Case Report

UNILATERAL TESTICULAR FIBROSARCOMA IN A GERMAN SHEPHERD DOG- A CASE STUDY

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ABSTRACT

This paper describes a rare case of testicular fibrosarcoma in a 4-year-old German shepherd dog with the history of testicular swelling for two months and its successful surgical management.

Keywords: Testicular fibrosarcoma, German Shepherd dog, scrotal ablation

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INTRODUCTION

The major types of testicular tumours are sex cord-stromal (gonadostromal) tumours, germ cell tumours and mixed germ cell-sex cord stromal tumours (Kennedy *et al.*, 1998). Testicular tumor in dogs occurs as a result of uncontrolled and abnormal growth of testicular cells. Three primary types of testicular tumors are identified in dogs: Seminoma or germ cell tumors, interstitial cell tumors, and Sertoli cell tumors (Gokulakrishnan *et al.*, 2023). Cancer is the major cause of morbidity and mortality in dogs. Approximately 25 percent of deaths in dogs are a result of cancer (Kumar *et al*., 2018). Soft tissue sarcomas are mesenchymal neoplasms derived from soft connective tissues, occur commonly in cutaneous and subcutaneous tissues. Examples for soft tissue sarcomas include fibrosarcoma, liposarcoma, lymphoma, hemangiosarcoma and peripheral nerve sheath tumours. Fibrosarcoma is a rare, highly malignant soft tissue tumour of mesenchymal cell origin that connects supports or surrounds other structures and organs of the body. Fibrosarcoma originates from connective tissue cells. Since connective tissue is abundant in all parts of the body, fibrosarcoma can occur anywhere in the body. In dogs, 60 to 80 per cent of

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skin tumors are benign and can be cured with early surgical removal (Shameem Ara Begum *et al.,* 2022). Among these tumors, fibrosarcoma is one of the rarest entities and poses diagnostic challenges due to its subtle clinical manifestations.

CASE HISTORY AND CLINICAL OBSERVATIONS

A 4 year old intact German shepherd dog was brought to the Veterinary Clinical Complex with a notable history of left testicular swelling over past two months. On clinical examination the dog was alert and responsive, with vital signs including heart rate, respiratory rate, and temperature within normal limits. The left testicle was found to be significantly enlarged, firm, and non-painful on palpation. These clinical findings raised suspicion of a testicular mass, which leads to further diagnostic evaluation. Haemato-biochemical analysis showed all the other parameters were in normal range except neutrophilia. The fine needle aspiration cytology revealed more number of RBC, neutrophils and a very few sertoli cells. The ultrasonographic examination revealed hyperechoic areas within the left testicle, suggesting alterations in tissue density consistent with neoplastic processes. These findings help to differentiate testicular tumors from other conditions such as orchitis or traumatic hematomas. No evidence of tumor metastasis to the lungs, liver, or other internal organs on radiographic examination.

TREATMENT AND DISCUSSION

The dog was pre-medicated with atropine sulphate (0.04 mg/kg b.wt S/C) and xylazine (1 mg/kg b.wt I/M). Anaesthesia was induced with intravenous diazepam (0.25 mg/kg I/V) and ketamine (5 mg/kg, I/V), and maintained with the same combination at the same dose. Throughout the procedure vital parameters such as heart rate, respiratory rate, and oxygen saturation were monitored and fluid therapy was maintained with normal saline @ 15ml/kg/hour. An elliptical incision was made around the neck of the scrotum and the spermatic cords were ligated individually and the testicles were removed along with the scrotum. The excised tumor mass revealed large, smooth and spherical shaped left testicle and normal sized right testicle (Fig 1). The length, width and diameter of both the testicles were compared which revealed left testicle was larger (Table 1). The proliferating fibroblasts arranged in herringbone pattern, as well as necrotic seminiferous tubules with shrunken lumens and irregular shaped mitotic (Fig 2,3,4) on histopathological examination. These findings confirmed the unilateral testicular fibrosarcoma. Postoperatively, the dog was treated with cefpodoxime (5 mg/kg body weight P/O) and tramadol (2 mg/kg body weight I/V) for 5 days following which the animal recovered uneventfully.

