Rheumatoid factor in the diagnosis of congenital syphilis

M. P. MEYER, A. F. MALAN

Summary
Rheumatoid factor was evaluated as a screening test for congenital syphilis. It was positive in all infants with syphilis but negative in control infants. The test would appear to be of definite diagnostic value.


Congenital syphilis remains an important disease in developing countries. In a study in Zambia, 0.9% of live-born infants had clinical signs of congenital syphilis and the disease has been quoted as a leading cause of perinatal death. In Cape Town, 7% of mothers attending antenatal clinics were found to have positive serological tests.

Many patients with congenital syphilis are asymptomatic at birth and therefore some form of screening is expected to identify infected infants. Because of passive transfer of IgG from mother to fetus, routine serological tests are of limited value. Even the fluorescent treponemal antibody-absorption test (FTA-ABS) for fetal IgM is not always specific, false-negative rates being found in as many as 30% of cases in which the onset of disease is delayed. A raised total IgM test is cheaper and is reported to be a useful method to exclude syphilis.

In certain chronic infections the body produces rheumatoid factor (RF) which is usually IgM. Intra-uterine infections are no exception and the fetus would therefore be expected to make this IgM. This has only been looked at in a few studies. We report on the value of RF as an alternative diagnostic test for congenital syphilis.

Patients and methods
Several categories of infants were studied. Group I consisted of 15 infants each of whom had definite clinical, serological and radiological evidence of congenital syphilis. Group II consisted of 14 infants born to mothers with positive serological tests for syphilis. Ten of the mothers had received antenatal treatment with penicillin. In none of the infants was there any clinical signs of congenital syphilis. Group III consisted of 15 infants each of whom had definite clinical, serological and radiological evidence of congenital syphilis. Group III was made up of 80 control infants. Maternal STSs were negative at booking and the infants were normal with negative STS on cord blood.

RF was measured by a latex agglutination test which detects IgM values above 15 IU/mL. The agglutination test is carried out on a slide with controls and is read in 2 minutes. Serum for this, as well as for the total IgM, was collected from a heel prick into a non-anticoagulant capillary tube. Consent for the procedure was obtained from the mothers in group III. The total serum IgM was measured by radial immunodiffusion on immunoplate test kits. The other STSs were done by routine laboratory methods.

Results
RF was positive in all 15 infants in group I (Table I). The FTA-ABS IgM test was also positive in all these infants whereas the total IgM, tested shortly after birth, was not raised in 2 infants. Three infants presented weeks later and total IgM levels at birth were therefore not available. Radiological bone changes were present in 12 of the 15 infants.

In contrast, none of the tests done were abnormal in either group II or the control group III.

Discussion
This study contrasted tests for congenital syphilis in infants with obvious disease with those in infants at risk for syphilis and normal controls. Both the RF and FTA-ABS IgM tests provided 100% correlation. These results are in keeping with reports of the presence of RF in congenital cytomegalovirus, toxoplasmosis and syphilis. Indeed Reimer et al. stated that 26 out of 27 infants with congenital syphilis had positive RF tests. Whether RF is produced against maternal IgG or against immune complexes is not clear. The negative RF tests in group II would support the immune complex theory.

The high sensitivity of FTA-ABS IgM tests is somewhat surprising in view of previous reports and our experience. The total IgM was not fully diagnostic in this study and is only of value if carried out at or shortly after birth. The high incidence of bone changes was not unexpected. RF and total IgM tests were done in every infant in group II, and all the tests were normal as were the few other investigations (Table I).

It would appear from this relatively small study that the RF test is a rapid and effective screen for congenital syphilis. It is easily done, costs 60% less than total IgM determination and the answer is immediately available. The total IgM test is expensive and sometimes not available. It would appear from this study that the RF test is a rapid and effective screen for congenital syphilis. It is easily done, costs 60% less than total IgM determination and the answer is immediately available. The total IgM test is available in kit form but needs careful evaluation and takes up 48 hours to read. The FTA-ABS test requires a specialised laboratory, is expensive and there is an inevitable delay before the result becomes available.

More patients need to be studied to verify these very encouraging results. Infants in group II should be followed up to verify whether they remain free from syphilis. In poor socio-economic communities such long-term follow-up is generally very difficult. We believe that RF screening could be very useful, particularly in developing countries.

We wish to thank the medical superintendents of the teaching hospitals in the University of Cape Town group for permission to do this study, and the Department of Medical Microbiology for the serological testing.

REFERENCES

Department of Paediatrics and Child Health, University of Cape Town
M. P. MEYER, M.R.C.P.
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A longitudinal study of asymptomatic carriers of pathogenic zymodemes of *Entamoeba histolytica*

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**Summary**

The value of treating subjects who pass *Entamoeba histolytica* cysts in their faeces is currently in question. In the endemic Durban area iso-enzyme electrophoresis of *E. histolytica* isolates indicated that 1% of the asymptomatic population are infected with pathogenic zymodemes. The outcome of these potentially invasive infections was established by means of a longitudinal survey. All subjects had strongly positive serological responses — 10% of them developed amoebic colitis while the rest remained asymptomatic and spontaneous cure occurred within 1 year. Infections with pathogenic zymodemes occurred in family units and closely related individuals. Since they were cyst passers, good evidence was obtained for the existence of a carrier state for pathogenic *E. histolytica*. The value of sero-epidemiological studies in determining the prevalence of pathogenic *E. histolytica* in a community was highlighted. Treatment of asymptomatic carriers with pathogenic zymodemes of *E. histolytica* is as essential as treatment of patients with invasive amoebiasis, and in both cases all contacts of affected individuals must also be treated if they are found to harbour pathogenic zymodemes of *E. histolytica* in order to ensure control of disease transmission.

**Table I. Results of Tests for Congenital Syphilis**

<table>
<thead>
<tr>
<th>Group</th>
<th>No. of subjects</th>
<th>Clinical signs</th>
<th>RF positive</th>
<th>Total IgM raised</th>
<th>FTA-ABS IgM positive</th>
<th>Bone changes</th>
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<tbody>
<tr>
<td>I</td>
<td>15</td>
<td>14/15</td>
<td>15/15</td>
<td>10/12</td>
<td>15/15</td>
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<td>0/14</td>
<td>0/14</td>
<td>0/7</td>
<td>0/2</td>
</tr>
<tr>
<td>III</td>
<td>80</td>
<td>0/80</td>
<td>0/80</td>
<td>0/80</td>
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