



Chemotherapeutic management of canine transmissible venereal tumor in bitch at Chittagong, Bangladesh

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ABSTRACT

The present case study was conducted to apply chemotherapeutic method of treatment with its action on Canine Transmissible Venereal Tumor (CTVT) in bitch (local breed) at Chittagong, Bangladesh. A 3 years-old bitch of local breed with history of matting with stray dog before one month was brought to the SAQ Teaching Veterinary Hospital, CVASU. A cauliflower like growth on the vagina was found reddish, firm to friable multi-nodular mass and oozing fresh blood from the tumor. The blood report showed the change on different blood parameter whether increased total protein (TP) and leukocyte level were important to diagnose Canine Transmissible Venereal Tumor (CTVT). Chemotherapy was done by vincristine sulphate at a dose of 0.025 mg/kg/week intravenously totally for 5 dosages along with Prednisolone. The size of the tumor was amazingly reduced just from 5th day of treatment noticed by the owner, which was completely recovered after finishing the total dosage with normal value of total protein (TP) and leukocytes (TLC) on blood picture. Chemotherapeutic method of treatment with vincristine sulphate was very easy and much effective for CTVT in bitch.

INTRODUCTION

Canine transmissible venereal tumor (CTVT) is an important contagious neoplasm that commonly occurs in the reproductive tract of both male and female dogs. This tumor widely distributed in stray dogs (Batamuzi et al., 1992; Rogers et al., 1998). Based on the locations of the tumor mass, it is divided into two groups - genital CTVT and extra-genital CTVT (Das and Das, 2000; Sousa et al., 2000). Genital CTVT is transmitted via natural mating while extra-genital CTVT is occurred by social contact (Otomo et al., 1981). The clinical sign for CTVT are solitary mass on the vaginal wall or on the skin surface with multiple nodules that are friable in nature, cauliflower in shape with about 5 mm-10 cm in diameter, reddish in color, sometimes oozing of blood from mass and ocular or nasal deformation from tumor invasion (Martins et al., 2005). Treatments are used for CTVT are surgery, radiation or chemotherapy. Surgical

management does not only provide satisfactory result due to its recurrence. Although radiotherapy causes complete regression, it needs trained workers, special equipments and expenses (Sousa et al., 2000; Boscós and Ververidis, 2004). Chemotherapy provides good response against CTVT. Vincristine sulfate has been widely used as an efficient single chemotherapeutic agent for treatment of CTVT (Martins et al., 2005). Vincristine sulfate acts by inhibiting mitotic cell division specifically in metaphase stage (Coppoc, 2009). The course duration of vincristine sulphate treatment is three to five weeks of intravenous administration at 0.025 mg/kg body weight (BW) (Nak et al., 2005; Das and Das, 2000; Kunakornsawat et al., 2009). Side effects usually occur when the combined chemotherapeutics are applied and recurrence is seen in cases treated by surgical removal (Das and Das, 2000; Boscós and Ververidis, 2004; Kunakornsawat et al., 2010). Here, the study was planned to conduct on

chemotherapeutic method of treatment with its action on (CTVT) in bitch (local breed) at Chittagong, Bangladesh.

MATERIALS AND METHODS

Ethical statement and study period

The chemotherapeutic method of treatment was approved by the duty doctor of Small Animal Unit at Sahedul Alam Quadary Teaching Veterinary Hospital (SAQTVH), Chittagong Veterinary and Animal Sciences University (CVASU), Khulshi, Chittagong, Bangladesh. The study conducted within 7th February, 2017 to 10th August, 2017 in a bitch (local breed) affected with CTVT.

Case history

Bitch of local breed, 3 years, 24 kg body weight was brought to the SAQ teaching veterinary hospital, CVASU on 7th February, 2017. Owner's complained that there were some problems in the genital area with bleeding and voiding of bloody urine. The animal sometimes goes outside the home and may be mated with stray dogs. The animal was not any vaccination and deworming history.

