Cutaneous transmissible venereal tumor associated with thrombocytopenia in a dog and its successful management

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Abstract

A 2 year old female Spitz was presented to TVCC, Pookode with the complaint of a haemorrhagic mass at the vulva, cutaneous tumor like lesions on neck and stomach. It does not had a history of breeding. Animal was anorectic from 2 days and showed the signs of vomission. Clinical examination revealed cauliflower like growth on vulva, neck and abdomen, temperature and pulse within the normal range. Haematological examination revealed thrombocytopenia, leukocytosis, and reduced haemoglobin content. On Vaginal Exfoliative Cytology and FNAC, TVT cells were found. So the case was diagnosed as cutaneous TVT associated with thrombocytopenia. Then the animal was treated with Vincristin weekly once for four weeks along with oral Pantoprazole, Dexorange Syrup, and Capril papaya extract tablets for 1 month. Animal reviewed at one week interval for 4 weeksshowed the reduction in tumor masses on vulva, neck and abdomen. Haematological examination at 4th week revealed increase in platelet and haemoglobin count. Animal recovered completely after 4 weeks without recurrence of tumors. The side effects of Vincristine can be reduced by use of Pantoprazole and Caripill.

Key words: *Transvenerealtumor, Thrombocytopenia, Exfoliative cytology, Vincristine.*

Introduction

Canine transmissible venereal tumors (TVT) are cauliflower-like, pedunculated, nodular, papillary, or multi-lobulated in appearance. They range in size from a small nodule (5 mm) to a large mass (>10 cm) that is firm, though friable. The surface is often ulcerated and inflamed and bleeds easily. TVT may be solitary or multiple and are almost always located on the genitalia. The tumor is transplanted from site to site and from dog to dog by direct contact with the mass. They may be transplanted to adjacent skin and oral, nasal, or conjunctival mucosa. The tumor may arise deep within the preputial, vaginal, or nasal cavity and be difficult to see during cursory examination. This may lead to misdiagnosis if bleeding is incorrectly assumed to be hematuria or epistaxis from other causes. Initially, TVT grow rapidly, and more rapidly in neonatal and immuno suppressed dogs. Metastasis is uncommon (5%) and can occur without a primary

genital tumor present. When metastasis occurs, it is usually to the regional lymph nodes, but kidney, spleen, eye, brain, pituitary, skin and subcutis, mesenteric lymph nodes, and peritoneum may also be sites. Although TVT has a worldwide distribution, prevalence varies from relatively high in some geographic regions (eg, tropical and subtropical urban environments) to rare in others. Because of their homogenous populations of large, round cells with distinctive centrally located nucleoli, TVT are usually easily diagnosed by cytological examination of fine-needle aspirates or impression smears or by histopathology evaluation of biopsies. Although spontaneous regression can occur, TVT are usually progressive and are treated accordingly. Complete surgical excision, radiation therapy, and chemotherapy are effective treatments; however, chemotherapy is considered the treatment of choice (MacEwen, 2001).

Thrombocytopenia is a medical condition where blood platelets become too low in animals. Platelets are produced in the bone marrow and then released into the blood stream. They also serve the important function of maintaining haemostasis. Low platelet counts can be found in any breed of dog, and at any age. Treatment options do exist and unless the cause of the condition is serious, prognosis for the dog is positive.

Case history and Clinical signs

A 2 year old female Spitz of 12 kg was presented with the complaint of a haemorrhagic mass at the vulva, cutaneous tumor like lesions on neck and abdomen (Fig. 1, 2 & 3). It does not had a history of breeding. Animal was anorectic from 2 days and showed the signs of vomiting. Clinical examination revealed cauliflower like growth on vulva, neck and abdomen, temperature and pulse within the normal range.

