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8601 C

Response to Neoarsphenamine of Wassermann Antibody Induced in Rabbits by Injection of Normal Hamster Tissues.

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A recent study of a case of paroxysmal hemoglobinuria[1] has aroused our interest in the question of the etiology of this disease. The presence of Wassermann antibody in the serum of patients with paroxysmal hemoglobinuria and its response to neoarsphenamine have led the majority of workers to the belief that syphilis is the etiological factor. The behavior of a non-syphilitic Wassermann antibody towards injections of neoarsphenamine has not so far been studied.

Wakerlin and Carroll[2] found that rabbits receiving intratesticular injection of *Treponema pallidum* developed a positive Wassermann reaction after an average of 5 to 6 weeks, and that the Wassermann antibody gradually disappeared from the blood so as to give a negative reaction in an average of 84 days. At this time syphilitic infection goes into a latent stage in rabbits. In treating 9 rabbits with neoarsphenamine, they found that the Wassermann reaction became negative in an average of 28 days after treatment, while in the 6 controls receiving no neoarsphenamine the average duration of positive reaction was 94 days. The duration of positive Wassermann reaction in treated syphilitic rabbits was therefore shortened to one-third of that in untreated controls.

Recently, Hu and his co-workers[3] found that normal rabbits

1 Huang, C. H., and Sia, R. H. P., *Chinese Med. J.* (To be published).

2 Wakerlin, G. E., and Carroll, P. H., *Arch. Derm. and Syph.*, 1925, **12**, 670.

3 Hu, C. K., Wong, D. H., and Pearce, L., PROC. SOC. EXP. BIOL. AND MED., 1935, **32**, 989.

receiving injections of hamster tissues developed strongly positive Wassermann reactions. This Wassermann antibody was definitely non-syphilitic in nature as the injection consisted only of normal hamster tissues in which syphilitic virus could be excluded. The response of this antibody to neoarsphenamine was not studied at the time. The present report deals with the results of such a study.

Eleven male rabbits were used in the present experiment. All rabbits received one or 2 cc. of a tissue-emulsion of normal hamster's testis or brain either intratesticularly or intraäbdominally. Wassermann and Kahn tests were performed weekly on the blood of all rabbits before and after the injection. The Wassermann reactions in all rabbits which were found to be negative before the injection became positive after an average of 3 weeks (the shortest being 2 weeks and longest 7 weeks), and the Kahn reactions became positive after an average of 2 weeks (the shortest being one week and longest 5 weeks). Three weeks after the injection of hamster tissues, 6 rabbits received neoarsphenamine (0.015 gm. per kg. of body weight) in distilled water intravenously, and 5 rabbits, serving as controls, received at the same time equivalent amounts of distilled water only. The injections of neoarsphenamine were repeated at weekly intervals and the Wassermann and Kahn tests were applied to specimens of blood obtained before each treatment.

Results. Wassermann reaction: In the control series, the duration of positive Wassermann reactions was found to vary between 14 and 38 days, with an average of 31.2 days in the 5 rabbits tested. In the group receiving neoarsphenamine, the duration of positive reactions varied between 7 and 38 days, with an average of 30.2 days.

Kahn reaction: This remained positive for 28 to 45 days in the control group, with an average of 37 days. In the group receiving neoarsphenamine, positive Kahn reactions persisted for 28 to 45 days also, with an average of 37.2 days. Two rabbits from each group still showed positive Kahn reactions 45 days after the injection of neoarsphenamine or distilled water.

The experiment is conclusive in showing that the non-syphilitic antibody as induced in rabbits by the injection of normal hamster tissues does not respond to injections of neoarsphenamine. The average duration of positive Wassermann and Kahn reactions was practically the same in both groups of animals. This is quite different from the behavior of the syphilitic Wassermann antibody as induced in rabbits by the injection of *Treponema pallidum.* The

duration of positive Wassermann reactions in the latter case can be considerably shortened by treatment of the animals with neoarsphenamine.

Summary. Rabbits receiving normal hamster tissues intratesticularly or intraäbdominally developed, in the course of about 3 weeks after the injection, Wassermann and Kahn antibodies. These non-syphilitic antibodies persisted in the blood stream of these animals for about 4 to 5 weeks.

Injections of neoarsphenamine given to these rabbits did not shorten or modify the duration of positive Wassermann and Kahn reactions in these animals.

8602 C

Experimental Virus Infections in Chinese Hamster. I. Susceptibility to Fixed Rabies Virus.

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The characteristics of most viruses are best demonstrable by their effects on hosts. It is therefore desirable to determine the pathogenicity of a given virus for as many species of animals as possible. It seems to us of both practical and academic interest to find out the effect of various viruses upon the Chinese hamster, a species of rodent readily obtainable. In the present communication, the susceptibility of the Chinese hamster to fixed rabies virus is recorded.

A strain of fixed rabies virus after 137 rabbit passages from a local street virus, was used. The brain virus preserved in 50% glycerin was thoroughly ground in a sterile mortar and suspended in saline solution. Normal Chinese hamsters weighing 20-30 gm. were divided into several groups and each group was separately inoculated with various dilutions of the rabbit brain virus through different routes. In intracerebral inoculation, the hamsters were anesthetized and 0.05 cc. of the ground virus suspension was injected through an opening in the skull posterior to the eye and lateral to the mid-dorsal line. In intraperitoneal, intratesticular, intramuscular and subcutaneous injections, 0.5 cc. of virus suspension was introduced each time. The latter 2 routes of injec-