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SURGICAL TREATMENT OF SERTOLI CELL TUMORS EXTRATESTICULAR BY SCROTAL SAC ABLATION IN A LOCAL DOG

Penanganan Tumor Sel Sertoli Ekstratestikular dengan Ablasi Kantong Skrotum pada Anjing Lokal

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Abstract

Sertoli cell tumor is an abnormal tissue growth or neoplasm that most frequently occurs in the genital system of male dogs and can occur outside the testicular organ (extratesticular). This tumor arises from the sex cord-stromal support tissue, which consists of granulosa cells, Sertoli cells, and Leydig cells. This report aims to document the management of a Sertoli cell tumor case in a male local dog through scrotal ablation surgery. A seven-year-old male local dog named Boby, weighing 17 kg, presented with a solid mass on the scrotum that had been present for one year and was progressively increasing in size. Ancillary diagnostic procedures via histopatology of the testis revealed a proliferation of columnar cells with visible mitosis and tumor cells with a tubular pattern between trabeculae, leading to a diagnosis of Sertoli cell tumor with a favorable prognosis. Treatment was performed through scrotal ablation surgery to remove the entire tumor mass attached to the dog's scrotum, followed by an orchiectomy. Postoperatively, long-acting amoxicillin (15 mg/kg BW) was administered subcutaneously (SC) q48h on days 0, 2, 4, 6, and 8, followed by supportive therapy with biodin (2 ml) intramuscularly (IM) on the same schedule. On day 10, the surgical wound had begun to heal and showed no signs of infection; the dog exhibited normal appetite, water intake, urination, and defecation. These results indicate that scrotal ablation is an effective treatment for Sertoli cell tumors in dogs. Postoperatively, it is recommended to keep the dog in a cage and use an Elizabethan collar to prevent secondary infection.

Keywords: local dog, scrotal ablation, sertoli cell

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Abstrak

Tumor sel Sertoli adalah pertumbuhan jaringan abnormal atau neoplasma yang paling sering terjadi pada sistem genitalia anjing jantan dan dapat terjadi di luar organ testis (ekstratestikular). Tumor ini tumbuh dari jaringan pendukung *sex cord stroma* yang terdiri dari sel granulosa, sel Sertoli, dan sel Leydig. Laporan ini disusun dengan tujuan mengetahui penanganan kasus tumor sel Sertoli pada anjing lokal jantan melalui pembedahan ablasi kantong skrotum. Seekor anjing lokal jantan bernama Boby berumur tujuh tahun, berat badan 17 kg menunjukkan adanya benjolan massa padat pada bagian skrotum sejak satu tahun lalu dengan ukuran yang semakin membesar. Pemeriksaan penunjang dengan histopatologi massa pada testis menunjukkan adanya proliferasi sel berbentuk kolumnar yang terlihat mitosis dan sel tumor dengan pola tubulus di antara trabekula, sehingga anjing didiagnosis menderita tumor sel Sertoli dengan prognosis fausta. Penanganan dilakukan dengan tindakan pembedahan ablasi skrotum untuk mengangkat keseluruhan massa tumor yang melekat pada skrotum anjing, diikuti dengan orkiektomi pada testis. Pascaoperasi diberikan antibiotik amoxicillin *long acting* 15 mg/kg BB secara SC q48h pada hari ke-0, ke-2, ke-4, ke-6, dan ke-8, diikuti terapi suportif dengan biodin 2 ml secara IM q48h pada hari ke-0, ke-2, ke-4, ke-6, dan ke-8. Pada hari ke-10, luka operasi mulai menyatu dan tidak menunjukkan tanda infeksi, anjing memiliki nafsu makan dan minum normal, serta urinasi dan defekasi normal. Hasil ini menunjukkan penanganan dengan ablasi kantong skrotum terbukti efektif dalam menangani kejadian tumor sel Sertoli pada anjing. Pascaoperasi disarankan untuk menempatkan anjing di dalam kandang dan memasangkan *collar* untuk mencegah terjadinya infeksi sekunder.

