

THE POST-TREATMENT DISAPPEARANCE OF REACTIVITY TO TREPONEMAL AND LIPOIDAL TESTS IN EARLY SYPHILIS

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Abstract. The authors studied the post-treatment sero-reversal in a series of 56 patients with early syphilis and a known date of infection. Nineteen of the patients had primary and 37 secondary syphilis. The tests compared were the Kahn, VDRL slide, Kolmer, Reiter protein complement-fixation (RPCF) and fluorescent treponemal antibody-absorption (FTA-ABS) tests. In cases with a duration of infection shorter than three months the tests were found to turn negative rapidly, most patients being negative to all tests one year after treatment. In cases with a longer duration of infection sero-reversal was slow. The FTA-ABS test turned negative in both groups slower than both lipoidal tests and the RPCF test. It was concluded that the lipoidal tests are better indicators of the successful treatment of early syphilis than the RPCF test and especially than the FTA-ABS test, which, on the other hand, is the best method for detecting syphilis even in cases treated early.

In an earlier study the order of appearance of reactivity to treponemal and lipoidal tests was evaluated in a series of patients with untreated primary or secondary syphilis with a known date of infection (4). The fluorescent treponemal antibody-absorption (FTA-ABS) test was found to detect syphilis earlier than either the *Treponema pallidum* immobilization (TPI) or the Reiter protein complement-fixation (RPCF) test and frequently earlier than any of the four lipoidal tests evaluated. Förström (1), in a study of post-treatment disappearance, of reactivity to the RPCF and lipoidal tests, found that the tests tended to become non-reactive at a rate which was dependent on the degree of reaction elicited by the test in question before treatment. Weakly RPCF-reactive sera showed a quick sero-reversal, but if the RPCF test had already become strongly reactive it remained so, as a rule, for at least as long as the lipoidal tests.

The authors of the present paper are unaware of studies on the disappearance of reactivity to the FTA-ABS test in treated cases with primary or secondary syphilis with a known date of infection. In this study of such cases the persistence of FTA-ABS reactivity will be compared not only with that of lipoidal tests and of the RPCF test but also with the duration of infection at the time of treatment and with the pre-treatment level of antilipoidal antibodies and the strength of the reactivity to the RPCF test before treatment.

MATERIAL AND METHODS

The series comprised 56 patients, 19 of whom had primary and 37 secondary syphilis. The duration of infection could be estimated with relatively good accuracy because of the low incidence of fresh syphilis in Finland during the period of the investigation (1965 to 1968). A high proportion of the present patients had contracted the infection abroad and in these cases the possible time for infection could be limited to within two weeks. In the cases infected in Finland the sources had been traced. According to the estimation, the duration of the infection before treatment was in no case less than 30 days. Eight patients had been infected 31-41 days before treatment, eight 46-60 days, fourteen 61-90 days and twenty-six more than 90 days before treatment. Twelve of the patients were females.

The treatment in all cases followed the same schedule. Initially, a dose of 100,000 units of penicillin was given in order to reveal a possible Herxheimer reaction. Thereafter a daily intramuscular injection of 600,000 units of procaine-penicillin was given for 12 days. The total amount of penicillin given was thus, in all cases, 7.3 million units.

The patients were summoned for re-examination one, three, six and twelve months after the treatment was completed. At these re-examinations the same serological tests as before treatment were performed on each occasion.

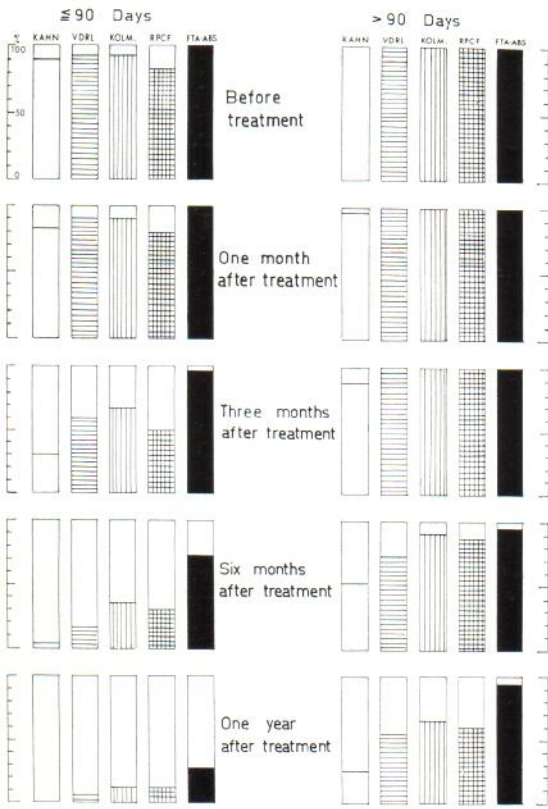


Fig. 1. Disappearance of reactivity in serological tests as related to the duration of the infection before treatment.