Fig. 1: Tumor mass

Fig. 2: Tumor seen in the neck region

Fig. 3: Tumor in the abdomen

Diagnosis

Haematological examination revealed thrombocytopenia (plateletcount-80000/ml), leucocytosis (WBC-15000/ml), and reduced haemoglobin (5.2g%) content. Vaginal Exfoliative Cytology and Fine Needle Aspiration and Cytology revealed a marked cellular sample with a predominant population of homogeneous, discrete round cells with mild anisocytosis and anisokaryosis. These cells had a moderate amount of pale-blue cytoplasm, often containing a few small punctate vacuoles (Fig. 4 & 5). The nuclei were round with coarse chromatin and a single prominent nucleolus. Moderate mitotic activity was observed (0 to 2/50X field). The cells were confirmed as TVT cells. So the case was diagnosed as cutaneous TVT associated with thrombocytopenia.

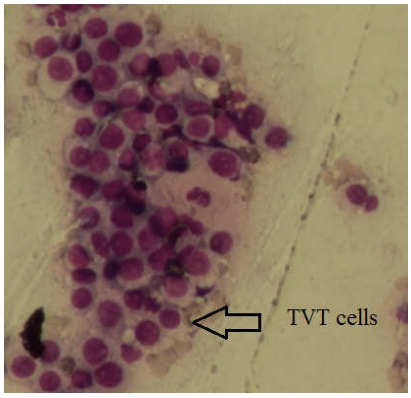

Fig. 4: TVT cells (wright's stain)

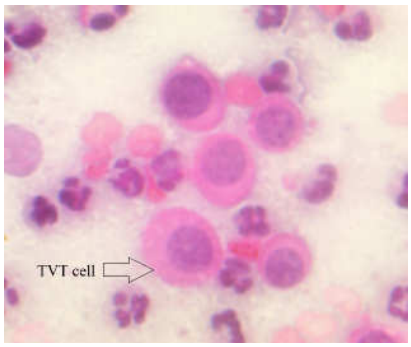

Fig. 5: TVT cells (Papanicolaou stain)

Treatment

Then the animal was treated with cytocristin injection **(**Vincristine® CIPLA) weekly once at a dose rate of 0.025mg/kg intravenously for four weeks along with oral Pantoprazole tablets(SANDOZ®) at 40 mg BID to reduce the gastrointestinal side effects. Five millilitre of Dexorange® oral Syrup (FRANCO-INDIAN Segments & Products) was given BID to increase the haemoglobin count, and Caripill papaya extract tablets (MICROLABS) at a rate of 2 tablets BID to increase the platelet count for one month.

Animal was reviewed at one week interval for 4 weeks. It showed reduction in tumor masses on vulva, neck and abdomen (Fig. 6). Haematological examination at 4th week revealed increase in platelet (1.4 lakhs/ml) and haemoglobin count (8.2g %) but reduced in leucocyte count to 9254/ml.

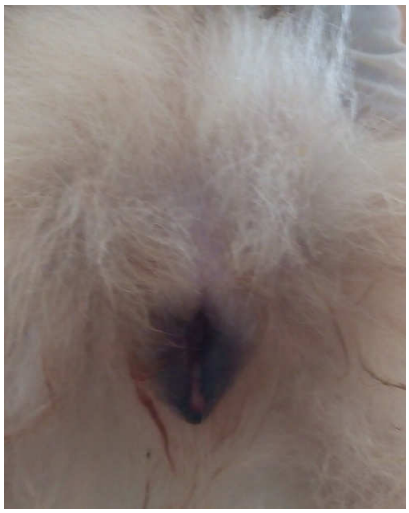

Fig. 6: Four weeks after therapy

Discussion

TVT is the most prevalent neoplasia of the external genitalia of the dog in tropical and sub-tropical areas.

