



CASE REPORT

Malignant Sertoli Cell Tumor with Abdominal Infiltrative Metastasis in a Dog

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ARTICLE HISTORY (15-342)

Received: July 12, 2015
Revised: October 29, 2015
Accepted: February 11, 2016
Published online: March 30, 2016

Key words:

Abdominal
Dog
Malignant
Metastasis
Sertoli cell tumor

ABSTRACT

A 14-year-old, intact male, mixed breed dog presented with history of testicular asymmetry and increase in left testicular volume. Although thoracic radiography showed no signs of metastasis, abdominal ultrasonographic examination revealed a large neoplastic structure whose origin could not be determined. On exploratory celiotomy, besides the identification of a large infiltrative mass adhered to external iliac arteries of both sides, there was lymph nodes enlargement. Orchiectomy with scrotal ablation was performed and the mass excised. The testicles and abdominal mass were further evaluated by histopathologic examination. Both samples consisted of neoplastic Sertoli cells with high mitotic rate and marked pleomorphism. After surgery, the animal developed vomiting, anorexia, polydipsia and hematochezia. Fourteen days after surgery, the animal was discharged from the hospital. Sertoli cell tumor (SCT) exhibit low metastatic rate. Metastasis occurs mostly from intra-abdominal SCT. We report an extra-abdominal, intra-scrotal malignant SCT with large infiltrative abdominal metastasis.

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To Cite This Article: Castro JLC, Albernaz VGP, Domingues CMT, Ferreira AA, Dittrich G, Moratelli CBS, Freitag FV and Miara LC, 2016. Malignant Sertoli cell tumor with abdominal infiltrative metastasis in a dog. Pak Vet J, 36(3): 379-381.

INTRODUCTION

Testicular tumors are frequently observed in dogs and classified as germ cell tumors (seminoma) and sex cord-stromal tumors, divided into Sertoli cell tumors (SCT) and interstitial Leydig cell tumors, or a mixture of all previous (D'Angelo *et al.*, 2012). Tumors from different cell lineages also occur in testis, but are very rare (Hohsteter *et al.*, 2014). The SCT can cause feminization syndrome due to estrogen production and occurrence of metastasis is rare (Hohsteter *et al.*, 2014).

The objective of this case report is to present a case of canine extra-abdominal, intra-scrotal malignant SCT with large infiltrative abdominal metastasis, without feminization syndrome.

History and Clinical Examination: A fourteen-year-old, intact male, mixed breed dog was referred for medical care with history of testicular asymmetry since last 12 months and severe left testicular volume increase. The dog had abdominal pain, anorexia, apathy, lethargy, polyuria, polydipsia and vomiting for the past three days. Palpation of the abdominal cavity revealed mild tenderness and a 10 cm mass located in the left abdominal

flank. Other physical examination parameters did not indicate changes, except the presence of a slight nasal discharge. There was no palpable peripheral lymph node enlargement.

Thoracic radiography did not indicate any pathological condition. Abdominal ultrasound demonstrated a neoplastic structure with gross heterogeneous echo texture in addition to cavities containing anechoic content. Scrotum ultrasonographic examination revealed left testicle severely increased in size and gross heterogeneous echo texture.

In blood test, it was noted severe normocytic hypochromic regenerative anemia (Hct: 15%, Hb: 3.5 g/dl, RBC: 1.950 million cells/mm³, reticulocytes: 442.500 cells/ μ l), leukocytosis (36200 cells/mm³), neutrophilia (32942 cells/mm³) with left shift (3620 cells/mm³), thrombocytosis (platelet: 621,000 cells/mm³), high levels of ALT, urea and ALP (456.65 UI/l, 116.36 mg/dl and 285 UI/l, respectively) and low albumin, ionic sodium, potassium and calcium (2.09 g/dl, 139 mmol/l, 3.8 mmol/L and 4.16 mg/dl, respectively). Coagulation test indicated normal prothrombin time (7.7 seconds) and decreased activated partial thromboplastin time (7.8 seconds).

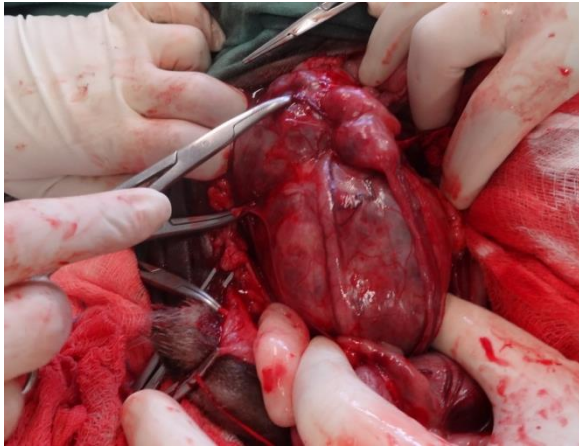


Fig. 1: Intra-operative view of a metastatic SCT mass adhered to both sides external iliac arteries.

Diagnosis and treatment: The patient was hospitalized and support therapy was performed. One day after admission, the patient received blood transfusion, which

improved hematologic condition (Hct: 27%, Hb: 7.4 g/dl, RBC: 3.540 million cells/mm³) and its general status.

