



P-ISSN: 2349-8528

E-ISSN: 2321-4902

IJCS 2018; 6(5): 466-468

© 2018 IJCS

Received: 05-07-2018

Accepted: 10-08-2018

M Thangapandiyan

Assistant Professor and
Corresponding author
Department of Veterinary
Pathology, Madras Veterinary
College, TANUVAS, Chennai,
Tamil Nadu, India

N Pazhanivel

Professor, Department of
Veterinary Pathology, Madras
Veterinary College, TANUVAS,
Chennai, Tamil Nadu, India

A Karthi

PG Scholars, Department of
Veterinary Pathology, Madras
Veterinary College, TANUVAS,
Chennai, Tamil Nadu, India

S Sasikumar

PG Scholars, Department of
Veterinary Pathology, Madras
Veterinary College, TANUVAS,
Chennai, Tamil Nadu, India

C Yogesh

PG Scholars, Department of
Veterinary Pathology, Madras
Veterinary College, TANUVAS,
Chennai, Tamil Nadu, India

GVS Rao

Professor & Head, Department
of Veterinary Pathology, Madras
Veterinary College, TANUVAS,
Chennai, Tamil Nadu, India

Correspondence

M Thangapandiyan

Assistant Professor and
Corresponding author
Department of Veterinary
Pathology, Madras Veterinary
College, TANUVAS, Chennai,
Tamil Nadu, India

Immunohistochemical diagnosis of metastatic transmissible venereal tumor in dogs

M Thangapandiyan, N Pazhanivel, A Karthi, S Sasikumar, C Yogesh and GVS Rao

Abstract

Transmissible venereal tumor (TVT) is a well-documented transplantable tumor in dogs with no breed or sex predilection and a low metastatic rate. A 9 year female mongrel dog was presented for necropsy. Gross examination revealed roughly oval, hard, greyish white mass on right abdominal subcutis and multiple varying sized (2-14 mm) white nodules on lung lobes. Cytological and histological features were consistent with TVT. By immune histochemical staining, the neoplastic cells were positive for vimentin and negative for S100, cytokeratin, CD3 and CD79a.

Keywords: dog, transmissible venereal tumor, lungs, immunochemistry

Introduction

Canine transmissible venereal tumor, also called sticker's sarcoma, is a naturally occurring, horizontally transmitted round cell tumor found in domestic dogs [1]. It is sexually transmitted by transplantation of viable cells from one animal to another animal during coitus, since it is a venereal tumor lesion found mostly on external genitalia less commonly extra genital neoplasm may also seen in nasal, oral cavities by sniffing or licking. Metastasis is rare and also been reported in kidney, brain, liver, pancreas and spleen [2]. Cutaneous TVT without genital involvement in a prepubertal female dog was reported [3]. The involvement of visceral organs is a rare event in naturally occurring TVT and the metastasis is probably by hematogenous or lymphatic routes [4].

Material and Methods

A 9 year old female mongrel was presented to the Madras Veterinary College Teaching Hospital with history of exercise intolerance, cachexia, decreased appetite for past two weeks. Physical examination revealed hard freely movable mass on the right side of the caudal abdominal region (Fig.1) and a hard palpable mass in right axial region. Radiographic examination of the thoracic region revealed cotton ball appearance of the mass with diffusely metastatic lung lesions in the lung. Animal collapsed during the treatment. On necropsy, there was hard, roughly round to oval ranging from 5 to 8cm clearly demarcated, freely movable mass noticed on the right side near to the caudal mammary gland, axillary region and right chest region. On cut section the mass were white to grey white colour and hemorrhagic. Disseminated nodule was also seen in the lungs (Fig.2). In lungs, diffuse roughly spherical, greyish-white nodule of varying size (2-14mm), hard to incise were noticed. Impression cytology from various incised masses were collected and stained with the Leishman-Giemsa stain and the tissue samples were collected, fixed in 10% formalin, embedded in paraffin, sectioned at 4µm and stained with H&E stain and toluidine blue to differentiate mast cell tumor. Immuno histochemistry (IHC) study was done as per the recommended procedure of the manufacturer (Pathnsitu, USA) with vimentin, S100, cytokeratin, CD3 and CD79a differential diagnosis.

Results and Discussion

Most of the reported metastasis cases actually are mechanical extensions of growth or transplantation to skin, cervix, uterus and fallopian tubes from the tumour at the external genitalia⁵. But in this case, the tumor metastasized to aberrant site i.e., lung. Impression cytology revealed round neoplastic cells with distinct cytoplasmic borders. The cytoplasm was

slightly blue or clear, finely granular with distinct vacuoles arranged at the periphery of the cells. The nucleus was round to oval with prominent nucleolus and finely stippled chromatin (Fig. 3, 4). There was increase in nucleus to cytoplasmic ratio with mild to moderate anisocytosis and anisokaryosis and a few mitotic figures.

