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Treatment and Prevention of Transmissible Venereal Sarcoma in Dogs

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ABSTRACT

Canine transmissible venereal tumour (CTVT) is a contagious venereal tumour of dogs, commonly observed in dogs that are in close contact with one another, or in stray and wild dogs that exhibit unrestrained sexual activity. CTVT represents a unique, naturally transmissible, contagious tumour, where the mutated tumour cell itself is the causative agent and perpetuates as a parasitic allograft in the host. Clinical history, signalment and cytological features are often obvious for establishing a diagnosis though biopsy and histological examination may be needed in atypical cases. Most cases are curable with three intravenous injections of cyclophosphan at weekly intervals. The role of stray and wild dogs makes the disease difficult to control and necessitates sustained animal birth control in stray dogs along with prompt therapy of the affected dogs. This review captures the manifold developments in different areas embracing this fascinating tumour, including its biology, diagnosis and therapeutic alternatives.

Keywords:

Introduction. Improvement and development of new methods for the diagnosis and treatment of neoplasms in the genital area of animals are one of the urgent problems of veterinary medicine [1,5]. Currently, in connection with the emergence of a large number of domestic and homeless small animals, various breeds of dogs, the problem of oncological diseases in the genital area in them is of particular importance due to the poor knowledge of the pathogenesis and the lack of criteria for early diagnosis. Moreover, the most common in this group of diseases is transmissible venereal sarcoma [2,4].

Despite the available research in this direction, the etiological factors that contribute to the development of the disease remain poorly understood, and therefore, early diagnosis,

treatment and prevention of this disease are difficult. Transmissible venereal sarcoma in dogs usually occurs more often than is diagnosed, since objective clinical symptoms (bleeding, ulceration, changes in the anatomical structure of the genital organs) appear only at the stage when the neoplasm affects the main part of the genital organs [3,6].

Materials and methods. Experiments were performed on dogs with genital tumors brought to the surgical clinic of the Samarkand Institute of Veterinary Medicine, Faculty of Veterinary Prevention and Treatment, Department of Veterinary Surgery and Obstetrics. Blood was taken from each dog in the experimental group and their morphological and biochemical parameters were examined. The tumors were

also surgically removed, and the tumor tissue was histologically examined at the oncology centers to determine the type of tumor, whether it was malignant or benign, and the type of tissue.

In the dogs in the experimental group, chemotherapy in combination with surgery, i.e. cyclophosphamide, was injected intravenously at a dose of 200 mg / m² once every 7 days. no complementary 2 times in oral administration 25 drops of the drug ASD-2. Dogs in the control group were treated only surgically.

The treatment was carried out in courses. The effectiveness of each course was assessed according to the generally accepted method (palpation, measurement of tumor size, biopsy), while the general condition of the dogs and changes in hematological parameters were assessed. If the condition of the animal was satisfactory, the next course of treatment was prescribed, and if the condition of the dog deteriorated, primarily when severe myelosuppression appeared, the treatment was interrupted. Usually the interval between courses was 1 - 2 weeks.

Statistical data processing was carried out using conventional methods. The care, feeding and maintenance of the dogs was carried out by their owners, taking into account the recommendations of the clinic staff.

Results and its discussion. The main etiological factors for the development of transmissible venereal sarcoma in dogs are: uncontrolled mating, lack of planned preventive measures, decreased resistance, late diagnosis of the disease, insufficiently qualified and untimely medical care, most often without taking into account the clinical signs and general condition of the animal [7].

It has been established that transmissible venereal sarcoma is localized in

places of damage to the mucous membrane of the vestibule of the vagina, penis and prepuce, and manifests itself most often during coitus. Tumors have the appearance of round, loose, ulcerated formations from gray to red-brown color, ranging in size from several millimeters to 10 centimeters, accompanied by drip bleeding. Histological examination revealed a transmissible venereal sarcoma of the alveolar type, built of cells with chromatin-rich nuclei and a narrow rim of the cytoplasm. A significant increase in vascularization of healthy tissue bordering the tumor was noted [8].

According to the clinical analysis of blood in sick animals, it was established: a decrease in hemoglobin in 84% of dogs before treatment and in 30% of dogs after treatment, a decrease in the number of erythrocytes was observed in 76% of dogs before treatment, an increase in the number of leukocytes was observed in 45% of dogs before treatment; increased platelet counts in 78% of dogs before treatment.