The animal was anesthetized and subjected to exploratory celiotomy, which demonstrated a 10 cm encapsulated, solid tumor on hypogastric region adhered to both sides external iliac artery (Fig. 1 and 2A). Enlargement of abdominal lymph nodes with cyst formations was also visualized. Some lymph nodes had broken up and a yellowish substance drained into the peritoneal cavity. The tumor was removed with carefully dissection and ligation of direct vascular branches using Satinsky clamps. Because of the tumor adherence on the external iliac arteries, a vascular suture with polypropylene 6-0 was necessary to preserve blood supply and prevent bleeding. Abdominal lavage was performed with Lactated Ringer's solution (1.5 liters) and after that, muscular, subcutaneous and skin sutures were executed. After proceeded to scrotal orchietomy with scrotum ablation. The left testicle was severely enlarged and irregular compared with contralateral testis (Fig. 2B). All tissue samples were fixed in formalin 10% and submitted for histological evaluation.

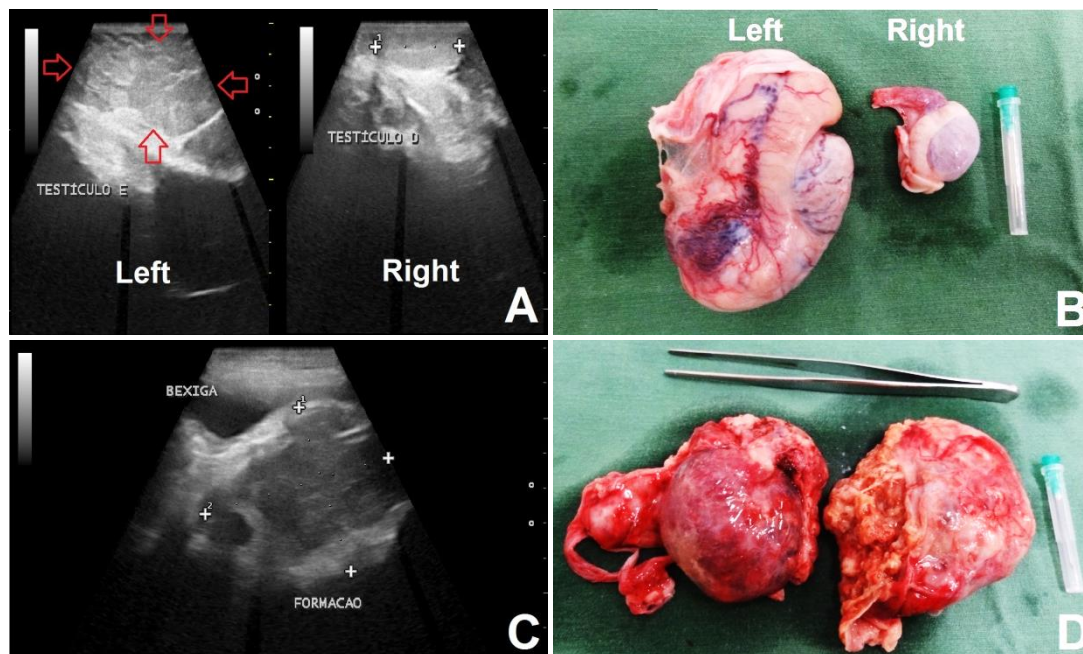


Fig. 2: Ultrasonographic and gross appearance of both testis metastatic infiltrative mass. (A) Ultrasonographic appearance of abnormally enlarged, irregular and heterogeneous left testis (red arrows) and normal size right testis (white markers). (B) Left testis severely increased in relation to the right. (C) Metastatic abdominal mass with anechoic content (white markers). (D) Gross appearance of abdominal metastasis, sectioned during the surgical procedure.

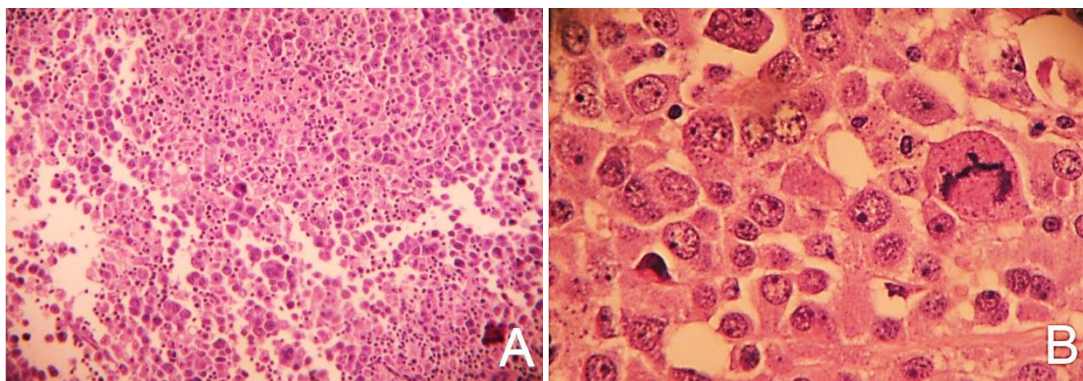


Fig. 3: Histopathologic examination of the left neoplastic testis. (A) Diffuse distribution of Sertoli cells forming a large aggregates with no canalicular structure and significant presence of stroma between cells (H&E; 100x). (B) Proliferation of irregular, round, neoplastic Sertoli cells with high mitotic rate (H&E; 400x).

