

A RARE REPORT OF SEMINOMA IN AN ORCHIECTOMIZED DOG

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Received: 16.06.2024; Accepted: 28.08.2024

SUMMARY

A rare report of seminoma in a neutered dog is documented first of its kind in India following confirmative diagnosis by histopathology. One and half year old, castrated male, chippiparai dog was reported with pink, firm, ulcerated mass with mild bleeding in the scrotum. Thoracic radiography revealed no lung metastases. Surgical excision of the mass was performed under general anaesthesia using Inj. Ketamine (5 mg/kg). Histopathologically, it revealed sheet of round to polygonal cells within the seminiferous tubules. The uniform seminomatous cells had more eosinophilic cytoplasm, centrally placed vesicular nucleus with prominent nucleoli.

Keywords: Dog, Seminoma, Testicular tumours

How to cite: Kokila, S., Madheswaran, R., Vijayakumar, M., Kumaresan, S., Sankar, P., Kathirvel, S. and Dharmaceelan, S. (2025). A rare report of seminoma in an orchiectomized dog. *The Haryana Veterinarian* 64(1): 124-125.

The second most common type of tumor observed in male dogs is testicular tumors (Hayes, 1976). The frequently reported testicular types of tumours are germ cell, Sertoli cell and Leydig cell. Seminoma is originated from the germ cells that comprise the spermatogenic epithelium within the seminiferous tubules (Fan *et al.*, 2007). The risk factors involved in the genesis of seminoma in both human beings and canines includes cryptorchidism, inguinal hernias and occasionally, a hereditary link (Fan *et al.*, 2007). The tumours spread chiefly by lymphatic vessels and metastases to other organs and frequently to retroperitoneal lymph nodes (Restucci *et al.*, 2003). This communication reports a rare occurrence of seminoma in a castrated dog.

A one and half year old Chippiparai castrated male dog was reported to Veterinary Clinical Complex, Veterinary College and Research Institute, Namakkal with the history of ulcerated mass in the scrotum and castration was done by a field veterinarian three months ago. Clinical examination of the animal revealed a soft, reddish, firm, non-capsulated and irregular mass in the scrotal region with sero-sanguinous discharge (Fig. 1). Hematobiochemical parameters were analysed and recorded. Thoracic radiography was taken to ascertain the distant organ metastasis.

Surgical excision of the mass was performed under pre-anaesthetic Inj. Xylazine (1 mg/kg b.wt.), Inj. Diazepam (0.5 mg/kg b.wt.) and general anaesthesia using Inj. Ketamine (5 mg/kg b.wt) for induction and maintenance. Skin incision was made at the base of the mass including 1 cm of the healthy scrotal skin. Tumour mass was bluntly separated from the subcutaneous tissue. Bleeding points were coagulated using bipolar surgical electrocautery. There was no communication of the mass with the

abdominal cavity. Skin incision was closed using silk 1-0. Post-operative antibiotics (Amoxicillin@20 mg/kg IM) for five days, anti-inflammatory (Carprofen @4 mg/kg IM) for three days were prescribed. Sutures were removed on 12th post-operative day. Tissue samples were submitted for histopathology in 10% formalin.

The gross appearance of the mass was soft, reddish, firm, non-capsulated, irregular mass. Initially the mass was suspected for transmissible venereal tumour. Primary testicular tumors are commonly reported in intact, older dogs. According to (Doxsee *et al.*, 2006) the mean age of occurrence of an extra testicular tumor was 9.2 years (range, 4 to 15 years). This is in contrary to the present case which is one year old. The hematological and serum biochemical values were tabulated below:

Parameters	Values	Parameters	Values
Hb	10g/dl	Glucose	90 mg/dl
PCV	40%	Total protein	6 g/dl
RBC	$5 \times 10^6/\mu\text{l}$	BUN	10mg/dl
WBC	$5 \times 10^3/\mu\text{l}$	Creatinine	1.1 mg/dl
Neutrophils	65%	ALT	50 U/L
Lymphocytes	18%	ALP	120 U/L
Eosinophils	2%		
Monocytes	3%		
Thrombocytes	$3 \times 10^3/\mu\text{l}$		

Many authors have indicated that retained testicles have a higher predisposition to cause testicular tumours (Reif *et al.*, 1979). The predisposing cause of seminoma in cryptorchidism is due to higher temperature in the inguinal region than in the scrotal sac but lower when compared to abdominal cavity (Hemminkand Sweden, 2004). But in this case, there was no history of cryptorchidism as per owner's statement. The risk of developing testicular