According to the biochemical blood test, significant changes in sick animals were observed in the following indicators: an increase in alkaline phosphatase in 97% of dogs, an increase in total bilirubin in 31% of dogs before treatment, in 30% of dogs after treatment under the experimental group. An increase in urea in 97% of dogs before treatment, in 30% of dogs after treatment, an increase in creatinine in 37% of dogs after treatment in the experimental group.

In males, the tumor was most often found in the area of the lymphatic follicles of the parietal leaf of the preputial sac at the level of Bulbus glandis. However, it is not uncommon for a tumor to affect cranially located areas of the glans penis. The growth of the tumor is mainly exophytic, while the epithelium of the genital mucosa is often ulcerated.

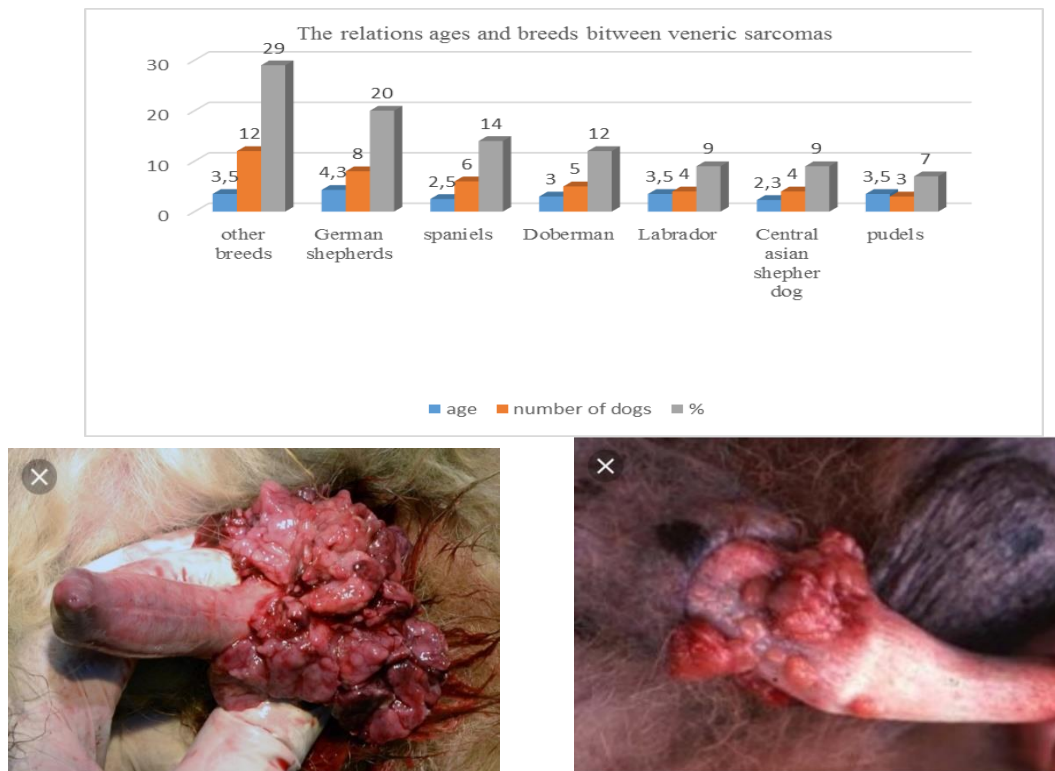


Figure 1. Genital sarcoma in male dogs

There is evidence that sometimes transmissible sarcoma can metastasize to regional lymph nodes. We observed such a course of the disease in males and females when we found metastases to the superficial inguinal lymph nodes; at the same time, we have histological confirmation of the process of metastasis. But most often, an increase in lymph nodes occurs due to reactive lymphadenitis, which develops in response to a chronic inflammatory process that always accompanies the growth of Sticker's sarcoma.

The diagnosis of venereal sarcoma was made on the basis of clinical studies. In some cases, the diagnosis was confirmed by histological examination of the tumor tissue.

It was revealed that mongrel dogs 21% (9 cases), German shepherds 12% (5 cases), spaniels 9% (4 cases), Dobermans 9% (4 cases), and 9% Labradors (4 cases) suffer from transmissible venereal sarcoma.