The day after surgery, the animal presented anorexia, vomiting and polydipsia. The patient remained hospitalized, receiving amoxicillin with clavulanic acid (22mg.kg⁻¹ s.c every 12 hours), dipyron (25mg.kg⁻¹ s.c every 8 hours), tramadol hydrochloride (5mg.kg⁻¹ i.m every 8 hours), meloxicam (0.1mg.kg⁻¹ s.c every 24 hours), omeprazole (1 mg.kg⁻¹ i.v every 24 hours), maropitant citrate (1mg.kg⁻¹ s.c every 24 hours) and intravenous fluid. On subsequent days, the animal developed hematochezia, polyuria, polydipsia, abdominal distention and pain. Abdominal ultrasound demonstrated enlarged mesenteric lymph nodes with low echogenicity, presence of abdominal fluid and diffusely hyperechoic mesentery.

Histopathological examination showed both left testicle and abdominal mass consisted of proliferated, round shaped, multinucleated, neoplastic Sertoli cells with marked pleomorphism, severe anisocytosis and anisocariosis, one or two evident nucleoli, high mitotic rate and significant presence of stroma (Fig 3A and 3B).

A carboplatin-based chemotherapy protocol was offered, but the owner denied. Fourteen days after surgery, the sutures were removed and the animal was discharged from the hospital. The dog lived stable for 274 days, until died of unknown reason at home.

DISCUSSION

The most common testicular tumors are the seminoma and the interstitial cell tumors. The SCT is the less frequent primary testicular neoplasm (Liao *et al.*, 2009). Among the risk factors for testicular tumors development are the old age and cryptorchidism (Liao *et al.*, 2009; D'Angelo *et al.*, 2012; Hohšteter *et al.*, 2014).

The SCT are slow growing, non-invasive with low malignancy features tumor, although intra-abdominal neoplasms are more likely to be malignant (Hohšteter *et al.*, 2014). Metastasis are rare, occurring in approximately 10% of cases, but when present is often located in the spermatic cord and lymph nodes. Metastasis can also occur in mesenteric and periaortic lymph nodes, liver, lungs, kidneys, spleen and adrenal glands (Kang *et al.*, 2011; Švara *et al.*, 2014). Despite metastasis are rare, a recent study demonstrated the invasion of neoplastic cells in blood and lymphatic vessels was detected in 40.8% of all SCT (Švara *et al.*, 2014). Metastasis from extra-scrotal tumors is most common due to late diagnosis. This report presents a rare case of extra-abdominal, intra-scrotum SCT with large abdominal infiltrative metastasis. These features suggest that the dog had a high malignancy tumor. Additionally, several abdominal lymph nodes were enlarged with cyst formations and draining yellowish secretion similar to pus. The diagnosis was supportive of lymphadenitis.

The histological differentiation of benign and malignant neoplasm is not well documented in veterinary medicine (Kang *et al.*, 2011). However, in human literature, some features such as mitotic figures, pleomorphism, large tumor size and necrosis are

suggested of SCT malignancy, especially if occurring together (Young, 2005). In metastatic tumors, the incidence of mitotic figures is often increased, as well as invasion of adjacent structures, blood and lymphatic vessels (Golombos *et al.*, 2010; Kang *et al.*, 2011). In this case, both testicle and metastatic mass showed identical histopathological features with high mitotic rate and pleomorphism. The author's considerer the metastatic mass near aorta is the periaortic lymph nodes with loss of normal architecture.

Feminization is a frequent paraneoplastic syndrome associated with SCT, showing signs of hyperestrogenism, contralateral testicular atrophy, symmetrical alopecia, prostate gland and bone marrow disorders (Peters *et al.*, 2000). In this case, the dog had severe regenerative anemia with high reticulocyte count which is incompatible with bone marrow aplasia or hypoplasia. As seen in other cases of malignant SCT, this dog did not show feminization syndrome (Kang *et al.*, 2011).

Conclusions: The malignancy of Sertoli cells tumors is very important when searching for concurrent conditions. The authors suggest abdominal ultrasound for all testicular tumors as a mean of early diagnosis of metastatic conditions. Additionally, lymph node evaluation is a crucial point on staging cancer. The absence of risk factors such as cryptorchidism and feminization syndrome does not exclude the malignancy feature of testicular tumors in dogs.

Author's contribution: JLCC, AAF and CBSM performed the surgery and postoperative care. GD held consultation, initial supportive and postoperative care until discharge from hospital. CMTD and LCM analyzed both blood and histologic tissue samples. VGPA and FVF conceived the review, discussion and organized the manuscript. All authors read and approved the final manuscript.

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