

EFFECT OF INTRAVENOUS INJECTION OF COLLOIDAL Ag^{110}
ON METASTASIZATION OF A BROWN-PEARCE CARCINOMA
TRANSPLANTED INTO THE TESTICLE

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An important aspect of the control of malignant tumors is the experimental study of the effect of colloidal preparations and suspensions of the radioactive isotopes of gold (Au^{198}), phosphorus (P^{32}), silver ($\text{Ag}^{111,110}$), yttrium (Y^{90}), etc., on the development of malignant neoplasms [1, 6]. It has been shown, for example, that radioactive chromium phosphate, when injected intravenously or intratracheally, has an inhibitory action on metastasization of the Brown-Pearce carcinoma.

The object of the present investigation was to study the effect of intravenously injected colloidal Ag^{110} on metastasization of a Brown-Pearce carcinoma when implanted intratesticularly.

EXPERIMENTAL METHODS

Experiments were conducted on 32 male rabbits weighing 2800-3000 g, divided into four groups: groups 1 and 3 were control and groups 2 and 4 experimental. A Brown-Pearce carcinoma was induced in all the rabbits by intratesticular injection of a 10% tumor suspension in a volume of 1 ml. The Brown-Pearce carcinoma has been shown [2, 3, 5] to be a suitable model for the experimental study of the effect of different preparations on tumor growth, for in respect of its malignancy and its rapid growth it closely resembles the tumors encountered in man, and it yields a high percentage of successful transplantations (85-90) when implanted intratesticularly.

The rabbits died on the 18th-25th day after transplantation with signs of increasing cachexia.

To study the effect of colloidal Ag^{110} (with a particle size of 45-50 $\text{m}\mu$) on metastasization of the carcinoma after intratesticular implantation, each rabbit received three injections of isotope in a dose of 100 μCi into the marginal vein of the ear, along with the transplantation and on the 6th and 12th days thereafter. The animals of the 1st and 2nd groups remained under observation for 20 days, and those of the 3rd and 4th groups for 30 days.

The criterion of action of the preparation on tumor development was the severity of the malignant disease in the animals, which was characterized by three degrees: I - the formation of a tumor at the site of transplantation, tumor nodules along the spermatic cord, and isolated nodules in the omentum; II - the formation of a tumor at the site of inoculation, the presence of tumor nodules in the omentum, in the serous membrane of the small and large intestines, and in their mesentery, in the retroperitoneal fatty tissue, and the pelvic and mesenteric lymph nodes; III - the formation of a tumor at the site of transplantation, metastases in the spermatic cord, omentum, liver, lungs, diaphragm, serous membrane of the small and large intestines and their mesentery, the retroperitoneal and perinephric fatty cellular tissue, the kidneys and bladder, and the pelvic and mesenteric lymph nodes.

EXPERIMENTAL RESULTS

It is clear from the table that at necropsy, solitary tiny tumor nodules were found along the course of the spermatic cord of 1 of the 8 rabbits of the 2nd group with tumors transplanted intratesticularly, on the 20th day of observation. In the other 7 animals of this group no malignant lesion developed, whether at the site of transplantation or in the other organs and tissues. Meanwhile, of the 8 rabbits of the 1st group, in 7 a tumor was found, with metastases in the organs and tissues of the thorax and abdomen, and in 1 animal no sign of malignancy was observed.

Development of Brown-Pearce Carcinoma in Animals after Intravenous Injection of Colloidal Ag¹¹⁰

Group of animals	Period of observation (in days)	Number of animals			Degree of severity		
		total	tumor took	tumor did not take	I	II	III
1st (control)	20	8	7	1	1	3	3
2nd (experimental)	20	8	1	7	1	0	0
3rd (control)	30	8	7	1	2	2	3
4th (experimental)	30	8	3	5	2	1	0

Observations on the experimental rabbits for 30 days also revealed the inhibitory effect of intravenously injected colloidal silver on tumor development. Of the 8 animals of the 4th group, in only 3 was a malignant lesion observed at necropsy in the organs and tissues; in 5 rabbits no signs of tumor development were seen either at the site of transplantation or in other organs and tissues. Meanwhile, in 7 animals of the 3rd group a tumor had developed on the 20th day of observation with metastases in the organs and tissues, of varying degrees of severity. In one rabbit of this group no sign of malignant disease could be found.

The inhibitory effect of intravenously injected Ag¹¹⁰ on tumor development may evidently be attributed to the action of radiation on the carcinoma cells metastasizing along lymphatic and hematogenous channels.

SUMMARY

Triple intravenous administration of colloidal Ag¹¹⁰ produced an inhibitory effect on the metastasization of Brown-Pearce carcinoma following its transplantation into the testicle. Observations on rabbits were carried out for 20 and 30 days.

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All abbreviations of periodicals in the above bibliography are letter-by-letter transliterations of the abbreviations as given in the original Russian journal. *Some or all of this periodical literature may well be available in English translation.* A complete list of the cover-to-cover English translations appears at the back of this issue.
