



Successful Treatment of Canine Transmissible Venereal Tumor Using Vincristine Sulfate

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Author's contribution

The sole author designed, analyzed and interpreted and prepared the manuscript.

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ABSTRACT

Transmissible venereal tumor (TVT) is a contagious neoplasm which is common among sexually active dogs, where sexual behaviour is not under control. There are several options for treatment of the tumor and the chemotherapy is the most commonly used. In our study, we investigated the effect of weekly vincristine sulfate administration with a dose of 0,025 mg/kg body weight for 4 weeks in 2 bitches with naturally occurring TVT. Tumors totally regressed in both of the cases and no recurrence was observed. Side effects as depression and decrease in appetite were observed in one of the dogs and leucopenia was observed in both of the bitches for three weeks after the first treatment. In conclusion, although the small numbers of the patients, results of our investigation confirm that vincristine sulfate is an effective chemotherapeutic agent for treatment of TVT in dogs.

Keywords: Dog; transmissible venereal tumor; vincristine sulfate; chemotherapy.

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1. INTRODUCTION

The canine transmissible venereal tumor (TVT) is a naturally occurring contagious neoplasm which is transmitted between dogs by the allogenic transfer of living cancer cells [1]. The disease is usually transmitted during coitus and results in the appearance of neoplasms most often in the external genitalia of male and female dogs or by social behaviour (sniffing and licking) which partially explains cases of extragenital TVT in nasal and oral cavities [2,3]. There are also reports of cutaneous metastatic TVT [4,5,6].

TVT is endemic in at least 90 countries around the world [1]. In Bulgaria, only one case has been reported until now [7].

There are several treatment options for TVT including surgical excision, chemotherapy, radiotherapy, immunotherapy, biotherapy [2,8,9], cryosurgery and electrocautery [10].

Vincristine sulfate is an alkaloid obtained from *Vinca rosea* that blocks mitosis by arresting cells in the metaphase [11]. The most effective treatment for TVT is chemotherapy with vincristine sulfate by weekly intravenous administration for 4 to 6 weeks [12,13].

Although vincristine is a common treatment for TVT, there are resistant patients to this therapy [14].

2. MATERIALS AND METHODS

2.1 Case 1

A 3-year-old Chow Chow bitch, weighing 23 kg, was presented at the Small Animal Clinic of The Faculty of Veterinary Medicine, Trakia University, Stara Zagora. The bitch had given birth 9 months previously and was brought to the clinic because of haemorrhagic vulvar discharge lasting 6 months and a fragile vestibular mass (Fig. 1).

Clinical symptoms and cytological findings were evaluated for diagnosis. Copious amounts of erythrocytes, neutrophils, lymphocytes, parabasal, intermediate cells and round-to-ovoid shaped cells containing intracytoplasmic vacuoles were observed in the vaginal cytology stained with Diff-Quick (Haemacolor®, Merck KGaA) (Fig. 2).

According to the haemogram and blood biochemistry results all the parameters were in

normal ranges (Tables 1 and 2). The bitch was diagnosed as TVT by exfoliated vaginal cytology. After diagnosis, 0.025 mg/kg vincristine sulfate (Vincristine-Teva, Pharmachemie B. V., Haarlem, Holland) was diluted in 200 ml saline and was administered every 7 days for 4 weeks. Blood samples were taken before each vincristine treatment.



Fig. 1. Vestibular mass on the first day of medical exam and at the first treatment

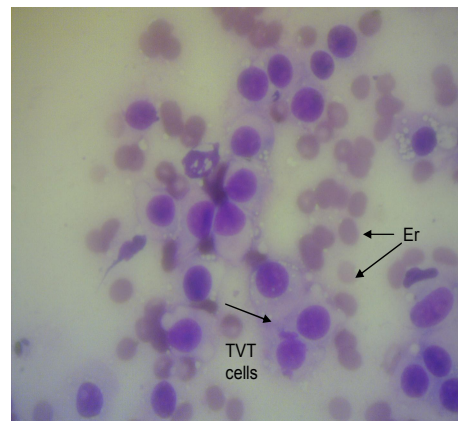


Fig. 2. TVT cells and erythrocytes

2.2 Case 2

A 5-year-old Golden Retriever bitch, 22 kg in weigh, was referred for examination at the Small Animal Clinic of the Faculty of Veterinary Medicine, Trakia University in Stara Zagora. The owner reported that the bitch had given birth a year ago and was presented to the clinic because of haemorrhagic vulvar discharge since 2 months after the birth and a red mass on the right vulvar lip (Fig. 3).