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Fig. 1. The Chippiparai dog showing soft, reddish, firm, non-capsulated and irregular mass in the scrotal region with serosanguineous discharge

tumour can be eliminated by a successful castration. But there are very few rare cases reports of testicular tumours developed in castrated dogs. One such report is by Collin carry (2012) who documented Sertoli cell tumour in a ten year old Labrador which was castrated at six months of age. Angela *et al.* (2006) reported a retrospective study on 12 dogs and 5 cats that spontaneously developed neoplasms of testicular origin (Sertoli cell tumour) after castration. According to De Kretser *et al.* (2000) due to the lack of inhibin (and testosterone), previously castrated animals are likely deficient in gonadotropin-releasing hormone and follicle stimulating hormone, which increases the risk of gonadotrophin overproduction and carcinogenesis. Metastasis of seminoma has been evidenced in the eye, nervous system, spleen (Lucas *et al.*, 2012), kidney, liver, pancreas, lymph nodes, alveolar tissue, base of the tongue, soft palate, wind pipe and pericardium (Takiguchi *et al.*, 2001). Dugat *et al.* (2015) reported metastasis of seminoma in bones (ribs and humerus bone) in a eight year old cryptorchid dog. Thoracic radiography revealed no metastasis in the present case. Histopathology revealed sheet of round to polygonal cells within the seminiferous tubules. The uniform seminomatous cells had more eosinophilic cytoplasm, centrally placed vesicular nucleus with prominent nucleoli. This correlates with the findings of (Ciaputa *et al.*, 2012) who described the most frequent form of seminoma, tumour cells transform within seminiferous tubule and form bands or islands of a relatively uniform texture. The cells are very closely packed and well outlined containing large cell nuclei with one or two nucleoli. The present case revealed the loosely attached neoplastic cells with weak desmosomes and collagen fibres (Fig. 2). This might be due to rapid turnover of neoplastic cells within the seminiferous tubule. No parallel reports are available to support this finding.

The present case is contrary to the published

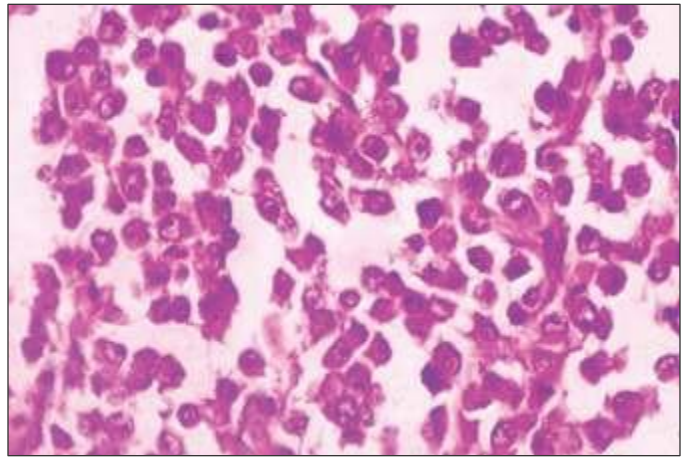


Fig. 2. Histopathology of the mass showing the round to polygonal cells with loosely attached collagen fibres and centrally placed vesicular nucleus with prominent nucleoli

literatures, because it was recorded in a young, castrated dog without cryptorchidism and metastases. The possible reason for occurrence of seminoma within three months of castration without any testicular remnants could not be ascertained.

REFERENCES

- Doxsee, A.L., Yager, J.A., Best, S.J. and Foster, R.A. (2006). Extratesticular interstitial and Sertoli cell tumors in previously neutered dogs and cats: A report of 17 cases. *Can. Vet. J.* **47**(8): 763-766.
- Ciaputa, R., Nowak, M., Kiełbowicz, M., Antończyk, A., Błasiak, K. and Madej, J.A. (2012). Seminoma, sertolioma and leydigoma in dogs: clinical and morphological correlations. *Bull. Vet. Inst. Pulawy.* **56**: 361-367.
- Collin Cary (2012). Scrotal mass in a 10 year old castrated male Labrador. Cornell university library. ecommons.cornell.edu.
- de Kretser, D.M., Meinhardt, A., Meehan, T., Phillips, D.J., O'Bryan, M.K. and Loveland, K.A. (2000). The roles of inhibin and related peptides in gonadal function. *Mol. Cell. Endocrinol.* **161**: 43-46.
- Dugat, D.R., Medici, E.L., Rochat, M.C., Arble, J.A. and Snider, T.A. (2015). An unusual case of metastatic seminoma in a dog. *J. Am. Anim. Hosp. Assoc.* **51**(6): 401-406.
- Fan, T.M. and de Lorimier, L.P. (2007). Tumors of the male reproductive system. In: Withrow, S.J., Vail DM, eds. *Withrow and MacEwen's Small Animal Clinical Oncology* (4th Edn.), St. Louis, Saunders Elsevier. pp. 637-641.
- Hayes Jr, H.M. and Pendergrass, T.W. (1976). Canine testicular tumors: epidemiologic features of 410 dogs. *Intern. J. Cancer.* **18**(4): 482-487.
- Lucas, X., Rodenas, C., Cuello, C., Gil, M.A., Parrilla, I., Soler, M., Belda, E. and Agut, A. (2012). Unusual systemic metastases of malignant seminoma in a dog. *Reprod. Domest. Anim.* **47**(4): e59-e61.
- Reif, J.S., Maguire, T.G., Kenney, R.M. and Brodey, R.S. (1979). A cohort study of canine testicular neoplasia. *J. Am. Vet. Med. Assoc.* **175**: 719-723.
- Restucci, B., Maiolino, P., Paciello, O., Martano, M., De Vico, G. and Papparella, S. (2003). Evaluation of angiogenesis in canine seminomas by quantitative immunohistochemistry. *J. Comp. Pathol.* **128**: 252-259.
- Takiguchi, M., Iida, T., Kudo, T. and Hashimoto, A. (2001). Malignant seminoma with systemic metastases in a dog. *J. Small Anim. Prac.* **42**(7): 360-362.