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A Persistent Hypersusceptibility Induced in Rabbits with an Homologous Tumor Material.

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A single injection of a filterable material from homologous tumor tissue prepared by prolonged anaerobic refrigeration will render the rabbit host more susceptible to the inoculation and increase the malignancy of the Brown-Pearce rabbit tumor. The dosage employed may vary from 0.2 to 0.5 cc. of a 1-5 dilution of the material.[1] The material is equally active when inoculated either 2 weeks before or 2 weeks after the tumor inoculation. In a previous experiment injection of the material 3 times at 2 month intervals led to increased susceptibility instead of to an immunity to this tumor.

This paper reports a second series in which 5 male rabbits were injected 8-10 times at intervals varying from 2 weeks to 2 months. The rabbits were then permitted to rest for 7 months, during which period no treatment was given. At the end of this period the 5 rabbits (experimental group) and 14 control rabbits (adults of the same sex, size, origin, and breed but almost a year younger) were inoculated intratesticularly with fresh Brown-Pearce tumor. The experiment was terminated at 2 months. The incidence of primary testicular tumors was 4 (80%) for the experimental group as compared with 11 (78.6%) for the control group; the cubic volume of the 4 primary tumors at autopsy in the experimental group was 15.5 cc. as compared with 10.0 cc. for the 11 primary tumors in the control group; the incidence of metastatic tumor in the experimental group was 4 (80%) as compared with 9 (64.3%) for the controls; the cubic volume of the metastatic tumor per animal with metastases was 175 cc. in the experimental as compared with 38.3 cc. for the control group; the average number of metastatic foci was 22.0 for the experimental as compared with 9.0 for the control group; the total mortality for all animals inoculated was 73.4% in the experimental as compared with 46.4% for the control group; the total mortality for all animals with tumor was 91.8% in the experimental as compared with 59.1% for the control group; the average longevity for all 5 animals in the experimental group was 50.8 days as compared with 58.6 days for the 14 animals in the control group.

[1] Casey, A. E., PROC. SOC. EXP. BIOL. AND MED., 1932, **29**, 869; 1933. **30**, 674, 1025; 1934, **31**, 663.

The age discrepancy of almost 12 months between the control and experimental groups will not explain the increased susceptibility obtained, for previous experience with this tumor indicates that older animals develop tumor more easily but actually have fewer metastatic foci and a smaller amount of metastatic tumor than younger adult animals within a given period of time. Also the older adults used were not old in an absolute sense but vigorous young adults in good physical condition. In more than 75 groups of normal adult male rabbits (including more than 350 animals) inoculated with this tumor during the past 5 years, none has had the number of metastatic foci or the volume of metastatic tumor as was found in the experimental group of the present series. One animal of the 5 had the largest volume of metastatic tumor, and another as large a number of metastatic foci as has been recorded in this laboratory. This includes not only the 350 normal animals of various breeds and hybrids inoculated, but also more than 150 animals treated with the homologous tumor material either 2 weeks before or 2 weeks after the tumor inoculation. Since 2 animals among 5 had 2 quantitative criteria of malignant disease such as occur only once in more than 500 times, and the group as a whole a value such as occurred among normal control groups but once in 75 times, the evidence of increased susceptibility to malignant disease seems conclusive. The effects of the homologous tumor material were, therefore, profoundly evident after a period of 7 months. The experiment deserves repeating to determine whether such a lasting hypersusceptibility can regularly be induced. If so, prolonged treatment with the material in a cell free state, either alone or combined with an irritant might eventually give rise to a tumor of the same kind.