

Short communication :
Metastatic canine transmissible venereal tumor at the spleen:
a case report

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Abstract

A six year-old female, mixed breed dog showed signs of vomiting, depression and painful crying, especially when her abdomen was palpated. The patient has ever affected with vaginal transmissible venereal tumor (TVT) and was cured by surgical excision and chemotherapy a year ago. By radiographic image with exploratory laparotomy, we found that grayish-white, multinodular masses sized 1 c.m. to 6 c.m. in diameters on entire spleen. Based on cytology and histomorphology, the masses were identified as TVT.

Keywords: transmissible venereal tumor, dog, spleen

The transmissible venereal tumor (TVT) is a sexually transmitted neoplasm of dogs that can also be transmitted by licking and contacting with several mucous membranes. The tumor is recognized in all dog breeds in various parts of the world, especially in tropical and subtropical zones (Gurel *et al*, 2002). Dogs at highest risk for developing TVT are those living in areas with high concentrations of free-roaming and poorly controlled breeding. The main depots of TVT are considered to be populations of unsupervised stray and semi-stray dogs and owned dogs with vague symptoms. The tumor occurs most commonly in sexually mature dogs because of the mode of transmission (Rogers, 1997). Naturally occurring TVT is usually located on the external genitalia of both sexes and seldom metastasizes. On rare occasions, metastases have been reported in skin and subcutaneous tissues, oral and nasal mucosa, the cranial cavity, pituitary gland, abdominal organs, and eye (Boscos *et al.*, 1998).

In Thailand, TVT is quite commonly found, despite the efforts to control the population of stray dogs. This fact provides the opportunity to study rare, interesting cases of TVT such as canine transmissible venereal tumor with metastasis to the eye and brain (Teankum *et al.*, 2003) and disseminative form of transmissible venereal tumor in puppy (Phonsuwan *et al.*, 2000).

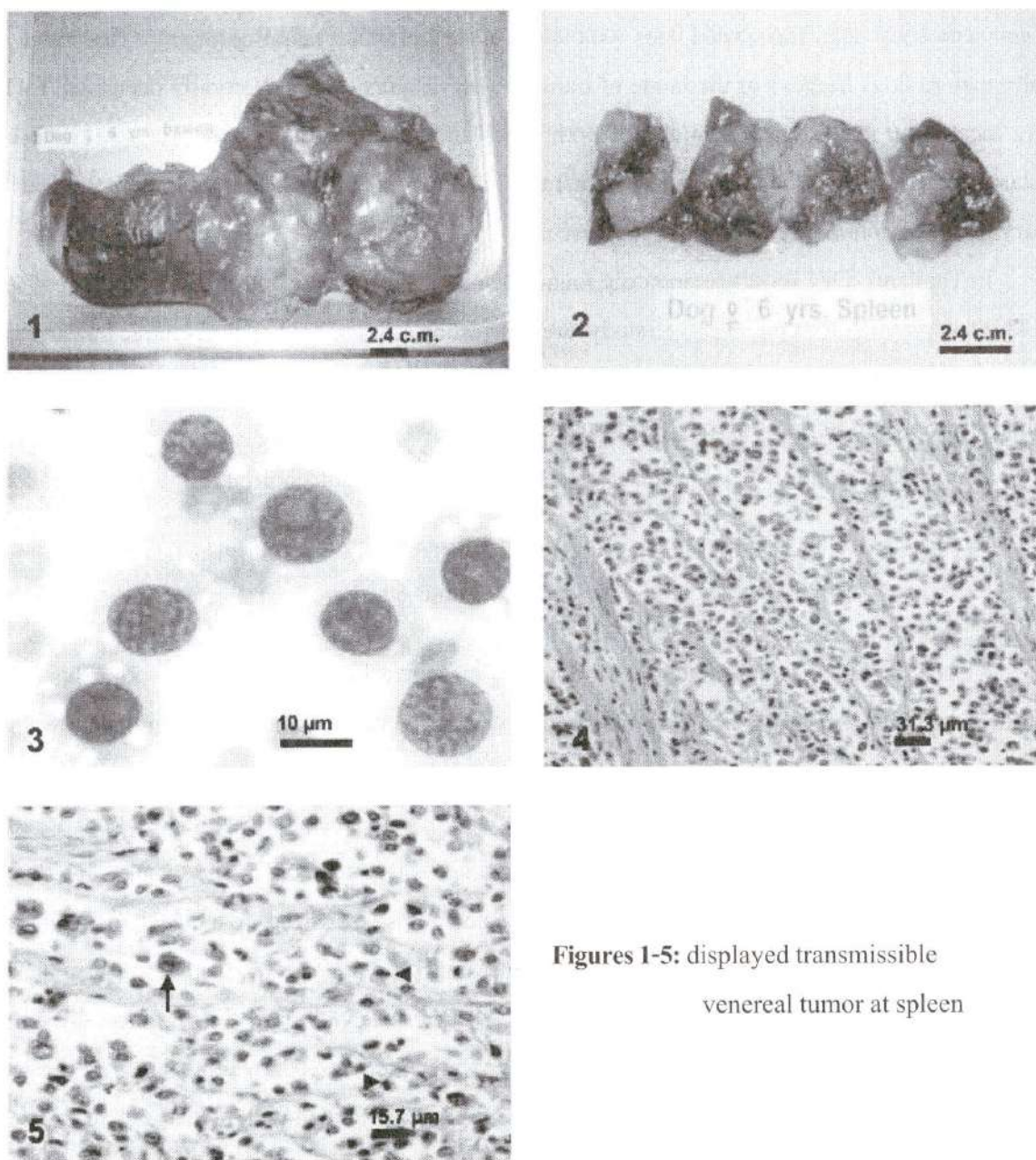
The present study shows a rare metastasis of TVT to the spleen after surgical removal with vincristine chemotherapy.

