Review Article

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Canine Transmissible Veneral Tumour

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Abstract

Transmissible veneral tumour is common neoplastic condition affecting genital tract of canine. As the tumour cells as transmitted from affected canine to healthy through copulation, it is important to know the cause, the disease pathogenesis, treatment approach and preventive measures to prevent spread of the disease. The present article reviews and gives information about canine transmissible veneral tumour.

Keywords: Canine transmissible veneral tumour, Chemotherapy; Impression smear, MHC; Vincristine sulfate.

INTRODUCTION

Synonyms of TVT- Veneral Granuloma, Infectious Sarcoma, Transmissible Lymphosarcoma, Sticker's Sarcoma.

Veneral tumours in canines is one the commonest neoplasms affecting the external genital tract which is transmitted by transfer of viable neoplastic cells from the affected dog to the unaffected dog. The tumour is often located in the external genital tract, vagina in case of bitch and at the base of penis in male dogs. The condition is common among stray dogs due to uncontrolled breeding and region wise common in tropical and subtropical region (Eze *et al.,* 2007). Gender wise the cases of TVT are more recorded in female as compared with the males because one male can potentially mate few females, but female once get conceived or crossed its estrus period will not mate. Disease mainly spread through contagious neoplasia which is transmitted by transfer of viable tumour cells which fails to cross the Major Histocompatibility Complex (MHC) barrier between dogs and family members in canine family ex, coyotes, foxes, jackals (Ulcar*et al.,* 2012).

The affected dogs may experience pain, weight loss to extent of cachexia, haemorrhages and

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discharge from the genitalia. The examination of external genitalia revealed a tumourus cauliflower like growth which is friable and often blood stained. Dogs may show pain upon palpation of tumour. Metastasis of the tumour cells to various parts of the body organs is uncommon and can be occurred mostly in immunocompromised dogs and puppies, with most reports on metastasis being mechanical transmission or transplantation (Ferreira *et al.*, 2000).

Huzzard in 1820 was the first scientist to report the tumour which later was also reported by Delabere-Blaine in 1928 (Murgiaet al., 2006). The first experimental transmission of the tumour was carried out by Russian Veterinarian Novinsky in 1876. He demonstrated that the tumour can be transmitted from infected dog to uninfected dog via transfer of viable tumour cells to uninfected dog (Martins et al., 2005).

PATHOGENESIS

The disease is transmitted by transplantation of viable tumour cells through infected dogs to healthy dogs through mating, licking or sniffing of genitalia of affected dogs. It is a histiocytic tumour and tumour cells get transferred in mucous membranes, especially when there is loss of integrity on surface or abrasions(Murgia*et al.*, 2006). The tumour usually transmitted through intercourse but skin can also affect via direct implantation of tumour cells during physical contact of skin and tumour mass. This type of transplantation occur when the host tumour cell loss expression of MHC-I and II molecules which will enable the transposition of tumour cells to healthy animal (Liu *et al.*, 2008).

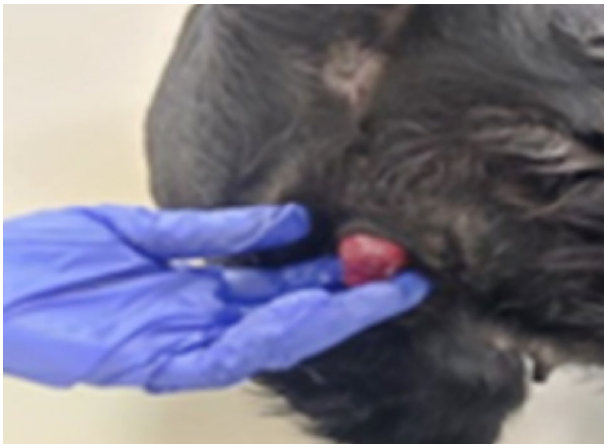

Fig. 1: Examination of genitalia of bitch

The tumour progression is unique, it follows a predictable growth pattern which includes progressive phase, static phase and regression phase, followed by transplantation immunity in immunocompetent adults but metastasis can occur in puppies and immunocompromised dogs (Hsiao et al., 2002). In the progression phase which will last for few weeks, there will be rapid increase in tumour volume (Chu *et al.*, 2001). The static or stable phase is characterised by slower growth of tumour which can last from weeks to months (Mukaratirwa*et al.*, 2006). The regressive phase usually lasts between 2 and 12 weeks during which the tumour can shrink and may eventually disappear or 1-20% tumours may enter second phase of rapid growth which can metastasize (Murchison, 2009 and Chu *et al.*, 2001). The tumour-infiltrating lymphocytes (TLIs) infiltration is greatly increased in transition between the progression and regression phase (Murgia*et al.*, 2006).

