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Changes in Morphological, Biochemical and Immunological Indicators of Blood of Dogs in Tumor Disease

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Abstract: Nowadays, as a result of the growing interest in studying one type of diseases of humans and animals, a number of important issues have begun to be solved in veterinary oncology. Because the causes of tumors have not been fully determined until now, and how it affects which systems of the body during its development is an important task facing the science of oncology.

Keywords: Oncology, immunity, erythrocyte, leukocyte, lymphocyte, thrombocyte, T-suppressors, T-hepler.

Introduction. Tumors are widespread in nature and occur not only in humans, but also in all species of the animal world, including domestic animals. In recent years, the most common pathology among surgical diseases in animals is the pathology of tumors, which accounts for 5-10% of all diseases. The tumor problem is of interest from both biological and medical-veterinary point of view. By now, the development of the veterinary field, especially as a result of the deepening of the study of the pathology of small animals, the problem of oncopathology spread among dogs remains one of the most important problems in terms of the number of occurrences and the complexity of the ways to solve them. According to statistics, the rate of tumor spread among dogs is higher than that of humans.

Materials and methods. In 2020-2023, in the surgical clinic of the "Veterinary Prevention and Treatment" Faculty, Department of "Veterinary Surgery and Obstetrics" of the Samarkand State University of Veterinary Medicine, Livestock and Biotechnologies, an experimental group of dogs with tumors was formed, blood was taken from them, morphological, biochemical and immune parameters were determined. was constantly checked. Also, tumors were surgically removed, and tumor tissue was histologically examined in oncology centers to determine the type of tumor, whether it was dangerous or safe, and the type of tissue. At the same time, various biostimulant drugs were used for the purpose of treatment after the operation, and their effect on the body of sick animals was monitored.

Results and their analysis. When the morphological, biochemical and immune parameters of the blood of dogs infected with tumor were examined, the following changes were revealed.

Among them, the morphological parameters of the blood of dogs with mammary hemangioendothelioma in the first group: erythrocytes 3.4 million/µl, hemoglobin 89g/l; color index was 0.9, thrombocytes 84 thousand, leukocytes 8.6 thousand/µl, rod-shaped nuclei 7 units, segment nuclei 42 units, lymphocytes 47 units, monocytes 2 units.

Biochemical parameters total protein 78.0 g/l, cholesterol 5.9 mmol/l, urea 7.2 mmol/l, nitrogen balance 22.8 µmol/l.

Table 1. Results of preoperative immunological examination of the blood of dogs with tumors

	The type of tumors	Number of animals	T-lymphocytes Number of (ROK), %		B-lymphocytes Number of (ROK), %		Number	
			A	B	A	B	T-hepler	T-suppres-sor
1	Breast adenocarcinoma	5	41±1,0	377,2±0,8	5,0±0,7	46±0,1	29±0,5	9±0,05
2	Squamous cell carcinoma of the skin	3	39±1,0	264±1,2	4,0±0,6	2,71±0,8	27±0,4	8±0,04
3	Transmissible genital sarcoma (genital)	3	35±0,9	191,1±1,01	4,0±0,6	21,8±0,7	24±0,8	6±0,02
4	Mucinous adenosarcoma of the mammary gland	3	38±1,0	1039,6±1,55	6±0,02	164,1±1,05	28±0,5	7±0,05
5	Ductal adenocarcinoma of the mammary gland	3	35±0,9	151,2±0,84	7±0,6	30,2±1,1	27±0,45	7±0,05
6	Squamous cell carcinoma of the mammary gland	3	34±0,9	465±1,08	4±0,6	54,7±1,3	26±0,5	9±0,05

Also, when the tumor tissue was examined histologically, it was found to be a benign tumor.

Blood morphological indicators of a dog with squamous cell carcinoma of the skin: erythrocytes 2.6 million, hemoglobin 70; color index was 0.8, leukocytes 8.8 thousand, eosinophils 2 units, rod-shaped nuclei 10 units, segmental nuclei 49 units, lymphocytes 36 units, monocytes 3 units.

Biochemical parameters total protein 54.8 g/l, cholesterol 4.6 mmol/l, urea 7.2 mmol/l, nitrogen balance 22.8 µmol/l.

Biochemical indicators are total protein 68.4 g/l, cholesterol 6.0 mmol/l, urea 4.8 mmol/l, nitrogen balance 17.1 µmol/l.

Also, blood morphological indicators of a dog infected with transmissible genital sarcoma: erythrocytes 3.0 million, hemoglobin 90; the color index was 0.9, leukocytes were 4.0 thousand, rod-shaped nuclei were 4 units, segmented nuclei were 62 units, lymphocytes were 30 units, monocytes were 2 units.

