

PREVENTIVE IMMUNIZATION AND IMMUNOTHERAPY OF EHRlich'S CARCINOMA AND CROCKER'S SARCOMA IN MICE

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Vaccines obtained from cells of Ehrlich's ascites carcinoma and tissue of Crocker's sarcoma with the aid of growth medium of microorganism AB-56, when given prophylactically, prevented growth of the corresponding tumor in more than 50% of mice.

Treatment of Ehrlich's ascites carcinoma with these vaccines proved effective in 40% of cases; in the case of treatment of Crocker's sarcoma, only delay in development of the tumor and lengthening of the period of survival of the animals were observed.

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Antitumor vaccines possessing good preventive and marked therapeutic properties against certain transplanted tumors were obtained for the first time by using metabolic products of species AB-56, one of a species of microorganisms of the soil and air belonging to the family Bacillaceae. The method of production and use of these vaccines was described previously [2-5].

The present investigation was carried out to continue the study of the therapeutic properties of these vaccines in Ehrlich's ascites carcinoma and Crocker's sarcoma of mice.

EXPERIMENTAL METHOD AND RESULTS

Results of preventive immunization (concurrently with transplantation of the tumor) of mice with vaccines obtained against Ehrlich's ascites carcinoma and Crocker's sarcoma are given in Table 1.

The results in Table 1 indicate that vaccine obtained against Ehrlich's ascites carcinoma prevented development of tumors in 52% of cases when injected subcutaneously concurrently with transplantation of the tumor. Filtrate alone (control I) under the same conditions prevented development of tumors in only 17% of cases, whereas in control II (no treatment given) development of Ehrlich's ascites carcinoma took place in 100% of cases.

TABLE 1. Results of Prevented Immunization of Mice against Ehrlich's Ascites Carcinoma and Crocker's Sarcoma

Tumor	Number of mice in experiment	Result of immunization		mD	t
		abs.	%		
Ehrlich's ascites carcinoma	79	41/38	52/48	8,4	4,2
Control I	41	7/34	17/83	8,3	6,2
Control II	28	0/28	0/100		
Crocker's sarcoma	20	10/10	50/50	18,4	2,1
Control I	15	2/13	13/87	18,7	2,1
Control II	10	1/9	10/90		

Legend to Tables 1 and 2. Numerator gives number of mice without tumors, denominator number with tumors.

TABLE 2. Results of Immunotherapy of Mice Inoculated with Ehrlich's Ascites Carcinoma and Crocker's Sarcoma

Tumor	Number of mice in experiment	Beginning of treatment (number of days after transplantation of tumor)	Result of vaccine therapy		mD	t
			abs.	%		
Ehrlich's ascites carcinoma	53	3	21/32	40/60	10,2	3,0
Control I	32	—	3/29	9/91	8,9	4,5
Control II	25	—	0/25	0/100		
Crocker's sarcoma	21	2	6/15	29/71	12,8	1,5
Control I	11	—	1/9	9/91	12,1	2,4
Control II	10	—	0/10	0/100		

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Under similar conditions, but injecting the vaccine intraperitoneally, development of Crocker's sarcoma was prevented in 50% of cases, while in control II one of the ten mice (10%) and in control I, two of 15 mice (13%) were naturally resistant. The differences between the experimental and control series are statistically significant [1].

Antitumor immunization of mice with vaccines prepared from filtrate of the medium after growth of a culture of microorganism AB-56 thus proved an effective means of preventing the development of neoplasms in more than half the animals when administered at the same time as transplantation of the tumor. It was therefore decided to study the therapeutic action of such vaccines against the same tumors.

The results of immunotherapy of Ehrlich's ascites carcinoma and Crocker's sarcoma are given in Table 2. Treatment of Ehrlich's ascites carcinoma began on the 3rd day and of Crocker's sarcoma on the 2nd day. The method of administration of the vaccines was the same as in preventive immunization.

The results in Table 2 illustrate the positive action of these vaccines when given therapeutically. Particularly good results were obtained in the case of Ehrlich's ascites carcinoma, when 40% (results of three experiments) of the animals were cured, in 60% of the others development of the tumors occurred significantly later, and the survival period of the animals was 2-5 days longer than in the control.

The result of immunotherapy of Crocker's sarcoma was less satisfactory. In this case only 29% of the mice were cured, compared with 9% in control I, while in control II all the mice developed tumors. However, tumors appeared 5-7 days later in the group of treated mice than in control II, and 2-3 days later than in control I.

It is too early, on the basis of these results, to draw conclusions regarding the specificity of these vaccines because in such systems it is impossible to differentiate between antitumor and transplantation immunity. However, it is considered that the therapeutic results are evidence which tends to favor the specificity of the vaccines used.

LITERATURE CITED

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