Diagnosis and Treatment Regimes for Syphilis  By Dr. John Bannister

Syphilis: Interpreting Different Treponemal Test Results

One of the common questions asked is “what to do if the EIA is reactive and the RPR test is negative and TPPA test is negative?”

These results are consistent with early syphilis (and the other tests have not started to be reactive), OR
- it could be a false reactive test
- it could be untreated late syphilis whereby the RPR has become negative and the TPPA negative (admittedly an uncommon situation)
- it could be a person who has been treated for syphilis in the past.

The history becomes important here. Has this person been treated for syphilis in the past? This could explain the results (1).
Is this person of high risk for syphilis? If so, he or she needs to be counseled to avoid sexual contact until a repeat test is done. The treponemal tests need to be repeated in 3 to 4 weeks time. If the patient has early syphilis then the repeat test will show the RPR as reactive and the TPPA as reactive.

Another very common cause of referral is the following scenario:

EIA reactive and RPR negative (or of low titre) and TPPA reactive. This can be a situation of either new disease (best described as early syphilis), that has been tested before the RPR has had a chance to become reactive, or old disease (best described as late syphilis) that has been treated or late syphilis that has not been treated.

Again the history becomes important. Does this patient have a history of syphilis? If there is a history of previous syphilis does the patient have a clear history of the correct treatment for syphilis? If not they will need to be treated. If there is no history of syphilis then questioning is directed to clarify if the syphilis is early or late. The treatment of the patient and the management of the sexual partners is different for both (see later). Ask about any previous syphilis tests. If the history
does not help clarify the disease as being early or late syphilis then a repeat blood test, taken 3 to 4 weeks after the initial test will clarify the situation: an evolving infection should see the RPR become reactive, old disease means the results will be unchanged 4 weeks later.

➤ **Interpretation of treponemal serology requires the sexual history of the patient and usually a comparative blood test.**

The table below shows that a single treponemal test result without any comparative test results and without any history has several possible interpretations.

### Possible interpretations of different treponemal test results.

<table>
<thead>
<tr>
<th>EIA</th>
<th>RPR</th>
<th>TPPA</th>
<th>INTERPRETATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>NT</td>
<td>NT</td>
<td>No evidence of treponemal infection. (Repeat test in 4 weeks if clinically indicated).</td>
</tr>
<tr>
<td>R</td>
<td>N</td>
<td>N</td>
<td>Possible early primary infection, or a false positive EIA, or very longstanding syphilis (either treated or untreated)</td>
</tr>
<tr>
<td>R</td>
<td>R</td>
<td>N</td>
<td>Possible early primary syphilis, or false positive EIA and false positive RPR.</td>
</tr>
<tr>
<td>R</td>
<td>N</td>
<td>R</td>
<td>Possible longstanding syphilis (either treated or untreated) or possible early syphilis (with the RPR yet to become reactive).</td>
</tr>
<tr>
<td>R</td>
<td>R</td>
<td>R</td>
<td>Possible current syphilis (either treated or untreated), or possible old syphilis (either treated or untreated). (If the syphilis is old and/or treated one would expect a low titre RPR)</td>
</tr>
</tbody>
</table>

N =   negative  
NT = not tested  
R = reactive
RECAP

If treponemal serology is to be interpreted correctly a sexual history is needed.

In addition to a thorough history a comparison blood test is usually required.

Treponemal serology can leave one unsure of diagnosis and management: even doctors experienced in the field may be presented with a combination of history and serology that are problematic.

If there is any doubt of the diagnosis then a Sexual Health or Infectious Diseases Service should be consulted.

References