lymphoid cells from male golden hamsters* infected with *Treponemia Fribourg Blanc* to isogenic recipients which were then challenged with the same organism. Cutaneous lesions appeared in all 56 control animals with a mean incubation period of 44 days (range 28–49). The lesions disappeared spontaneously in only 16% of the animals. The mean reciprocal titre of serum antibodies, estimated by the immunofluorescence technique, was 2400 (range 1600–3201) on the seventy-fifth and 4800 (range 1600–6400) on the ninetieth day after inoculation. Lymphoid cells were prepared from the spleen and lymph nodes of these animals at different times after the appearance of the lesion as a suspension in Eagle's medium containing penicillin (3 mg/ml) and streptomycin (0·05 mg/ml) to prevent any possible transfer of living treponemes, or accidental bacterial contamination.

The 63 recipient animals received 1×10^8 cells intraperitoneally, then were challenged with *T. Fribourg Blanc* by lateral inguinal scarification eight days later. In each case cutaneous lesions appeared at the challenge site with a mean delay of 40·3 days (range 24–44) after inoculation; however spontaneous remission of the lesions occurred in more than 60% of these animals compared with only 16% of the controls. Circulating antibodies were present in the challenged animals but all, with the exception of two animals which had received cells from donors in whom lesions had regressed three months before the cell transfer, had titres below those observed in the control group.

These experiments suggest that the transfer of lymphoid cells from a donor who has made an immune response to *T. Fribourg Blanc* results in an improved recovery by the recipient from cutaneous lesions caused by this agent, but does not confer protection from the initial development of the lesion. We therefore attempted to produce more strongly stimulated cells for transfer to the recipients. Cells were transferred from animals whose lesions had spontaneously regressed into recipients which were challenged as above. All these animals produced lesions, and were killed 60 days after the appearance of the lesion. Their lymphoid cells were then transferred to fresh recipients which were challenged 8 days later with *T. Fribourg Blanc*. In none of the five animals so treated was there any sign of a skin lesion at the challenge site, whereas all the control animals treated with the same *T. Fribourg Blanc* preparation produced lesions as usual. The protected animals produced only low titres of circulating antibody: the mean reciprocal titre at 75 days after challenge was 400 (range 200–800) and at 90 days it was 600 (range 400–800).

We believe that these results show that a resistance to the formation of cutaneous treponemal lesions can be transferred using sufficiently stimulated immune lymphoid cells, as the antibody titres in the resistant animals were particularly low. Further experiments have begun using populations of lymphocytes specifically depleted in T or B cells by treatment either with antithymocytic serum or with anti-immunoglobulin serum in the presence of complement. Preliminary results indicate that while B cell enriched populations do not alter the evolution of the lesions, T cell enriched population can transfer resistance.

*Breeding of inbred hamsters of CNRS Villejuif (Mrs Caubel).

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Yours faithfully,

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Early TPHA response in primary syphilis

TO THE EDITOR, *British Journal of Venereal Diseases*

Sir,

It is well known that the *Treponema pallidum* haemagglutination (TPHA) test is among the last of the tests for syphilis to become positive in early syphilis (Johnston, 1972; Young *et al.*, 1974; Sequeira and Eldridge, 1973). We wish to report an occasion on which this test was the first to convert to positive and so to prompt the diagnosis in a case of primary syphilis.

The patient was a male homosexual. He was a sero-negative cured case of primary syphilis, who, because of multiple repeated exposures had been undergoing regular serological testing, including the TPHA test, for several years. Two months after one particular new exposure the TPHA test was observed to become positive. This prompted repeated clinical examinations which eventually revealed spirochaetes of *Treponema pallidum* in the rectum. He was immediately treated with erythromycin but sequential blood tests during the ensuing weeks demonstrated gradual conversion of the previously negative Venereal Disease Reference Laboratory (VDRL) test. An initial FTA test carried out 10 days later as a result of finding the positive TPHA reaction was only weakly reactive. The time interval between first positive TPHA and the development of a positive cardiolipin test was three weeks. All sera were inactivated before testing and the TPHA test was carried out in accordance with the method of Tomizawa and Kasamatsu (1966), and Tomizawa *et al.* (1969). This patient's immune state was not normal. Five years previously he had been treated for primary syphilis. Treatment had been given so early that all tests performed had remained negative. The rapid TPHA response after the repeat infection must have been the secondary immune response of a 'primed' immune system, but it is worthy of note that this response preceeded those of the other equally 'primed' antibodies.

This report makes it clear that a positive TPHA reaction with no confirming FTA or cardiolipin reactions should not be summarily dismissed either as indicating very late inactive syphilis or as a false positive reaction.

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Yours faithfully,

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