Vincristine sulfate: An Effective Drug against Trans-venereal Tumors

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Abstract Trans-venereal tumors are actually the tumors of all canine species but mostly seen in domestic dogs which are used for breeding. These tumors appear cauliflower like pedunculated growth on the prepuce or base of penis in males and on vaginal surface in females. Similar case was seen when a bull dog visited the outdoor clinic at department of clinics, medicine and surgery (CMS) at University of Agriculture Faisalabad (UAF), Pakistan with complaint of bloody discharge from the preputial sac just after urination and prolong siting. All clinical parameters were normal but a pedunculated cauliflower like tumorous growth at the base of penis was found on palpation. Based on characteristic appearance and anatomical position, the tumor was recognized as TVT. Vincristine sulfate injections were used to treat this tumor on weekly basis for six weeks. Animal re-examined after 6 weeks for the presence of tumor but tumor was regressed completely.

Keywords Dog; Round cell neoplasm; Trans-venereal tumors (TVT); Vincristine sulfate

Introduction

Naturally occurring round cell neoplasm of sexually active dogs of 2~5 year of age known as transmissible venereal tumors (TVT) or Sticker tumors caused by cancer cell itself. Spread is possible by making sexual contact of healthy animals with infected animal or can also be occur by injured skin (Liao et al., 2003, Tahira et al., 2013). Mostly these are the tumors of dogs but can also effects the foxes, jackals and coyotes (Hsiao et al., 2002).

Mainly the cauliflower like pedunculated tumor growth appears in male dogs on penis or prepuce which may cause urine retention or discharge from prepuce. But in case of females it may be present on vaginal surface (Morrison and Wallace, 1998, Hasler and Weber, 2000). TVTs are benign in nature most of times but chances to metastasize to other regions like skin or regional lymph nodes are also there but very low and found to be only 5%. Incidence of metastasis is seen 16% and 2% in males and females respectively (Tahira et al., 2013).

The tumor has to be passes through from 3 phases; progression phase (P-phase), Static growth phase (S-phase) and Regression phase (R-phase) respectively. In P-phase during T-lymphocytes attack; by down-regulating class 1 and 2 the CTVT protect themselves and start releasing toxic proteins cause the apoptosis of B-lymphocytes which are known to produce antibodies. So antibodies production will not occur and immune system become suppress. Host immune system start defending against these cells during R-phase. It has been also reported that TVT regression can be enhanced by injecting the serum collect from dogs in which TVT growth was regressed spontaneously because it help the immune system to become strong and to fight against the TVT cells (Liao et al., 2003).

TVT should treat with vincristine sulfate but in 5~7% cases it may cause vomiting or alopecia likes condition
in animals. Surgical removal is not a good idea because of position of the tumor and its reoccurrence chances which may varies between 50%-68% (Tahira et al., 2013). Instead of surgery, chemotherapy is better choice but if its fail then one should go for radiation therapy (Rogers et al., 1998).

Case Summary
Case of 2.5 year old bull dog with good body condition was reported in May, 2013 at outdoor clinic at department of clinics, medicine and surgery (CMS), Faculty of Veterinary Sciences (FVS), University of Agriculture Faisalabad (UAF), Pakistan. Chief complain of the owner was to drops a bloody discharge from the preputial sac just after urination and after prolong siting by the animal. Animal was breed with 4 females in last 2 months. Animal was vaccinated against rabies and dewormed against parasites. Clinical examination showed all clinical parameters like Temp, respiration, heartbeat and capillary refill time (CRT) normal but dribbling of bloody discharge from preputial sac was reported. By stretching off the prepuce, a big pedunculated, lobular, cauliflower like mass was found at the base of the penis in circular fashion (Figure 1).

Figure 1 Circular fashion of cauliflower like lobular mass of trans-venereal tumor (TVT) in bull dog before treatment

Based on anatomical location and appearance of tumor, it was diagnosed as Transmissible venereal tumor (TVT).Treatment was done with 6 slow intra-venous injections of vincristine sulfate @ 0.025 mg/kg b.w for 6 weeks each with interval of 7 days as also reported by (Tahira et al., 2013). Tumor took 6 weeks to regress completely (Figure 3).

Discussion
TVTs are the round cell neoplasm, poorly differentiated and discover all over the world from different region and spread through coitus. Other than dogs can also effect the other members of canine family like foxes, jackals etc. (Liao et al., 2003, Hsiao et al., 2002). The chances of TVTs are more in rainy and summer months because immune system become depresses during these month (Scarpelli et al., 2010). Time of recovery varies among different animals because immune status of each animal differs from each other but treatment should be done until the animal is completely recovered.

The diagnosis was made on the evidence of pedunculated, cauliflower like round cell growth present at the base of the penis and when physically examined. After diagnosing the animal was treated with vincristine sulfate @ 0.025 mg/kg b.w six injection of vincristine sulfate was given to animal each with 1 week interval. Vincristine sulfate increases the infiltration of leukocytes in tumor so help in tumor regression. Hsiao et al. (2002) reported that this infiltration is higher during R-phase than p-phase.

During vincristine therapy, regression of tumor is greatly affected by host immune status. According to Scarpelli et al. (2010) Immunity reduces during summer season so response to vincristine therapy during summer season decreases. During regular therapy with vincristine sulfate for 6 weeks, animal was checked for tumor after 4 weeks and then after 6 weeks. Regression in tumor growth is seen when examined after 4 weeks (Figure 2) but the completely regressed after 6 weeks therapy with vincristine sulfate (Figure 3).
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References