Observation of the animal

General observation like respiration and pulse rate was normal, temperature was 101.4°F and congested mucous membrane was with no signs of heat. The animal was found with cauliflower like growth on the vagina (about 5.5 cm in diameter) which was reddish in color, firm to friable multinodular mass and oozing of fresh blood from tumor mass (Figure 1).

Diagnosis

On the basis of sign and symptoms, the surgery team presumed the diagnosis as Canine Transmissible Venereal Tumor (CTVT). For more accuracy, the team send blood sample to the lab to observe the pictures of blood parameters. And blood examination report showed the increased

level of lymphocytes (61.5%; normal range: 20-25% in dog) and total protein (TP) level (79.0%; normal range: 54-71 mg/l in dog) which confirmed the case as CTVT.

Treatment strategy

There are many recommended treatments for CTVT like as surgical correction, radiotherapy and chemotherapy. But in this case study, we, surgery team decided to go for experimental chemotherapeutic treatment to focused its effectiveness. Therefore, the case started with vincristine sulphate at a dose of 0.025 mg/kg body weight intravenously and prednisolone at a dose of 0.2 mg/kg body weight intravenously once weekly for five (5) injections.

RESULTS AND DISCUSSION

CTVT may be confused or has similarities with other round cell tumors, so accurate diagnosis is very important for proper treatment. Various treatments like surgery, radiotherapy, chemotherapy and immunotherapy have been applied for CTVT but in case of surgery, the recurrence can be 20-60% (Saba et al., 2007; Sreekumar et al. 2015). In general the vincristine sulphate produce a good response in CTVT cases (Rogers et al., 1998; Nak et al., 2005; Martins et al., 2005; Said et al., 2009) due to it blocks mitosis cell division needed for protein synthesis and ultimately reduces the tumor mass (Muller and Boos, 1998; Saba et al., 2007). Therefore, in this case study we used chemotherapy as a treatment and found our desired result. All treatment courses and outcomes are summarized and presented in (Table 1).

It was observed that after 1st dose of treatment the volume of tumor mass regressed about more than 60% (Figure 1) and mass was not visible from outside where Sudjaidee et al., (2012) were found the tumor size regressed more than 50%. At the beginning, the tumor size was approximately 5.5 cm and at the end of treatment course its size regressed at 0.8 cm in diameter (Figure 1).

Table 1
Response of Canine Transmissible Venereal Tumor to vincristine sulphate and prednisolone.

| Observation time | No. of treatment dose | Treatment outcome |
|----------------------|---|--|
| 1 st week | 1 st dose with vincristine sulphate and prednisolone | Tumor diameter reduced at 2.1 cm from 5.5 cm (more than 60%) |
| 2 nd week | 2 nd dose with vincristine sulphate and prednisolone | Reduced at 1.7 cm |
| 3 rd week | 3 rd dose with vincristine sulphate and prednisolone | Reduced at 1.3 cm |
| 4 th week | 4 th dose with vincristine sulphate and prednisolone | Reduced at 1 cm |
| 5 th week | 5 th dose with vincristine sulphate and prednisolone | Reduced at 0.8 cm |

Table 2
Blood examination results of CTVT case.

| Prior to treatment | | After treatment | |
|--------------------|-------------------------------------|--------------------|---------------------------------------|
| Parameters | Percentage (Normal range) | Parameters | Percentage (Normal range) |
| Haemoglobin | 8.8 (12-17%) | Haemoglobin | 11.6 (12-17%) |
| ESR | 2 (6-10 mm in 1 st hour) | ESR | 6.2 (6-10 mm in 1 st hour) |
| TEC | 2.1 (5-9 million/cumm) | TEC | 5.7 (5-9 million/cumm) |
| TLC | 6.1 (9-15 Thousand/cumm) | TLC | 10.8 (9-15 Thousand/cumm) |
| PCV | 29.0 (37-55%) | PCV | 42.0 (37-55%) |
| Lymphocytes | 67.0 (20-25%) | Lymphocytes | 31.0 (20-25%) |
| Neutrophils | 24.0 (60-75%) | Neutrophils | 54.0 (60-75%) |
| Eosinophils | 4.0 (2-5%) | Eosinophils | 3.0 (2-5%) |
| Monocytes | 2.0 (0-4%) | Monocytes | 2.0 (0-4%) |
| Basophils | 0 (0-1%) | Basophils | 0 (0-1%) |
| Total Protein (TP) | 79.8 (54-71 mg/l) | Total Protein (TP) | 56.35 (54-71 mg/l) |