CLINICAL FINDINGS

In females

Bleeding or reddish discharge which will be prolong for more than estrus period of bitch.

- Sometime owner confuse the bleeding as a sign of estrus, but due to prolonged bleeding it will doubtful
- The bleeding will be usually fresh blood with some blood clots and clumps, the estrus discharge is usually thin light red to brown colour without clots.
- Upon per-vaginal examination a tumorous cauliflower like growth can be palpated and will be vary in size depending upon the chronicity.
- Large tumours will tend to protrude out of vulva even without palpation.

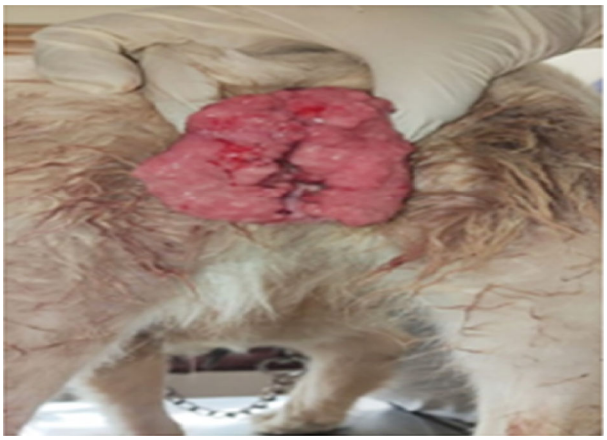

Fig. 2: Tumorous growth in the genitalia of bitch

In males

- The location of tumour is often the caudal penis or base of penis, also can grow on shaft, the glans and occasionally in the foreskin.
- The tumours mass tends to grow around the both sides of penis
- Upon palpation on base the bigger mass can be palpated even without retracting the foreskin.
- Though the mass can be seen by gently holding the base of penis and pushing penis out of preputial pouch.
- The serosanguinous fluid can be seen on the tip of prepuce.

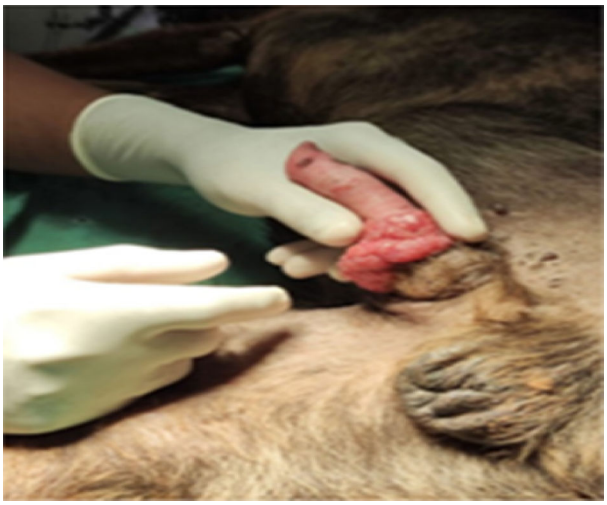

Fig. 3: Examination of male genital revealing tumour like mass around the penis

DIAGNOSIS

- By per-vaginal examination of bitch to palpate the tumour. Wear gloves while examination. Insert your index finger in to the vaginal canal and palpate the tumour and its point of attachment. You can also slightly pull the tumour out of vulva to reveal the structure.
- In male, holds at the base of prepuce with one hand and with other slight apply gentle pressure to retract the prepuce backward, simultaneously pushing the penis forward. The palpate and visualise the tumour mass.
- A impression smear can be taken with clean glass slide and staining it with Leishman's stain.
- The stained smear will reveal tumour cells with vacuolation along with Red blood cell and Neutrophils.

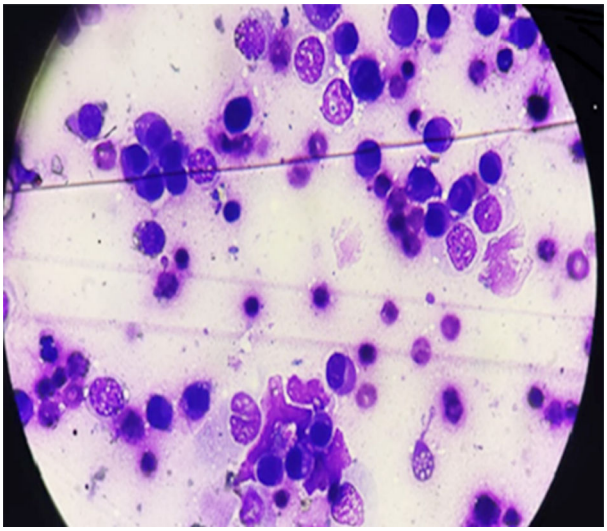

Fig. 4: Stained impression smear of TVT showing cells with vacuoles, along with RBC and Neutrophils.