Histopathologically, the tumor mass in abdominal region revealed diffuse sheets of round neoplastic cells with minimal stroma, anisokaryosis and pleomorphism. The neoplastic cells had round hyperchromatic nucleus with coarsely stippled chromatin. Then the tumor metastasized to lung which has round pleomorphic cells (Fig.5) with similar changes of primary tumor mass.

Toluidine blue staining did not reveal metachromatic granules in the tumor cells. On IHC, neoplastic cells revealed approximately 80% of positive cytoplasmic immunoreactivity with antibodies against vimentin (Fig.6) and negative for S100, cytokeratin, CD3 and CD79a.

Differential diagnoses for this case included lymphoma, canine cutaneous histiocytoma, anaplastic mast cell tumor, amelanotic melanoma, and poorly differentiated carcinomas [6]. The negative reactivity to CD3, CD79a used as markers for T and B lymphocytes contributed to the differentiation of TVT from lymphoma, which was further supported by positive staining against vimentin. Positive staining for vimentin also excluded undifferentiated carcinoma, which was confirmed by the negative staining for cytokeratin. Negative S-100 protein allowed differentiation of TVT from amelanotic melanoma. The neoplastic cells did not have metachromatic granules when stained with toluidine blue, which excluded anaplastic mast cell tumor. The possibility of canine cutaneous histiocytoma was excluded based on the cytologic and histopathological features [7].

The transference of TVT among dogs has been found to be equal, regardless gender, either by implantation of viable tumor cells in mucus membranes during coitus, or by scratching, licking, biting or smelling of a carrier animal [8, 9, 10].

The biological behaviour of TVT is quite variable and depends on the host immune response. Metastasis of TVT usually occurs in suboptimal physiological conditions of the dog, such as immunosuppression, malnutrition, or young age. Metastasis is uncommon in TVT but is most often seen in the skin and lymph nodes [5]. This study reports the metastasis of canine TVT to lungs with identification and confirmation by impression smear and histopathological technique with differentiation from other similar round cell tumor by Immuno-histochemical technique.



Fig 1: Dog - Mass in the caudal abdominal region (Arrow)

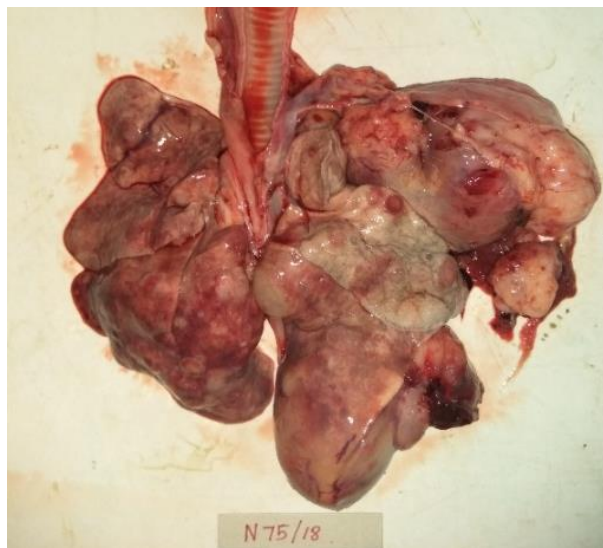


Fig 2: Lungs - Multiple metastatic nodules

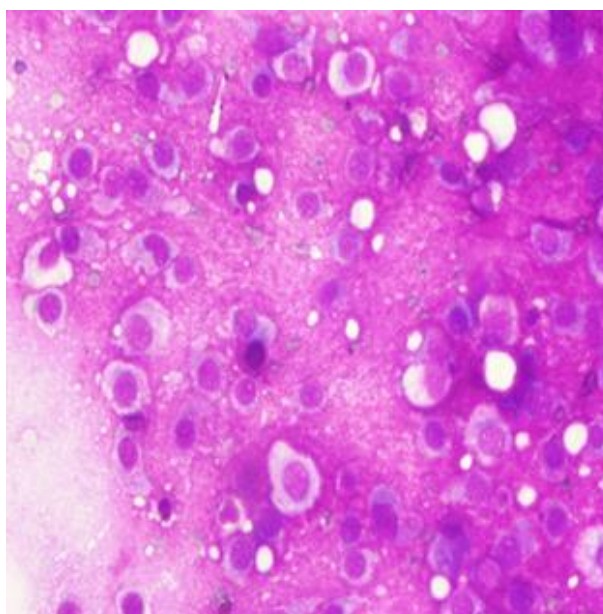


Fig 3: Tumour mass - Cytology - Round to oval neoplastic cells with distinct cytoplasmic vacuoles - 20X