A correlation was established between the age parameters of the animal and the number of sick dogs. More often, young animals

aged 3 to 5 years old are ill 40% (18 cases), at the age from 5 to 7 years old - 20% (9 cases) and at the age from 1 to 3 years old - 11% (5 cases).

During surgical treatment (n = 42, of which 20 females and 22 males), excision of tumor nodes was performed within healthy tissues using electrothermocoagulation of the tumor growth zone. In bitches, the amputation technique was more often performed, while the vestibule of the vagina with tumor nodes was removed.

Chemotherapy was carried out in two treatment regimens (n = 10). Combined chemotherapy was performed with cytostatic drugs cyclophosphamide at a dose of 200 mg / m² once a week, strictly intravenously, drip (n = 5). To perform drip infusion, the preparations were diluted in 100 ml of 0.9% sodium chloride solution. The infusions of the named drugs were carried out sequentially with an interval of a day.

During the surgical treatment of Sticker's sarcoma, we observed a large number of

complications, the most unpleasant of them was the frequent development of relapses of 9% (n = 3), which occurred after performing organ-preserved operations. However, the use of the amputation technique of surgical intervention in bitches - removal of the vestibule of the vagina together with tumor nodes - turned out to be very effective, we did not meet a single case of recurrence of tumor growth. But extended surgery, which guarantees the absence of oncological complications, is associated with the development of many early and / or late surgical complications 26% (n = 9). The most common complications were: dysuria 10% (n = 4); bleeding 3% (n = 2); failure of seams 3% (n = 2); vaginal prolapse 3% (n = 2); uterine prolapse 1.5% (n = 1); cicatricial strictures of the preputial sac in males, vagina and urethra in females 6% (n = 5).

With combined chemotherapy, all patients recovered. This required from 3 to 6 procedures, while neither in the early nor in the later periods of observation of patients (from 6 months to 4 years), there were no recurrences of Sticker's tumor. A significant number of complications accompanying combined chemotherapy should be noted. The most striking of them were gastrointestinal toxicity, manifested by anorexia, vomiting, diarrhea, 83% (n = 5); hematological toxicity, expressed in eosinophilia and moderate leukopenia, 100% (n = 6); neurotoxicity, manifested by paresthesia, ataxia, areflexia, 17% (n = 1). In addition, one patient (17%) developed dermatological problems - multiple areas of alopecia appeared on the skin. Due to the obvious high toxicity of combined chemotherapy, our experience of using it in the treatment of venereal sarcoma of the external genital organs in dogs is limited to six clinical cases and is no longer used by us in clinical practice.

During treatment, the size of tumors, expressed as a percentage of the initial size, decreased in dogs of both groups. However, the dynamics of tumor regression in the control and experimental groups was different.

In the experimental group, the size of tumors after the first course decreased by more than half and amounted to only 46.7% of the

initial, after the second - 22.2%, after the third - 3.2%, and after the fifth course all dogs were healthy, which was confirmed by cytological studies.

In the control group, the size of tumors after the first course decreased by approximately one third, to 72.4%, and after the second course it even slightly increased (84.2%). Further tumor regression occurred slowly, after the fourth and fifth courses their size remained practically at the same level (20.8% and 19.3%), and even after the sixth course of chemotherapy, their complete leveling was not achieved (0.5%).

Conclusions.

1. It was revealed that mongrel dogs 21% (9 cases), German shepherds 12% (5 cases), spaniels 9% (4 cases), Dobermans 9% (4 cases), Labradors 9% (4 cases).

2. Established a correlation between the age parameters of the animal and the number of sick dogs. More often young animals aged from 3 to 5 years are ill 40% (18 cases), at the age from 5 to 7 years - 20% (9 cases) and at the age from 1 to 3 years - 11% (5 cases).

3. The use of complex methods of therapy with surgical and chemotherapy increases the efficiency from 40 to 100%.

4. As a preventive measure, it is proposed: to control the course of sexual cycles in bitches, to conduct a clinical and obstetric-gynecological examination before mating, to treat the external genitalia with disinfectants after mating. Avoid mating dogs with transmissible venereal sarcoma. Provide balanced feeding and adequate maintenance of animals.

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