Kata kunci: anjing lokal, ablasi skrotum, sel sertoli

INTRODUCTION

Dogs are among the most popular companion animals in society. Given their integral role in human life, health management is a crucial aspect of ensuring their welfare and quality of life. Appropriate preventive measures are necessary to minimize the risk of various diseases that can threaten canine health. Clinically, dogs are susceptible to a wide range of pathologies, including infectious diseases caused by pathogenic agents such as bacteria, viruses, parasites, and fungi, as well as non-infectious diseases such as neoplasia or tumors, which have become a primary concern in veterinary practice. One of the most prevalent tumors affecting dogs is the testicular tumor in males. Testicular tumors represent the most frequent abnormal tissue growth or neoplasm occurring in the male canine genital system and rank as the third most common tumor, following skin tumors and fibrous tissue tumors (Nødtvedt *et al.*, 2011). Dogs are the species most frequently affected by testicular tumors, accounting for 90% of tumor occurrences in male genital organs(North & Banks, 2009)

Sertoli cell tumors can arise in both intratesticular and extratesticular tissues, although extratesticular occurrences are considered very rare (Doxsee *et al.*, 2006). These tumors may develop from the proliferation of sex cord-stromal tissue, such as granulosa cells, Leydig cells, or Sertoli cells. Generally, Sertoli cell tumors are benign, with a very low rate of metastasis (Canadas *et al.*, 2016).

Sertoli cell tumors, whether intratesticular or extratesticular in origin, can potentially induce endocrine disorders that trigger paraneoplastic feminization syndrome. This syndrome is characterized by clinical manifestations including non-pruritic alopecia, hyperpigmentation, gynecomastia, pendulous prepuce, prostatic dysfunction, and a change in urination posture resembling that of a female dog. Furthermore, excessive estrogen exposure can lead to myelotoxicosis, characterized by bone marrow hypoplasia and non-regenerative anemia (Quartuccio *et al.*, 2012). Therefore, surgical intervention is crucial in the management of this

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condition. This case report aims to describe the occurrence of testicular tumors in dogs, covering diagnostic methodology, clinical management, and therapeutic interventions.

RESEARCH METHODS

Signalment and Anamnesis

The patient, a 7-year-old male black-and-white local breed dog weighing 17 kg, was presented with a chief complaint of a firm scrotal mass that had been present for one year. The owner reported that the mass was initially small but had progressively enlarged. The patient was intact and had received a rabies vaccination, but had no history of anthelmintic or ectoparasite prophylaxis. The dog was kept in a free-roaming environment and fed a diet consisting of rice and chicken. There were no reported changes in appetite or water intake, and urination and defecation patterns were normal.

Physical Examination and Clinical Signs

Physical examination was performed via inspection, palpation, and auscultation. The vital parameters were as follows: heart rate and pulse 88 beats/minute, respiratory rate 26 breaths/minute, capillary refill time (CRT) <2 seconds, and rectal temperature 38.5°C (Table 1). Palpation revealed a mass with a firm consistency, an irregular surface, and adherence to the scrotal skin (Figure 1). The dog exhibited no signs of pain or discomfort upon palpation of the mass. Secondary findings during the examination included tick infestation, lichenified lesions on the cranial and caudal extremities, and multifocal alopecia on the body. Physical examination of the mucous membranes, musculoskeletal, gastrointestinal, urogenital, cardiovascular, neurological, and respiratory systems revealed no other abnormalities.

Hematological Examination

A complete blood count (CBC) was performed to evaluate the patient's overall health status. The hematological findings revealed an increased percentage of white blood cells, granulocytopenia, and normocytic normochromic anemia (Table 2).

Tumor Tissue Histopathology

Histopathological examination was performed following the surgical excision of the mass to establish a definitive diagnosis. Tissue samples were collected from the excised mass and fixed in 10% neutral buffered formalin (NBF). The biopsy specimens were then submitted to the Veterinary Pathology Laboratory at the Faculty of Veterinary Medicine, Udayana University, for tissue processing and staining with Hematoxylin and Eosin (H&E). The prepared slides were subsequently examined and evaluated via light microscopy (Figure 2A and 2B).

Diagnosis and Prognosis

Based on the clinical history, clinical signs, physical examination, and histopathological findings, it was concluded that the patient was suffering from an extratesticular Sertoli cell tumor with a favorable prognosis.

