

DYNAMICS OF C_x-REACTIVE PROTEIN IN RABBITS INOCULATED
WITH A BROWN - PEARCE TUMOR

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C_x-reactive protein was detected in the blood serum of rabbits inoculated intratesticularly with a Brown - Pearce tumor. In rabbits from which the primary tumor focus was removed soon after it began to develop, C_x-reactive protein is detected later, during development of metastases.

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Observations have shown that C-reactive protein (CRP) appears in the blood serum of man and animals during the active phase of various infectious, inflammatory, degenerative, and neoplastic diseases [1, 3-6, 10, 12].

CRP is a complete antigen. By immunization of animals with the purified preparation an antiserum is obtained, whose specificity has been demonstrated by complement fixation and precipitation reactions [2, 9, 11]. Human CRP reacts equally with C- and C_x-polysaccharide, while rabbit CRP precipitates only C_x-polysaccharide. Rabbit C_xRP has been isolated with the aid of C_x-polysaccharide and its properties determined [8].

It was decided to study the dynamics and time of appearance of C_x-RP in animals inoculated with tumors and also during the development of metastases after surgical removal of the primary tumor focus.

The present investigation was carried out to determine the times of appearance and dynamics of C_x-reactive protein (C_xRP) during development of Brown - Pearce tumors in rabbits.

EXPERIMENTAL METHOD

Experiments were carried out on 32 male rabbits weighing 2.5-3 kg divided into three groups: 14 rabbits in group 1, 7 in group 2, 11 in group 3.

The rabbits of groups 1 and 2 were inoculated intratesticularly with a 20% suspension of Brown - Pearce tumor in a dose of 0.5 ml. The animals of group 3 were not inoculated with the tumor (control). The testis into which the tumor was injected was removed from the rabbits of group 2, 7 days after inoculation.

For the serologic investigation blood was taken from all the animals in a volume of 1.5-2 ml before inoculation of the tumor and every 5-7 days thereafter until death of the animals.

C_xRP in the blood serum of rabbits with tumors was determined by the precipitation reaction in capillary tubes [7], capable of revealing CRP in serum in a concentration of not less than 0.01 mg/ml, and enabling the results to be assessed semiquantitatively. The results were read and recorded as follows: no precipitate - reaction negative, column of precipitate 1 mm long +, 2 mm ++, 3 mm +++, and 4 mm +++++.

EXPERIMENTAL RESULTS

The results of investigations of changes in the C_xRP level demonstrate that in 9 of the 14 animals in group 1 (dying from the tumor or sacrificed on the 38th day when a tumor was present), C_xRP began to appear on the 4th-5th day (++, +++, +++) and continued to be found at different periods of tumor development.

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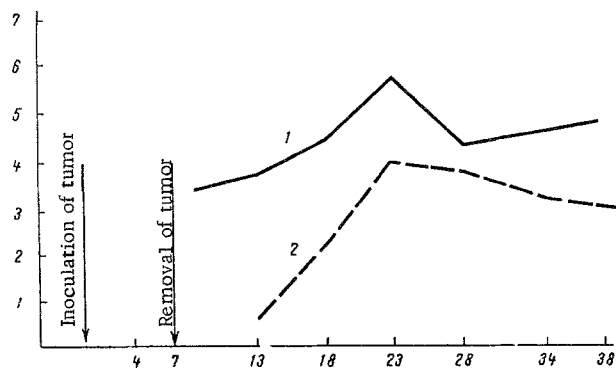


Fig. 1. Times of appearance and dynamics of C_x-reactive protein in rabbits inoculated with Brown-Pearce tumor. 1) Rabbits with inoculated tumor (group 1); 2) rabbits with inoculated and removed tumor (group 2). Abscissa, days of development of tumor; ordinate, height of precipitate (in mm).

In two rabbits of this group (Nos. 10 and 13) the tumor regressed on the 13th and 18th days, and starting from this time no C_xRP could be detected in their sera, whereas in the initial stage of tumor growth (4th and 7th, and for the second rabbit 7th and 13th days after inoculation) the C_xRP content in the serum of these animals was high (+++). In the remaining three rabbits of this group no C_xRP was found at any time during the investigation, and at autopsy on the 38th day no traces of Brown-Pearce tumor could be found at the place of inoculation, nor were there any metastases.

In the rabbits of group 2, from which the tumor was removed on the 7th day after inoculation, no traces of a tumor or metastases from it were found at autopsy on the 38th day after inoculation in two animals. Correspondingly, no C_xRP was found in the sera of these rabbits when tested at any time during the investigation. The remaining five rabbits, which developed metastases along the course of the sper-matic cord and in the internal organs after removal of the primary Brown-Pearce tumor, C_xRP was detected only after the 13th-18th day after inoculation of the tumor, i.e., at a time when, several days after the operation, the process of rapid metastasization probably began.

In the 11 rabbits of group 3 (control), no C_xRP was detected throughout the investigation. The ex-ceptions were two rabbits in which C_xRP was detected in small quantities (+ or ++) in occasional tests.

Analysis of the results of experiments to study the dynamics of C_xRP in rabbits with a Brown-Pearce tumor shows that this protein as a rule is absent from the serum of clinically healthy rabbits. It likewise is not found in the sera of rabbits not inoculated with the tumor. At a certain stage of develop-ment of the tumor, and in particular starting with the period of metastasization, C_xRP is found in the blood serum of rabbits with a developing Brown-Pearce tumor.

C_xRP is found in earlier stages of development of the tumor in animals from which the primary tumor focus is not removed, and later in rabbits from which the tumor is removed, when a certain time has elapsed after the operation and in the course of development of the malignant disease (Fig. 1).

Tumor development, especially in the period of generalization of metastasization, thus lead to the appearance of C_xRP in the serum of the animals. This process evidently reflects to some extent the general condition of the animal affected by the tumor, and to some extent the intensity of the course of the disease.

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