Testicular fibrosarcoma is uncommon tumour in dogs. It is a malignant tumor of fibroblasts and also unclassified and mixed mesenchymal cell neoplasms capable of collagen fibre production (Mumba *et al*., 2013). There are various causes for development of fibrosarcoma in animals including genetic susceptibility, chemical substances, subcutaneous vaccine

injections, subcutaneous microchip implants and parasitic infections. In the present case, the neoplastic transformation of cells in testicular fibrosarcoma may be due to dartos muscle and mediastinum testes. In dogs, fibrosarcoma was earlier reported on various parts of the body such as on oesophagus, heart, urinary bladder, omentum, trachea, vagina, intestine and lower eyelid (Soujanya *et al*.,2019). In the present study, fibrosarcoma was observed on testes of the dog. The tumour may be originated from the dartos muscle and mediastinum testes because it is the only fibrous connective tissue present in testes and due to any trauma or injury, the cells get proliferated and invade the testicular tissue resulted in tumour. In this case, histologically the testicular mass was composed of spindle shaped tumor cells arranged in herringbone pattern confirm the case as testicular fibrosarcoma (Ruskin and Mayer, 2016). In conclusion, the fibrosarcoma is the rarest in the testicle, may be originated from the dartos muscle of the testicle due to external injury and the surgical excision is the treatment of choice if it is diagnosed earlier.

CONCLUSION

The condition was effectively managed through surgical excision under general anesthesia. Postoperative care, including antibiotics and analgesics, ensured an uneventful recovery. This case study highlights the importance of prompt diagnosis and surgical intervention in managing rare testicular tumors in canines.

CONFLICT OF INTEREST

The authors have no conflict of interest to declare.

Fig 1: The excised testicular mass (fibrosarcoma)

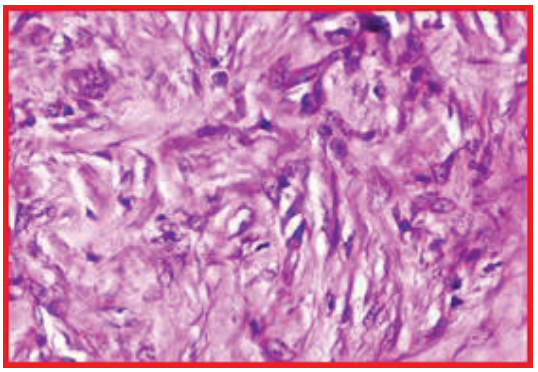

Fig 2: Testes, dog : Higher magnification of the necrotic seminiferous tubules. Note the thick basement membrane of the seminiferous tubules (HE. 10x).

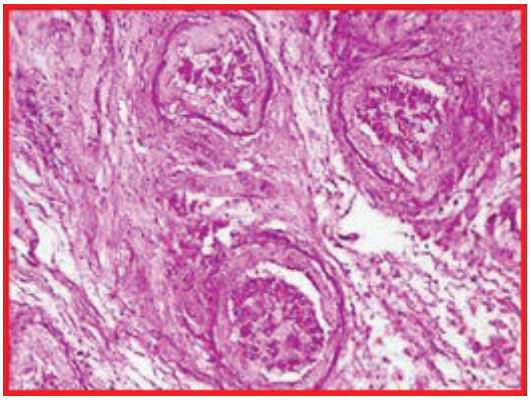

Fig 3: Testes, dog: Seminiferous tubules showing complete lysis of all the spermatogenic series of cells (HE. 40x).

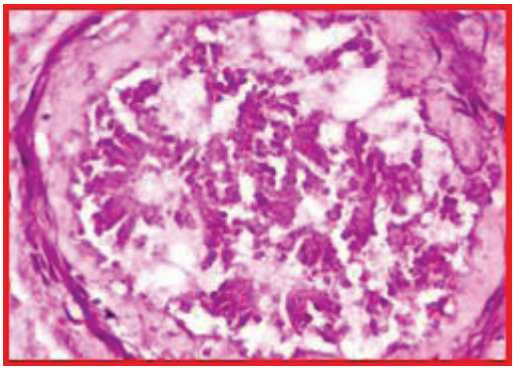

Fig 4: Fibrosarcoma, dog: Mature plumpy fibroblasts with abundance of eosinophilic collagen in between them (HE. 40x).

Table 1: Comparing the length, width and diameter of both the testicles

Parameters	Right testis	Left testis
Length (cm)	3.7	7.3
Diameter (cm)	2.3	10.7
Weight (gm)	9.44	35.29

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