Canine transmissible venereal tumor, also called *Sticker's sarcoma*, is a naturally occurring, horizontally transmitted round cell tumor found in domestic dogs and potentially other canids such as grey wolves and coyotes (VonHoldt et al., 2006). The etiology of TVT is now known to be cell transplant from affected dogs. The most frequent owner's complaint is the hemorrhagic discharge. The tumor is seen most commonly in young, sexually active, intact dogs allowed to roam freely including stray dogs. These tumors usually spread during coitus or other social behaviors such as sniffing and licking (Murgia *et al.*, 2006). Thus, the typical locations of these tumors are the external genitalia and the nasal and oral cavities (VonHoldt *et al.*, 2006, MacEwen, 2006). Other less common locations include the anal mucosa and the skin and subcutaneous areas. A recent report of a multicentric, extragenital, cutaneous canine transmissible venereal tumor in a sexually immature 11-month-old virgin female mixed-breed dog suggests that transmissible venereal tumor cells can be inoculated into puppy skin lesions by the mother during social interactions such as grooming and other mothering behavior (Marcos *et al.*, 2006). As with other round cell tumors, canine transmissible venereal tumor cells tend to readily exfoliate, and fine-needle aspiration usually yields high numbers of individualized round cells and these cells have abundant, lightly basophilic to sometimes deeply basophilic cytoplasm, often with small punctate vacuoles(Goldschmidt and Hendrick, 2002, and Zinkl J.G. *et al.*, 1999).

In animals that have an appropriate antitumor immunologic response, spontaneous tumor regression may occur after the tumor reaches a certain size. However, in animals that are unable to mount an appropriate immunologic response, the tumor may continue to grow and metastasize and therapy is generally recommended when a canine transmissible venereal tumor is definitively diagnosed. Several therapeutic modalities have been used with canine transmissible venereal tumors, including surgery, radiation therapy, biologic response modifiers (experimentally), and chemotherapy (MacEwen, 2006). Surgery may be effective for small and localized cutaneous nodules, although adequate excision is usually not possible when external genitalia are involved, and the recurrence rate in these instances varies from 20% to 60%. Radiation therapy has also been effective but chemotherapy is the most effective way to treat canine transmissible venereal tumor (MacEwen, 2006). Vincristine, is (Boscos and Ververidis, 2004) administered weekly at a dose of 0.5 to 0.7 mg/m2 of body surface area or 0.025 mg/kg, IV (Cohen, 1985; Singh *et al.*, 1996). The involution of the lesions is gradual, although it is particularly noticeable and significant at the beginning of the treatment. Complete remission usually takes 2 to 8 injections (Calvet *et al.*, 1982) and occurs in more than 90% of the treated cases. A cure rate approaching 100% (Boscos and Ververidis, 2004) is achieved in cases treated in the initial stages of progression, especially in cases of less than 1 year duration, and

independent of the presence or not of metastases (Boscos *et al*., 2004).

Cytotoxic therapy was the major factor increasing the risk of thrombocytopenia in dogs with melanoma. Golden Retrievers were the only breed recognized with a predisposition to develop thrombocytopenia (Grindem *et al*., 1994). Cytostatic agents, such as vincristine can cause myelosuppression and gastrointestinal effects resulting in leucopenia and vomiting in 5 to 7% of the patients. In cases that fail to resolve with chemotherapy, radiotherapy has been reported to yield good results (Boscos *et al.,* 2004). The tumor immunity plays a role in tumor regression after modest chemotherapy (Gonzalez *et al.,* 2000). The result of the treatment for thrombocytopenia are similar to those reported Sathasivam *et al.* (2009) that CaricaPapaya leaf extract can increase platelet count in mice, and also in dengue fever patient as reported by Ahmad *et al.* (2011).

Conclusion

Transmissible Venereal Tumor is the most common neoplastic condition affecting genital organs in dogs. Metastasis to cutaneous locations are also reported in dogs. Diagnosis is based on physical examination, clinical signs and cytological findings. Weekly administration of Vincristine is found to be the most effective and efficient treatment. The side effects of Vincristine can be reduced by use of Pantoprazole and Caripill in the treatment of Trans venereal tumors along with thrombocytopenia in dogs.

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