Relative indicators of the results of preoperative immunological examination in dogs with squamous cell carcinoma of the skin in the first group: T-ROK level 39%, B-ROK level 4%, T-hepler 27%, T-suppressors 8%, absolute indicators T-ROK 264/ µl, B-ROK was 27.1/µl, the results of the immunological examination after levamisole administration showed relative indicators of T-ROK level 43%, B-ROK level 16%, T-hepplers 36%, T-suppressors 8%, absolute indicators T- ROK was 1330.5/µl, B-ROK was 394.2/µl.

The results of preoperative immunological examination in dogs with transmissible genital sarcoma showed relative values of T-ROK level 35%, B-ROK level 4%, T-hepler 24%, T-suppressors 6%, absolute indicators T-ROK 191.1/µl, V- If ROK was 21.8/µl, the results of immunological examination after levamisole administration showed relative values of T-ROK level 53%, B-ROK

level 14%, T-hepler 34%, T-suppressors 9%, absolute indicators T-ROK 1364.7/µl , B-ROK was 360.5/µl.

Table 2. Results of postoperative immunological examination of blood from dogs with tumors

	Ўсмаларнинг тури	Number of animals	T-lymphocytes Number of (ROK), %		B-lymphocytes Number of (ROK), %		Number	
			A	B	A	B	T-hepler	T-suppres-sor
1	Breast adenocarcinoma	5	48±1,01	660,4±1,08	10,0±1,0	137,6±1,4	34±0,9	8±0,03
2	Squamous cell carcinoma of the skin	3	43±1,0	335,4±1,03	8,0±0,9	62,4±1,2	30±0,95	6±0,02
3	Transmissible genital sarcoma (genital)	3	41±0,9	551±1,18	7,0±0,8	94±1,3	29±0,98	7±0,03
4	Mucinous adenosarcoma of the mammary gland	3	46±1,08	3157,2,95±1,55	15±1,87	1029,4±1,75	35±1,4	16±0,9
5	Ductal adenocarcinoma of the mammary gland	3	41±0,9	403±1,05	11±0,98	108,2±1,21	33±1,21	14±0,6
6	Squamous cell carcinoma of the mammary gland	3	39±1,01	938±1,08	12±1,02	304,1±1,25	31±1,11	11±0,9

Note: A - relative (%) B - absolute (1µl)

The results of preliminary immunological examination before surgery of dogs with mucinous adenosarcoma of the mammary gland in the second group showed relative indicators of T-ROK level 38%, B-ROK level 6%, T-hepler 28%, T-suppressors 9%, absolute indicators T-ROK 1039.6/ µl, B-ROK was 164.1/µl, the results of immunological examination after the use of thymostimulin drug after surgery, relative indicators T-ROK level 56%, B-ROK level 19%, T-hepplers 36%, T-suppressors 16%, absolute indicators T-ROK was 4102.5/µl, B-ROK was 1392/µl.

The results of the preliminary immunological examination of the blood of a dog with ductal adenocarcinoma of the mammary gland, relative indicators of T-ROK level 35%, B-ROK level 7%, T-hepler 27%, T-suppressors 7%, absolute indicators T-ROK 151.2/µl , B-ROK was 32.2/µL, these relative rates after the administration of thymostimulin drug after surgery were T-ROK level 58%, B-ROK level 18%, T-hepler 43%, T-suppressor 21%, absolute rates T-ROK 1834/µl, B-ROK was 589.1/µl.

The results of preliminary immunological examination in dogs with non-squamous squamous cell carcinoma of the mammary gland showed relative values of T-ROK level 34%, B-ROK level 4%, T-hepler 26%, T-suppressors 9%, absolute values T-ROK 465/µl, When B-ROK was 54.7/µl, the relative results after the use of thymostimulin drug after surgery were T-ROK level 47%, B-ROK level 17%, T-hepler 37%, T-suppressor 16%, absolute indicators T-ROK 2170 /µl, B-ROK was 785/µl.

Conclusion.

1. Changes in morphological, biochemical and immunological parameters occur in the blood of dogs with tumors.
2. The appearance of tumors in the body of dogs leads to a decrease in the activity of the immune system in the body. When the blood of dogs is examined immunologically, there is a sharp decrease in the amount of T and T-lymphocytes in their blood, that is, in the level of T ROK and V ROK, as well as the absolute indicators of T-helpers and T-suppressors.
3. If tumors are surgically removed at the initial stages, the effectiveness of treatment will increase, and the overall effect of the tumor on the body will decrease.
4. In order to strengthen the activity of the body's immune system during the post-operative treatment, an increase in the number of lymphocytes and their subpopulations was found as a result of the use of levamisole and thymostimulin drugs.

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