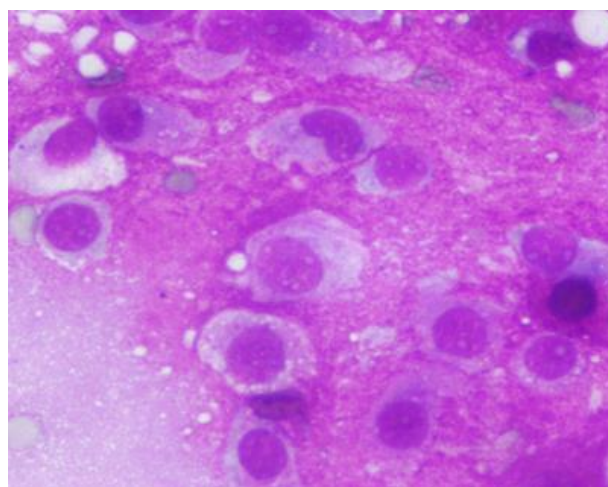


Fig 4: Tumour mass - Cytology - Round to oval neoplastic cells with distinct cytoplasmic vacuoles - 40X

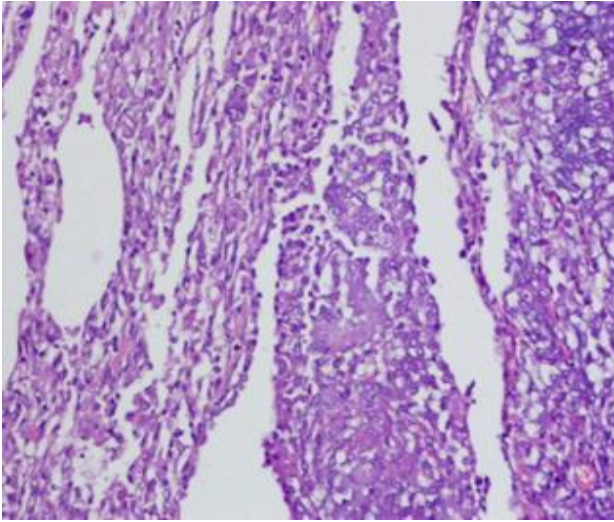


Fig 5: TVT - Histopathology-lung- round neoplastic cells with hyperchromatic nucleus, anisokaryosis and pleomorphism. H&E 10X

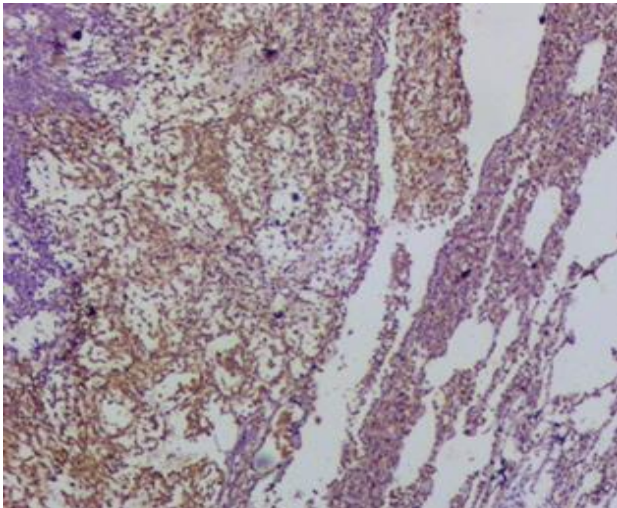


Fig 6: TVT-Lung metastasis - IHC- Intense Vimentin positive Tumour cells. DAB brown

7. Goldschmidt MH, Hendrick MJ. Tumors of the skin and soft tissues. In: Tumors in domestic animals, ed. Meuten DJ, 4th ed. 2002; 45-118.
8. Varaschin MS, Wouters F, Bernis VM. Tumor venéreo transmissível canino na região de Alfenas, Minas Gerais; formas de apresentação clínico-patológicas. *Clín Vet.* 2001; 6(32):32-38.
9. Ganguly B, Das U, Das K. Canine transmissible venereal tumour: a review. *Vet Comp Oncol.* 2013; 11(4):1-12.
10. Sreekumar KS, Narendran PV, Ajidhan VB. Case Study of Canine Transmissible Venereal Tumor. *EC Veterinary Science.* 2015; 109-117.

References

1. Higgins DA. Observations on the canine transmissible venereal tumour as seen in the Bahamas. *Vet Rec.* 1966; 79:67-71.
2. Placke ME, Hill DL, Yang TJ. Cranial metastasis of canine transmissible venereal sarcoma. *Zentralblatt für Veterinärmedizin, Reihe A.* 1987; 34:125-132.
3. Marcos R, Santos M, Marrinhas C, Rocha E. Cutaneous transmissible venereal tumor without genital involvement in a prepubertal female dog. *Vet Clin Pathol.* 2006; 35(1):106-9.
4. Oduye OO, Ikede BO, Esuruoso GO, Akpokodje JU. Metastatic transmissible venereal tumor in dogs. *Journal of Small Animal Practice.* 1973; 14:625-637.
5. Mukaratirwa S, Gruys E. Canine transmissible venereal tumor: cytogenetic origin, immunophenotype and immunobiology: A review. *Vet Quart.* 2003; 25(3):101-111.
6. Mozos E, Mendez A, Gomez-Villamandos JC, Martin De Las Mulas J, Perez J. Immunohistochemical Characterization of Canine Transmissible Venereal Tumor. *Veterinary Pathology.* 1996; 33:257-263.