Patient History

A six year-old, female, mixed breed dog was presented to animal hospital with a history of inappetite, vomiting, depression and painfully crying when palpated at abdomen. From history taking, she was affected by TVT at her vagina a year ago and the tumor was surgical removal with ovariectomy, and then, vincristine sulphate was treated once a week for four times. By radiographic image, a multi-nodular opacity at left mid-ventral abdomen was presented. Subsequently, exploratory laparotomy was done and revealed several grayish-white nodular masses sized 1 c.m. to 6 c.m. in diameter on entire spleen. The splenectomy was performed. The masses were diagnosed by microscopic examination of the impression smears and histopathological sections. All air-dried cytological preparations were stained with modified Wright's stain, while the tissue samples were fixed in 10% neutral buffered formalin, processed routinely, embedded in paraffin, sectioned at 5 μ m, and stained with hematoxyline and eosin (H&E).

The gross appearance of masses were soft, global, grayish-white color, unencapsulated and irregular surfaces (Figure 1). The cut surfaces were glistening and friable (Figure 2). By cytological morphology, the individual neoplastic cells had a round nucleus, fine to granular chromatin pattern, and often a single, prominent nucleolus. Mitotic figures were frequently observed. The cytoplasm was pale

blue and moderately abundant with distinct, clear vacuoles (Figure 3). Histologically, the solid masses of neoplastic cells arranged in compact and loose sheets of round to polyhedral cells divided by thin connective tissue (Figure 4). The neoplastic cell characterized large, round, vesicular nuclei. The cytoplasm was slightly granular, vacuolated, and eosinophilic with indistinct borders. Mitotic figures were frequent (Figure 5). All of the microscopic results, the masses were diagnosed as transmissible venereal tumor.



Figures 1-5: displayed transmissible
venereal tumor at spleen

Figure 1 The gross appearance of the tumor were unencapsulated, global, irregular surfaces, soft and grayish-white color.

Figure 2 Cut surfaces of the tumor, presented bulgy, glistening and friable.

Figure 3 Individual TVT cells had a round nucleus, fine to granular chromatin pattern with a single, prominent nucleolus, the cytoplasm was pale blue with distinct, clear vacuoles.

