

COURSE OF THE ALLERGIC REACTION IN RABBITS AGAINST THE BACKGROUND OF A TRANSPLANTED BROWN-PEARCE TUMOR

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A previous investigation [1] showed that the allergic reaction (the Arthús phenomenon) in rabbits with a transplanted Brown-Pearce tumor cannot always be reproduced, and it is less well defined than in control animals. These observations indicate that the tumor, as it develops, depresses the defensive reactions of the organism.

The object of the present investigation was to study the manifestation of other allergic reactions and, in particular, the Schwartzmann phenomenon, in rabbits with a transplanted Brown-Pearce tumor.

EXPERIMENTAL METHOD

Experiments were conducted on 14 male chinchilla rabbits weighing 2.7-3.3 kg. The experimental animals were divided into two groups, containing rabbits of equal weight. The animals of group 1 were inoculated in the left testis with a 20% suspension of Brown-Pearce tumor in a dose of 0.5 ml; the animals of group 2 were not inoculated with the tumor and served as the control.

After 15 days, when a tumor could be clearly detected in the animals of the experimental group, the attempt was made to reproduce the Schwartzmann phenomenon by means of a filtrate of *Escherichia coli* prepared from washings of a 48-hour culture of the microorganism (the washings contained 4 billion bacterial cells/ml). The hair was shaved on the rabbit's flank (of both experimental and control groups), the site of the puncture was sterilized with alcohol, and by means of a syringe an injection of the filtrate of *E. coli* was given (2 ml per rabbit). After 20 h the same filtrate was injected intravenously in the same dose. The manifestation of the Schwartzmann phenomenon at the site of the intradermal injection was recorded after 24, 48, and 72 h (the extent and intensity of the edema, hyperemia, hemorrhage, and necrosis were determined).

On the 19th day after inoculation of the tumor the animals of both groups were sacrificed. The skin flap was dissected at the site of reproduction of the phenomenon and the reaction (the manifestation of the Schwartzmann phenomenon) of the underlying tissues was studied. The degree to which the animals of group 1 were affected by tumors was assessed from the postmortem findings.

Manifestation of the Schwartzmann Phenomenon on Rabbits with a Transplanted Brown-Pearce Tumor and in Healthy (Control) Animals

Severity of allergic reaction	Animals with Brown-Pearce tumor (7)	Presence of metastases	Healthy
++++	0	—	3
+++	1	No metastases	3
++	3	Few metastases	0
+	2	Many metastases	1
0	1	The same	0

Legend: ++++—edema of skin with hyperemia, hemorrhages, and necrosis; +++—the same signs but less severe; ++—edema of the skin and hyperemia; +—slight edema and hyperemia of the skin; 0—no manifestations of the phenomenon. The number of animals is shown in parentheses.

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EXPERIMENTAL RESULTS

The results of experiments to reproduce the Schwartzmann phenomenon in rabbits with a transplanted Brown-Pearce tumor and in the healthy animals are given in the table.

It is clear from the table that the Schwartzmann phenomenon was not observed in so marked a form in the animals with the Brown-Pearce tumor as in the controls, in which it was present in 6 of 7 cases.

Comparison of these results with the postmortem findings showed that the phenomenon was least developed in those rabbits in which extensive processes of metastasization involving nearly all the internal organs were observed. In cases when growth of the tumor was not accompanied by metastasization, the manifestations of the phenomenon were more definite.

It may be concluded from the results obtained in these and the author's previous experiments [1] that during allergic reactions in rabbits with a transplanted Brown-Pearce tumor, the latter, in the course of its development, to some extent modifies the reactivity of the tissue, and this is manifested by the clearer reproduction of the Schwartzmann phenomenon.

SUMMARY

The object of the present research was the problem of manifestation of the allergic reaction (Schwartzmann phenomenon) against the background of a changed body reactivity in a rabbit with a transplanted Brown-Pearce tumor. It has been found that reproduction of the Schwartzmann phenomenon was less manifest in rabbits with a rapidly metastasizing tumorous process. The data obtained are evidence that the tumor apparently changes and inhibits the defensive reactions of the body, in particular the local tissue reactivity.

LITERATURE CITED

1. M. N. Nilovskii, Byull. Éksp. Biol., No. 1 (1963), p. 85.