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Radiothermy and Experimental Herpes Encephalitis in Rabbits.

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The interesting results obtained with radiothermy in experimental syphilis by Carpenter and Boak[1] have been further extended to the treatment of general paralysis by Hinsie and Carpenter.[2] These investigations suggested the possible application of radiothermy to the treatment of experimental virus diseases in animals. Jungeblut and Kopeloff[3] inoculated monkeys with poliomyelitis virus but failed to protect the animals with radiothermy by 5 days treatment for 1½ hours, which resulted in a rectal temperature of 106° to 107°F.

In the foregoing investigation an attempt was made to study the influence of radiothermy on experimental herpes encephalitis in rabbits. Through the kindness of Dr. W. R. Whitney of the General Electric Company who very generously placed a radiotherm at our disposal and with the assistance of Miss K. King we were able to continue these efforts.

The first rabbit was injected in the *foramen magnum* with 0.2 cc. of supernatant fluid from a 1:20 suspension of a 3-4 day herpes virus (El-l'Perdrau) rabbit brain. This animal was placed in the radiotherm for about 1½ hours on 3 successive days attaining an average rectal temperature of 106-107°F. The control rabbit died with typical symptoms in 4 days. The treated rabbit died 24 hours later. Two rabbits were similarly inoculated with the "Frank" 7

[1] Carpenter, C. M., and Boak, R. A., *Am. J. Syph.*, 1930, **14**, 346.

[2] Hinsie, L. E., and Carpenter, C. M., *Psychiatric Quart.*, 1931, **5**, 215.

[3] Jungeblut, C. W., and Kopeloff, N., *J. Inf. Dis.*, in press.

day herpes virus. When treated by radiotherm their rectal temperatures reached 110°F. and both animals died during the night in consequence of overheating.

Two more rabbits were again inoculated with the "Frank" 7 day virus and these received 7 hours of radiothermy daily for 6 successive days. The average rectal temperature was 108°F. One rabbit reached a temperature of 110.2°F. and died, the other died with typical symptoms 7 days after inoculation as did the 2 control animals similarly inoculated.

Since a temperature of 108°F. failed to protect the rabbits and 110°F. killed them it was of interest to determine the results of heat *in vitro*. We found nothing in the literature to indicate that a critical temperature of 109.4°F. (43°C.) had ever been employed with herpes virus. Consequently, the El-1 strain was heated at 109.4°F. for ½ hour and 7 hours respectively which corresponded to the duration of one radiotherm treatment. Each heated virus material was injected in duplicate rabbits and all 4 died within 5 to 6 days, including the control animal which died in 3 days. These results corroborate those obtained with radiothermy.

Within the limitations of the material at hand it appears that radiothermy in the dosage employed fails to protect rabbits against herpes virus.

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Further Observations on the Transformation of Type-Specific Pneumococci by In Vitro Procedures.

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Dawson and Sia[1, 2] described a method for inducing transformation of pneumococcal types by an *in vitro* technique. In this procedure the transformation of pneumococci from one specific S type into other specific S types was effected through the intermediate stage of the R form. The method consisted in growing small inocula of R forms, derived from S forms of one specific type, in media containing vaccines prepared from cultures of heterologous S types.

[1] Dawson, M. H., and Sia, R. H. P., *J. Exp. Med.*, 1931, **54**, 681.

[2] Sia, R. H. P., and Dawson, M. H., *J. Exp. Med.*, 1931, **54**, 701.