

PECULIARITIES IN THE GROWTH OF EHRlich'S CARCINOMA DEPENDING ON THE LOCATION OF ITS INOCULATION

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In studying the biological peculiarities of inoculable tumors, investigators occasionally inoculate a single animal with several tumors. In doing this, some authors compare the nature of the growth of tumors which were inoculated in different areas of the body without taking into account the place of inoculation [4], although it has considerable significance.

Bashford [3] already noted the more rapid growth of some tumors when inoculated in the axillary area than subcutaneously in the back of mice. V. A. Dodonova [1] showed the better take and more rapid growth of adenocarcinoma in mice when inoculated in the abdomen compared with subcutaneously in the back. However, such indications are very rare and usually do not exceed the limits of simple observations, without quantitative analysis of the observed differences.

The aim of our work was the correlation of the rates of growth of Ehrlich's adenocarcinoma in different parts of the body when mice were inoculated subcutaneously with ascitic fluid.

EXPERIMENTAL METHODS

In all approximately 500 half-grown female mice weighing an average of 20 g. were in the experiment. In order to obtain subcutaneous tumors, the ascitic form of Ehrlich's adenocarcinoma was used (0.2 ml per animal). Some animals were inoculated subcutaneously in the back in the area of the right or left scapula, near the limb; others were administered the ascitic fluid subcutaneously in the right or left hip. Each animal received only one inoculation. The weight of the tumors was determined when the animals were killed on the 10th, 15th and 20th day after inoculation.

In order to establish the significance of the difference between the average weights of the tumors, we established the probability (P) of their chance differences. We assumed that with a value of P not more than 0.05, the difference between the averages under comparison could be considered significant [2].

EXPERIMENTAL RESULTS

The average weight of tumors inoculated in the area of the front or hind limbs is shown in Figure 1. We compared the growth of tumors within the limits of one side of the body in this case.

From the data in Figure 1, it follows that Ehrlich's adenocarcinoma, inoculated in the area of the front limb, grows faster than that inoculated in the area of the hind leg on the same side. Two experiments with 15-day tumors are exceptions, whose data, in spite of a difference in their average sizes, proved to be statistically insignificant ($P=0.19$ and 0.23). The practical simultaneousness of the setting up of these experiments allowed us to check the significance of these results, summarizing the averages which were compared. It proved that with an increase in the number of animals in the groups under comparison, the difference in the averages became significant ($P=0.0004$).

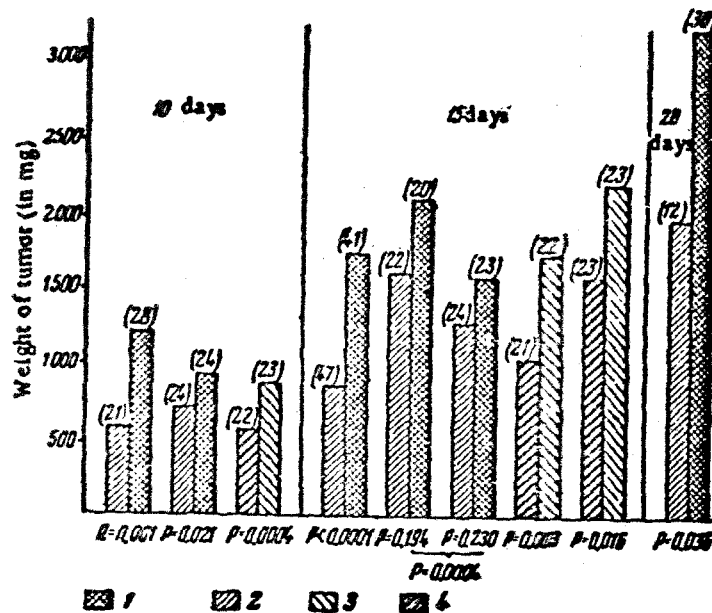


Fig. 1. Comparison of the average weight of tumors inoculated in the area of the front and hind limbs on one side of the body.
1) Right front limb; 2) right hind; 3) left front; 4) left hind. Numbers in parentheses—number of animals inoculated with the tumors.

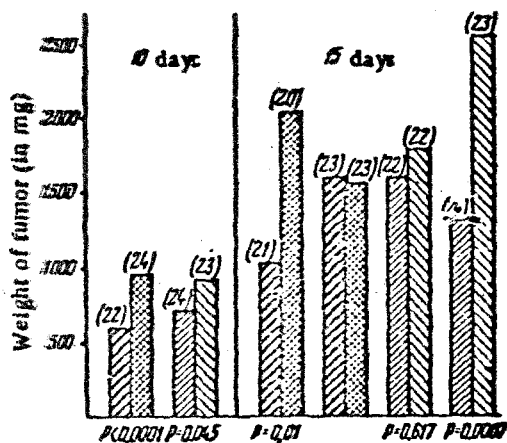


Fig. 2. Comparison of the average weight of tumors inoculated in the area of the front and hind limbs on the opposite side of the body. Symbols same as in Fig. 1.

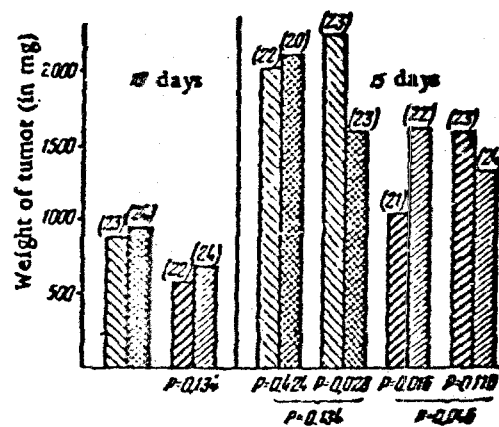


Fig. 3. Comparison of the average weight of tumors within the limits of one segment of the body. Symbols the same as in Fig. 1.

In Fig. 2 a comparison of the tumors in the area of the front and hind quarter of opposite sides of the body is shown.

Analysis of these data showed that the growth of the tumor in the area of the front limb, while remaining higher on the average, was not always significantly greater with respect to the tumor on the opposite side.

In Fig. 3 is shown the correlation of the average weight of the tumors within the limits of one segment of the body.

As the figure shows, on the 10th day after inoculation there is either no difference in the rates of growth of the tumors in the area of the right or left limb within the limits of one segment or this difference is not significant.

On the 15th day after inoculation in one of the experiments the rate of growth of the tumors proved to be greater in the area of the left front limb ($P=0.028$), while in another, in the area of the right hind limb ($P=0.016$).

Determination of the significance of the summated average weight of the tumors in the experiments which were set up practically simultaneously, showed that the difference in the rates of growth of the tumors in the area of the right and left limbs was insignificant on the 15th day ($P=0.134$).

The rates of growth of tumors inoculated in the area of the right hind limb compared with the left hind limb proved to be significantly different ($P=0.045$). However, in one case the average weight of the tumors inoculated in the area of the left hind limb was less, while in another case it was greater, than in the area of the right hind limb.

The data of Fig. 3 show, thus, that no regular differences were observed in the rates of growth of adenocarcinoma within the limits of each of the segments under study.

At present it is difficult to reply with confidence to the question of the reasons for the different rates of growth of adenocarcinoma depending on the place of inoculation. The explanation of the results obtained can only be given after special experiments are conducted. However, the above material can be useful to investigators studying the regulation of the growth of inoculable tumors, especially in connection with immunological investigations.

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