TREATMENT APPROACH

Radiotherapy

Radiotherapy can be used as per the available facility. It has been shown that TVT cells are radiosensitive, orthovoltage and cobalt have used for the purpose. Recommendation dosage range between 1500-2000 rads which can be divided in session over period of 1-2 weeks with 400-500 rads in each session. The radiotherapy lack practicality due to requirements of sophisticated equipments, cost and trained personnel (Gandotra, 2014).

Chemotherapy

Use of chemotheraupeutic drugs is most effective and practical approach for treating the cases of TVT. The drugs used are Vincristine, Vinblastine, Doxorubicin, Cyclophosphamide, and methotrexate. The most commonly used is Vincristine sulfate.

- Vincristine Sulfate @ 0.025-0.05 mg/kg of body weigth given by intravenous route for a period of 3-4 treatments once a week.
- The drug should be given with care by diluting in natural saline solution, Inj. NS by slow IV route.
- Supportive therapy is utmost important to compensate the side effects of anti-neoplastic drug.
- For supportive treatment, Vit-B complex injection, Iron dextran in case of anaemia, oral liver tonics, oral vitamins and mineral supplement.

- The common side effects are weight loss, aneamia (due to myelosuppression), immunosuppression, gastric problems even can cause gastric ulcers if the drug is given at high dose, ruff hair and skin, anorexia.
- The animal tends to scream in pain and will be complete anorectic in case there is gastric ulcers. In such case oral sucralfate solution, antibiotics and oral or parenteral antacids such as Ranitidine or Pantoprazole should be given.
- Sucralfate will act as ulcer protective and stimulate mucosal defence and repair mechanism and proton pump inhibitors such as Pantoprazole will minimize the gastric acid secretions.

PREVENTION AND CONTROL

Control is difficult because stray dogs pose as a reservoir of TVT. Breeding restriction policy of stray dogs are very important to control by adopting strict neutering practices, managing free roaming dogs and treatment of affected animal. Dog owners and breeders should screen the animals before mating and avoid mating with potentially diseased animals. Kennel owner should separate the affected animals in order to stop mating and spread via sniffing and liking. Handling affected dogs with proper care and washing hands before touching the healthy animals.

REFERENCES

1. ChuR.M., C. Y.Lin, C.C. Liu, S.Y. Yang, Y.W. Siaoand S.W. Hun, 2001a. Proliferation characteristics ofcanine transmissible venereal tumor. Anticancer Res.,21: 4017-4024.
2. Eze C., H. Anyanwu, R. Kene. (2007). Review of canine transmissible venereal tumor (TVT) in dogs. Nigerian Vet J 28: 54-70.
3. Ferreira, A.J., A. Jaggy, A.P. Varejao, M.L. Ferreira, J.M. Correia, J.M. Mulas, O. Almeida, P. Oliveira and J. Prada, 2000. Brain and ocular metastases from a transmissible venereal tumour in a dog. Journal of Small Animal Practice, 41: 165-168.
4. Gandotra V (2014): Transmissible venereal tumors in dogs. Animal Husbandry Officers Workshop pp. 5.
5. Hsiao Y., K. Liao, S. Hung, R. Chu. (2002). Effect of tumor infiltrating lymphocytes on the expression of MHC molecules in canine transmissible venereal tumor cells. Vet Immun Immunol 87(1): 19-27.
6. Liu C., Y. Wang, C. Lin C, T. Chuang, K. Liao K. (2008) Transient down regulate on of monocyte-derived dendritic cell differentiation, function, and survival during tumor progression and regression in an in vivo canine model of transmissible venereal tumor. Cancer Immunol Immunother 57(4): 479-491.
7. Martins M., M. De-Souza, F. Ferreira, C. Gobello. (2005). Canine transmissible venereal tumor: Etiology, pathology, diagnosis and treatment. Recent Advances in Small Animal Reproduction. Retrieved 2006-05-25.
8. Mukaratirwa, S., T. Chiwome, S. Chitanga and E. Bhebhe, 2006. Canine transmissible venereal tumour: assessment of mast cell numbers as indicators of the growth phase. Vet. Res. Commun, 30: 613-621.
9. Murchison, E.P., 2009b. Review Clonally transmissible cancers in dogs and Tasmanian devils. Oncogene, 27: 350-61.
10. Murgia C., K. Pritchard, Y. Kim, A. Fassati, A. Weiss .(2006). Clonal Origin and Evolution of a Transmissible Cancer. Cell 126(3): 477-487.
11. Ulčar I., I. Celesk, K. Ilievska, E. Atanaskova, G. Nikolovski G et al. (2012) Cytological diagnostic of canine transmissible venereal tumor case report. Mac Vet Rev 35: 91-96.