Preoperative Management

The patient was fasted for eight hours prior to surgery. Fluid therapy was initiated with lactated Ringer’s solution via a 24G intravenous (IV) catheter, followed by premedication with atropine sulfate at a dosage of 0.02 mg/kg BW administered subcutaneously (SC). Ten minutes post-atropine administration, anesthetic induction was achieved using a combination of xylazine (1 mg/kg BW) and ketamine (10 mg/kg BW) administered intramuscularly (IM). The patient was then transferred to the operating table and positioned in dorsal recumbency. The scrotal and inguinal regions were clipped and aseptically prepared using chlorhexidine, 70% alcohol, and

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povidone-iodine. The surgical site was then draped. During the procedure, anesthesia was maintained with 2% isoflurane and 100% oxygen via inhalation.

Surgical Procedure

A circular skin incision was performed to delineate the excision margins. The incision was continued into the subcutaneous tissue, following the pattern of the scrotal skin incision (Figure 3A). Following the incision of the skin, subcutaneous tissues, and tumor margins, the area was explored to locate both testes. Both testes were exteriorized and appeared grossly normal, indicating that the tumor mass was confined to the scrotum. A bilateral orchiectomy was subsequently performed to remove both testes (Figure 3B). Following the orchiectomy, the tumor was excised from the scrotal area according to the designated margins to ensure complete removal (Figure 3C). A tissue sample was collected from the excised mass for histopathological analysis. The muscle and subcutaneous layers were closed using simple interrupted sutures with 3-0 absorbable PGA 910 suture material. The skin was closed using a subcuticular suture pattern with 3-0 absorbable PGA 910 (Figure 3D). The incision site was cleaned and treated with povidone-iodine and gentamicin sulfate ointment, then covered with sterile gauze and secured with an adhesive dressing. Throughout the procedure, the patient's vital signs, including respiratory rate, heart rate, and mucous membrane color, were monitored every 10 minutes.

Postoperative Management

Post-operative wound care consisted of cleaning the incision site with 0.9% NaCl solution and chlorhexidine, followed by the application of gentamicin sulfate antibiotic ointment twice daily from day 0 to day 10. The patient was administered long-acting amoxicillin (150 mg/ml) at a dosage of 15 mg/kg BW subcutaneously (SC) every 48 hours on days 0, 2, 4, 6, 8, and 10 (1.7 ml per dose). Additionally, supportive therapy was provided via intramuscular (IM) injection of Biodin (containing ATP and vitamin B12) at a volume of 2 ml, administered every 48 hours.

RESULTS AND DISCUSSIONS

Result

Post-operative wound monitoring and therapy were continued until day 10 (Table 3). On day 2 post-operation, the surgical site appeared moist and edematous, accompanied by surrounding erythema. The patient remained clinically stable, characterized by a good appetite and water intake, with normal urination and defecation patterns. Purulent discharge was observed from days 4 to 6 post-operation, likely attributed to suboptimal post-operative management. This was observed as the patient was actively licking the surgical site and engaging in outdoor activities, which increased the risk of secondary infection. By days 8 and 10, the surgical site showed improvement, characterized by the resolution of purulent discharge and complete apposition of the incision without further exudate.

Discussion

Based on the clinical history, physical examination, and ancillary diagnostic findings, the patient was diagnosed with an extratesticular Sertoli cell tumor, as evidenced by the absence of macroscopic abnormalities in the testes observed during surgical exploration. Although the mass developed outside the testicular parenchyma, the neoplastic cells were identified as Sertoli cells—the supporting cells typically located within the seminiferous tubules. According to (Doxsee *et al.*, 2006) extratesticular Sertoli cell tumors originate from testicular cells but develop extra-testicularly, such as in the spermatic cord, scrotal skin, or at previous castration sites. This is hypothesized to arise from ectopic testicular tissue, as seen in cases of unilateral or bilateral cryptorchidism. Alternatively, the condition may result from the iatrogenic

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implantation of testicular tissue to adjacent areas during prior surgery or as a consequence of testicular trauma.