Two treponemal tests were carried out in all cases. The FTA-ABS test was performed as described by Lassus (3) and the semi-quantitative RPCF test as described by Förström (1). The TPI test was not included among the serological tests because of its low sensitivity in early syphilis (4). The lipoidal tests used were the Kahn, VDRL slide and Kolmer tests (6). All the serological tests were carried out at the Department of Serology and Bacteriology, University of Helsinki.

RESULTS

Before treatment the FTA-ABS test was positive in all cases, while five patients had a negative RPCF test, three a negative Kahn and two each a negative VDRL slide or Kolmer test. All the patients with a negative result in some of the tests had been infected within three months of treatment. In 17 of the positive cases the VDRL slide titre was 1 : 8 and in 37 cases 1 : 16. Fourteen of the 51 patients with a positive result in the RPCF test had only a weak reaction (\pm , 1 +

or 2 +), while the remaining 37 patients had a strong reaction (3 + or 4 +).

All the 56 patients were re-examined one and three months after treatment was completed. Six months after treatment, 49, and twelve months after treatment, 37 patients were available for re-examination. At the re-examination no signs of re-infection or relapse could be detected in any case. The post-treatment results in the serological tests are shown in the figure. The 30 patients with a duration of infection less than three months before treatment showed only a slight change in sero-reactivity one month after treatment but two months later there was a definite decrease in sero-reactivity in all other tests except the FTA-ABS test. Twenty-six of these 30 patients had been re-examined six months after treatment and there was then a sharp decrease in the reactivity to the lipoidal tests, while both the FTA-ABS test and the RPCF test showed only a slight change as compared with three months earlier. Twelve months after treatment only 17 of the original 30 patients were available for examination. None of these 17 patients had a positive result in the Kahn test, while one had a positive VDRL slide test and two each positive Kolmer and RPCF tests. Five patients still had a positive result in the FTA-ABS test. Two of them were among the nine patients who had been treated as early as the second month after contracting the infection, while three were found among the eight patients who had been treated during the third month after infection.

Twenty-six patients had been treated more than three months after infection. In these cases the sero-reactivity altered very slightly during the first three months after treatment. Six months after treatment 23 of these patients had been re-examined and only the Kahn test showed a definite decrease in reactivity. Twenty of the original 26 patients were available for examination one year after treatment. One fourth of them were still positive to the Kahn test and over half to the VDRL slide, Kolmer and RPCF tests. Only one of the twenty patients had a negative result in the FTA-ABS test.

Altogether 37 patients were re-examined one year after treatment. In ten of these cases only one test was positive in the final re-examination, the FTA-ABS in eight cases and the VDRL slide and Kolmer tests in one each.

Thirteen of the 37 patients who were re-examined had been either VDRL-negative, or positive only in a dilution 1:8 before treatment. Seven of these had turned negative in the FTA-ABS test, as had also six of the 24 re-examined patients with a stronger reaction in the VDRL slide test before treatment. Twelve of the patients who were re-examined one year after treatment had, before treatment, been only weakly reactive or totally non-reactive to the RPCF test and five of these had had a positive result in the FTA-ABS test in the one-year re-examination. Nineteen of the 25 patients who had initially had a stronger reaction in the RPCF test had also remained positive to the FTA-ABS test.

DISCUSSION

The rapidity with which sero-reversal occurs after treatment of early syphilis depends mainly on the duration of the disease before treatment (2). However, serological tests behave differently, because of different degrees of sensitivity and the nature of the antibodies detected by them.

In primary syphilis, highly sensitive lipoidal tests, such as the VDRL slide and Kolmer tests, turn positive almost as early as the FTA-ABS test (1), which is known to be the most sensitive serological test for syphilis at the moment. But these lipoidal tests seem to turn negative much earlier than the FTA-ABS test, probably because of their non-specific nature. The RPCF test, which is rather slow to turn positive in primary syphilis, seems to persist longer than the lipoidal tests, when once it has turned positive (5). However, the low sensitivity of the RPCF test makes its use in primary syphilis questionable.

A three-months duration of the infection seems to be an important borderline for sero-reversal after treatment of early syphilis. Even the FTA-ABS test turned negative in over half the cases treated within three months after infection, and there was only a slight difference between the cases treated during the second and third months. On the other hand, only one of the patients with an infection of over three months had turned FTA-ABS negative in the present follow-up study. The same tendency could also be noted for the other tests evaluated, although they did not remain positive so long as the FTA-ABS test, even when the infection had lasted for more than

three months prior to treatment. The higher incidence of persistently detectable FTA-ABS antibodies in the cases with strong reactions in the VDRL and RPCF tests before treatment was another indication of the importance of the duration of the infection for sero-reversal.

It may be concluded that lipoidal tests are better indicators of the successful treatment of early syphilis than the RPCF test and especially than the FTA-ABS test, which, on the other hand, is at present the best method for detecting syphilis even in cases treated early.

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