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Effect of Antisyphilitic Treatment on Histopathology of Local Tuberculous Lesions in Syphilitic Rabbits.

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In a previous communication[1] evidence was presented indicating that untreated syphilitic rabbits react in a different manner to the intracutaneous injection of living virulent tubercle bacilli than do similarly infected nonsyphilitic rabbits.

In the syphilitic rabbits the local inflammatory reaction to the injection of tubercle bacilli was more intense, appeared earlier, was focal in character and was usually distributed about capillaries. Ulceration occurred early in these animals, was extensive and showed undermined edges. Beneath this area of ulceration epithelioid cells were relatively few, and frequently perivascular in distribution, while granulation-tissue rich in newly formed capillaries and fibroblasts was conspicuous and was followed later by dense connective-tissue formation. On the other hand, in the non-syphilitic rabbits the local inflammatory process was diffuse, bore no relationship to vascular distribution, and epithelioid cells were numerous occurring in sheets usually extending beneath and to the sides of the ulcer. Granulation-tissue was not much in evidence and there was a paucity of newly formed capillaries.

To determine whether antisyphilitic treatment modified the histopathology of local tuberculous lesions in syphilitic rabbits, 12 albino New Zealand rabbits of the same breed as that used in the earlier studies were injected intratesticularly with an emulsion of testes from a rabbit infected with the Nichols strain of *Tr. pallidum*. These animals developed typical chancres 4 weeks after inoculation, and in 8 of the rabbits metastatic lesions appeared in the opposite testes. Examination by dark field revealed numerous *Tr. pallida* in material obtained by puncture of the testes of these animals.

The rabbits were injected intravenously with 20 mg of arsphenamine per kilo of body weight 6 weeks after infection with the syphilitic virus, and one week later were again injected with 10 mg of arsphenamine per kilo of body weight. This dose or less of arsphenamine has been found by Dr. M. Severac, Dermatological Research Laboratory,

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Philadelphia, to sterilize rabbits of syphilitic infection as evidenced by failure to infect normal rabbits on injection of popliteal nodes from the treated animals. Three weeks following the last injection of arsphenamine and 10 weeks after infection with the *Tr. pallida* the rabbits were infected intracutaneously at 6 widely separated points over the abdomen with 0.1 mg in 0.1 cc salt solution of the same bovine-strain tubercle bacillus as was used in the original studies. As in the previous studies, the sites of injection were removed from a series of 3 rabbits at intervals of 1, 3, 5, 12, 24, and 48 hours after the injection of tubercle bacilli. From another series of 3 rabbits the lesions were removed 3, 4, 5, 6, 7, and 14 days after infection. In a third series of 3 rabbits the lesions were removed at intervals of 3, 4, 5, 6, 7, and 8 weeks, while from a fourth series the lesions were removed at intervals of 9, 10, 11, 12, 13, and 14 weeks following infection.

The gross appearances of the local tuberculous lesions observed in the syphilitic rabbits treated with arsphenamine did not differ conspicuously from those noted in the untreated syphilitic animals. As in the untreated syphilitic rabbits, sections removed from 1 to 12 hours inclusive showed marked vascular dilatation and perivascular aggregations of mononuclear cells with large pale-staining nuclei and numerous young fibroblasts at the site of injection of tubercle bacilli. Ulceration, which was first observed 2 weeks after infection, was superficial, and was characterized by a sharply demarcated line beneath the slough, consisting of granulation-tissue rich in newly formed capillaries and young fibroblasts. As in the untreated syphilitic rabbits epithelioid cells were relatively few and were focal and not diffuse in distribution. With increasing time dense bands of connective tissue were found. The tuberculous lesions of the viscera of these rabbits killed 3 days, 12 weeks, and 8 weeks after infection with tubercle bacilli did not differ conspicuously from those seen in the untreated syphilitic rabbits. From this experiment it is concluded that local experimental tuberculosis pursues an identical course in untreated syphilitic rabbits and in syphilitic rabbits treated with treponemicidal doses of arsphenamine.