Post-operative histopathological examination of the excised tumor mass revealed a proliferation of columnar cells. Cell proliferation—characterized by abnormal, rapid, and repetitive growth and division—is a hallmark of tumor development (Yang *et al.*, 2017).The tumor growth exhibited a tubular pattern interspersed between trabeculae. According to (Doxsee *et al.*, 2006), Sertoli cell tumors are typically organized into tubular structures lined by Sertoli cells, with an accumulation of eosinophilic cytoplasm toward the center of the tubular pattern—a characteristic feature of this neoplasm. Occasional mitotic figures were observed in the biopsy specimens at 400x magnification, indicating cellular division, though in low frequency. This finding is consistent with reports by (Doxsee *et al.*, 2006) and (Meichner *et al.*, 2016), which classify Sertoli cell tumors as benign neoplasms with slow growth rates. Based on these results, the patient was diagnosed with an extratesticular Sertoli cell tumor, as evidenced by the tumor's location outside the testis, the grossly normal appearance of the testes, and the characteristic microscopic features of Sertoli cells.

The surgical management consisted of scrotal ablation—the complete excision of the scrotum—followed by bilateral orchiectomy to prevent future Sertoli cell tumor recurrence. This surgical approach ensured the complete removal of the tumor mass and aimed to prevent further spread. The surgical outcome was consistent with the favorable prognosis; the tumor was benign, and the patient remained in good condition post-operatively. From day 1 to day 6, the surgical site exhibited inflammation, characterized by erythema. This is considered part of the initial phase of wound healing, serving as a physiological response to tissue trauma and microbial colonization, as well as an indication of cellular proliferation and new tissue formation (Tarigan *et al.*, 2023). From day 4 to day 6, the inflammation was complicated by purulent discharge, likely attributed to self-trauma (licking) and the patient's free-roaming lifestyle, which increased the risk of secondary microbial infection (Alhadz *et al.*, 2025). By days 8 and 10, the purulent discharge had resolved; however, the incision site still exhibited mild erythema, indicating residual inflammation, though it was less pronounced than in previous days. Throughout the recovery period, the patient remained systemically stable, evidenced by normal appetite, water intake, urination, and defecation.

CONCLUSIONS AND SUGGESTIONS

Conclusions

Based on clinical and ancillary diagnostic findings, the patient was diagnosed with an extratesticular Sertoli cell tumor. Surgical management consisted of scrotal ablation to achieve complete excision of the tumor mass. By day 10 post-operation, the incision site had healed well with good apposition, and there were no clinical signs of infection. The patient demonstrated a good appetite and water intake, with normal urination and defecation patterns.

Suggestions

For optimal outcomes, early intervention is strongly recommended for patients diagnosed with extratesticular Sertoli cell tumors to prevent tumor enlargement and potential metastasis, which could compromise the patient's health. Furthermore, post-operative management should include patient confinement and the use of an Elizabethan collar to prevent self-trauma, thereby minimizing the risk of infection at the surgical and incision sites.

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Tables

Table 1. Results of Vital Signs Examination

No.	Parameter	Result	Reference Range	Interpretation
1	Body Temperature	38,5^{0}C	37.5-38.6^{0}C	Normal
2	Heart Rate	88 beats/minute	65-90 beats/minute	Normal
3	Pulse Rate	88 beats/minute	65-90 beats/minute	Normal
4	Respiratory Rate	26 breaths/minute	15-30 breaths/minute	Normal
5	Capillary Refill Time (CRT)	< 2 seconds	< 2 seconds	Normal

Table 2. Routine Hematological Results

No	Parameter	Result	Reference Range	Interpretation
1.	WBC	12.74 10^3/µL	6-17	Normal
2.	Lymphocyes	28%	12-30	Normal
3.	MID	12.6%	2-9	Increased
4.	Granulocytes	59.4%	60-83	Decreased
5.	RBC	4.14 10^6/µL	5.5-8.5	Decreased
6.	Hemoglobin	9.1 g/dL	11-19	Decreased
7.	HCT	27.5%	39-56	Decreased
8.	MCV	66.4 fL	62-72	Normal
9.	MCH	22.1 pg	20-25	Normal
10.	MCHC	33.2 g/dL	30-38	Normal
11.	RDWCV	11.4%	11-15.5	Normal
12.	Platelet	129 10^3/µL	117-460	Normal
13.	MPV	8.1 fL	20-25	Normal
14.	PDW	13.2 fL	62-72	Normal
15.	PCT	0.105%	0.1-0.5	Normal