Figure 4 Histomorphology, the tumor arranged in loose sheets of round to polyhedral cells divided by thin connective tissue.

Figure 5 Higher magnification from Figure 4, revealed large, round, vesicular to hyperchromatic nuclei with eosinophilic cytoplasm. Some vacuoles were presented in cytoplasm (arrow) and mitotic figures were frequent (arrow head).

In our case, the diagnosis of TVT at spleen was based on cytology and histopathology of the tumor masses. Overall, TVT has been already well documented in the literatures (Moulton, 1990; Baker and Lumden, 2000). Anyway, a panel of immunohistochemistry findings; S-100 protein, HMB 45, cytokeratin and vimentin, supported the diagnosis of TVT. This neoplastic cells were all negative for S-100 protein, HMB 45 and cytokeratin, but were positive for vimentin (Pereira *et al.*, 2000).

According to the clinical history of this case, we suggested that TVT at spleen was metastasized from her primarily affected vagina. Eventhough metastasis to visceral organs is uncommon, TVT can also metastasize by hematogenous and draining lymphatic routes (Miller, 1990). The reasons for this metastatic behavior have not yet been clarified (Boscos *et al.*, 1998). It seems likely that reduced immune response of the host may lead to widespread metastases. This was defined by under experimental conditions, the clinical course of the illness was affected by the animal's immune response (Albanese *et al.*, 2002). This is supported by the fact that stray dogs with a low standard of care or immunosuppressed dogs are more susceptible and compromised immune response due to concurrent disease or corticosteroid therapy are also more prone to metastatic lesions (Boscos *et al.*, 1999).

Based on author's experience, the mean age of cutaneous TVT affected dog was about 5.3 years (Prihirunkij and Kasorndokbua, 2001), while the presented case was 6 years which previously infected at 5 years old. Despite definitely cured from TVT by surgical removal with ovariectomy and chemotherapy, the tumor masses became recurred one year later. This fact leads to the conclusion that precedent TVT infection does not provide long-term immunity (Boscos, 2004). Idowu (1984) reported that the recurrence rate could be as high as 68% and the concurrent neutering has no effect on the frequency of recurrence. However, many of the recurrences were at different sites, implying metastasis rather than true local recurrence (Amber and Henderson, 1982).

Though vincristine sulphate is the drug of choice for TVT, but chronic cases infected for more than 1 year may resist to treatment, thus demanding therapy of longer duration without ensuring successful results (Boscos, 2004). In case of vincristine therapy failure, radiotherapy appeared to be effective (Rogers *et al.*, 1998). Anyway, radiotherapy for animals is not now available in Thailand, so alternatively, doxorubicin chemotherapy may be applied (Boscos, 2004).

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บทความสั้น : Transmissible venereal tumor ที่ม้ามของสุนัข: กรณีตัวอย่าง

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บทคัดย่อ

สุนัขพันธุ์ผสมเพศเมีย อายุ 6 ปี แสดงอาการอาเจียนตลอด อ่อนแรง และร้องเจ็บตลอดเวลา โดยเฉพาะเวลาตรวจคลำท้อง จากการซักประวัติเจ้าของพบว่าเมื่อ 1 ปีก่อน สุนัขเคยได้รับการรักษาเนื้องอก transmissible venereal tumor (TVT) ที่ช่องคลอด โดยวิธีผ่าตัดร่วมกับเคมีบำบัดจนหายเป็นปกติ จากภาพถ่ายรังสีและผ่าเปิดช่องท้องพบก้อนเนื้องอกสีเทา-ขาว จำนวนมากขนาดเส้นผ่านศูนย์กลางตั้งแต่ 1 เซนติเมตร ถึง 6 เซนติเมตร กระจายทั่วม้าม จึงทำการรักษาด้วยการตัดม้าม ผลการตรวจทางเซลล์วิทยา และจุลพยาธิลักษณะ วินิจฉัยได้ว่าเนื้องอกที่พบคือ TVT

คำสำคัญ: transmissible venereal tumor สุนัข ม้าม