 and 1 μL of R-2 are needed for a one cuvette-rotor 
run (20 tests). The procedure is performed in four steps: 1) 
Loader: the cuvette rotor is loaded with 75 μL of sample + 5 
μL of diluent and 75 μL of R-1 + 5 μL of diluent. Cuvette 1 
is loaded with urine blank instead of water. 2) Multistat: 
samples and R-1 are mixed with use of the standard 
"Mix/Centrifugation" program. 3) Loader: the rotor is next 
loaded with 15 μL of R-2 + 5 μL of diluent. 4) Multistat: the 

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