Table 1. Complete blood counts results of the patients

Haematology parameter	Results				Reference values [15]
	1 st treatment	2 nd treatment	3 rd treatment	4 th treatment	
	P1/P2	P1/P2	P1/P2	P1/P2	
HGB (g/l)	133/111	137/141	133/154	134/155	120-180
HCT (%)	44.5/34.3	46.3/37.1	42.7/42.4	43.3/40.2	37-55
RBC (T/l)	6.51/5.45	6.68/6.16	6.64/7.02	6.77/6.85	5.5-8.5
MCV (fl)	68.8/63.1	69.4/60.1	64.4/60.4	64.0/58.6	60-77
PLT (G/l)	238/500	302/724	335/580	289/458	200-500
WBC (G/l)	12.1/10.7	6.0/4.7	3.3/5.0	6.8/9.9	6.0-17.0

Legend: P1-patient from case 1; P2-patient from case 2

Table 2. Blood biochemistry results of the patents

Biochemistry parameter	Results				Reference values [16]
	1 st treatment	2 nd treatment	3 rd treatment	4 th treatment	
	P1/P2	P1/P2	P1/P2	P1/P2	
ASAT (U/l)	66/31	53/34	66/31	56/32	23-66
ALAT (U/l)	21/31	19/26	32/37	34/23	21-102
Urea (mmol/l)	4.8/3.7	5.5/3.4	4.1/4.5	4.2/2.1	1.67-3.33
Creatinine (μmol/l)	123/69	115/56	121/80	108/53	44.2-132.6

Legend: P1-patient from case 1; P2-patient from case 2

The mass in the vagina was diagnosed by clinical signs and vaginal cytology showing that it was TVT. The bitch also exhibited a slight anemia and blood biochemistry parameters were in normal ranges (Tables 1 and 2).

The bitch was also diagnosed as TVT by vaginal exfoliative cytology and was treated as the protocol previously described.



Fig. 3. Vulvar mass on the first day of medical examination and at the first treatment

3. RESULTS

Vaginal bleeding stopped directly and the size of the vaginal masses gradually decreased after the

first week of vincristine treatment (Figs. 4 and 5).



Fig. 4. Vulvar mass at the second treatment

The tumors totally regressed in both of the cases until the last treatment (Fig. 6).

Side effects as depression and decrease in appetite were observed in one of the dogs and leucopenia was observed in both of the bitches for three weeks after the first treatment. No recurrences were observed in both of the patients.



Fig. 5. Vulva of the bitch at the third treatment



Fig. 6. Vulva of the bitch at the last treatment

4. DISCUSSION

Canine transmissible venereal tumor has a global distribution and prevalence around the world [1]. Analysis of factors influencing TVT showed that in countries where sexual behaviour is not under control there is an increased prevalence of the disease, while spaying and neutering were associated with reduced TVT prevalence [1]. This is the second report of the disease in Bulgaria and the increased prevalence may be associated with the presence of free-roaming dogs in our country. The dogs were from two different regions of Bulgaria and had not visited a country where TVT is endemic, so may be TVT has a higher prevalence in our country than it is known.

Vincristine sulfate has been widely accepted as the most effective single chemotherapeutic agent for treatment of TVT [2]. In our study it showed a total regression of the tumors in both of the patients without any recurrence.

Before the start of the therapy it is necessary to execute the clinical findings, the cytological examination and the complete blood count for monitoring the side effects related to treatment [10]. The main side effects in this study were depression and decrease in appetite which were observed in one of the dogs. Leucopenia was observed in both of the bitches for three weeks after the first treatment. These findings were also reported by other authors [12,14] and all of them were resolved after therapy was discontinued.

5. CONCLUSION

Although the small numbers of the patients our investigation confirms that vincristine sulfate is an effective chemotherapeutic agent for treatment of TVT in dogs.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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