The tumor regression pattern is shown graphically in Figure 2. The dog was followed up by physical examination and cytological method up to six months after treatment. The tumor recurrence was not observed. Sudjaidee et al., (2012) reported the tumor size persisted at 0.3cm in diameter after the end of treatment course and it disappeared two months later.

In chemotherapy, several side effects may be occurred like decreasing in appetite, diarrhea and

diffuse alopecia (Said et al., 2009). But in this case study, we didn't find any side effects which were similar with the study of Kunakornsawat et al., (2009).

Hematological and serological profile were analyzed and defined as in normal range before the treatment started and after the end of treatment which is shown in (Table 2).



Figure 1
 Treatment outcome of CTVT to vincristine sulphate and prednisolone; a. Tumor diameter reduced at 2.1 cm from 5.5 cm (more than 60%) (1st week), b. Tumor diameter reduced at 1.7 cm (2nd week), c. Tumor diameter reduced at 1.3 cm (3rd week), d. Tumor diameter reduced at 1 cm (4th week) and e. Tumor diameter reduced at 0.8 cm (5th week).

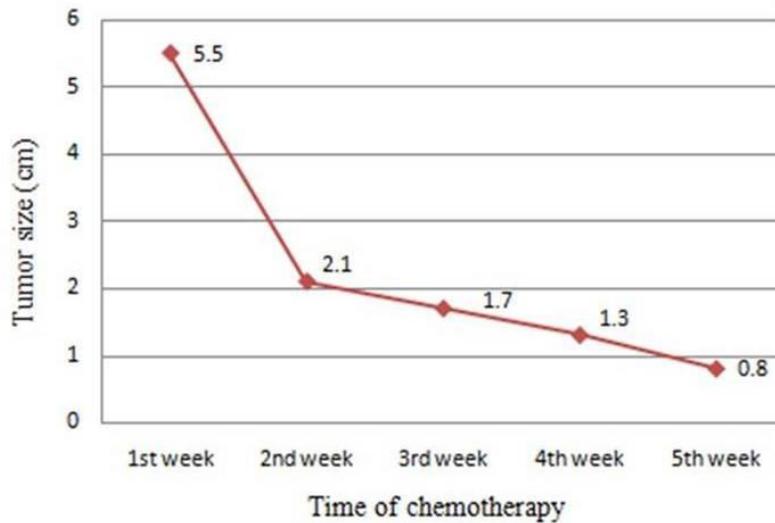


Figure 2
 Graphical presentation of tumor regression pattern.

Prior to the treatment, the total protein (TP) was 79.8 mg/l (above the range) and after the treatment it became 56.35 mg/dl (within the range) which was the strongest point of the effectiveness of the chemotherapy. And also blood parameters didn't show any abnormality which suggests the blood profile findings of Sudjaidee P. et al., (2012).

CONCLUSION

Accurate diagnosis and proper treatment is a dynamic principle to cure an animal from any disease or disorders. Treatment with vincristine has brought a great result. Here the dog makes remarkable improvement in condition.

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AUTHORS' CONTRIBUTION

Tuli Dey and Mohammad Bayazid Bostami did that chemotherapeutic method of treatment and wrote the manuscript, Sonnet Poddar helped in formatting the manuscript, Bibek Chandra Sutradhar helped by instruction during treatment procedure and manuscript preparation.

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