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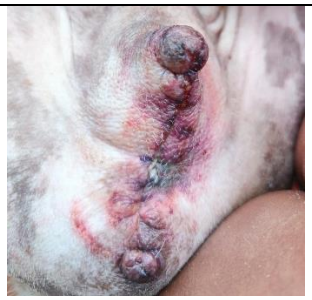
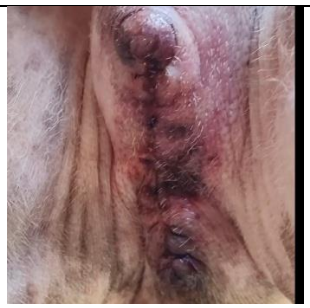
Table 3. Post-operative Observation Table

Day	Result	Description
Day 0		Surgical incision site appeared moist. The patient was lethargic, but appetite and water intake remained normal.
Day 2		The surgical site remained moist and edematous, despite the application of gentamicin sulfate ointment. Appetite, water intake, urination, and defecation remained within normal limits. However, the patient was observed licking the surgical site and engaging in outdoor activity.
Day 4		The surgical incision remained moist and edematous, accompanied by inflammatory erythema and the presence of purulent discharge. Appetite, water intake, urination, and defecation remained within normal limits. The patient was observed licking the surgical site and engaging in outdoor activity.
Day 6		The incision site remained moist, although the edema and erythema were subsiding. Purulent discharge was still present. Appetite, water intake, urination, and defecation remained within normal limits. The patient continued to lick the surgical site and remained active outdoors.
Day 8		The incision site remained moist with persistent edema and erythema; however, purulent discharge was no longer evident. Appetite, water intake, urination, and defecation remained within normal limits. The patient continued to lick the surgical site and engaged in outdoor activities.

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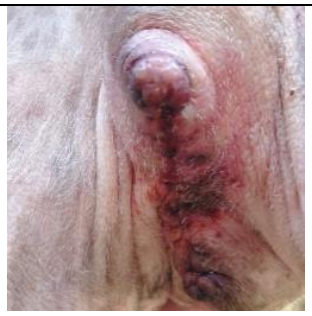
Day 10		The incision site remained moist; persistent edema and erythema were observed, although purulent discharge was no longer evident. Physiological functions (appetite, water intake, urination, and defecation) remained within normal limits. The patient was observed licking the surgical site and engaging in outdoor activity.

Figures

Figure 1. A prominent mass on the patient's testicular region (indicated by the red circle).

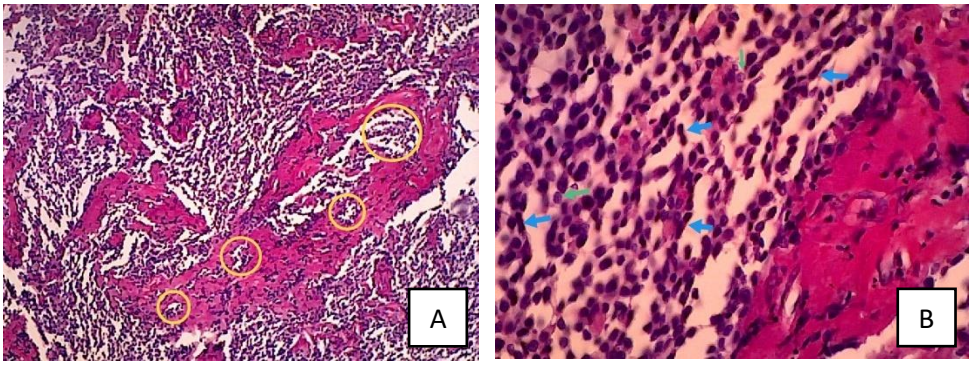


Figure 2. A) Tumor cells forming tubular patterns (yellow circle), 100x magnification. B) Columnar cell proliferation (blue arrow) and columnar cell mitosis (green arrow), 400x magnification.

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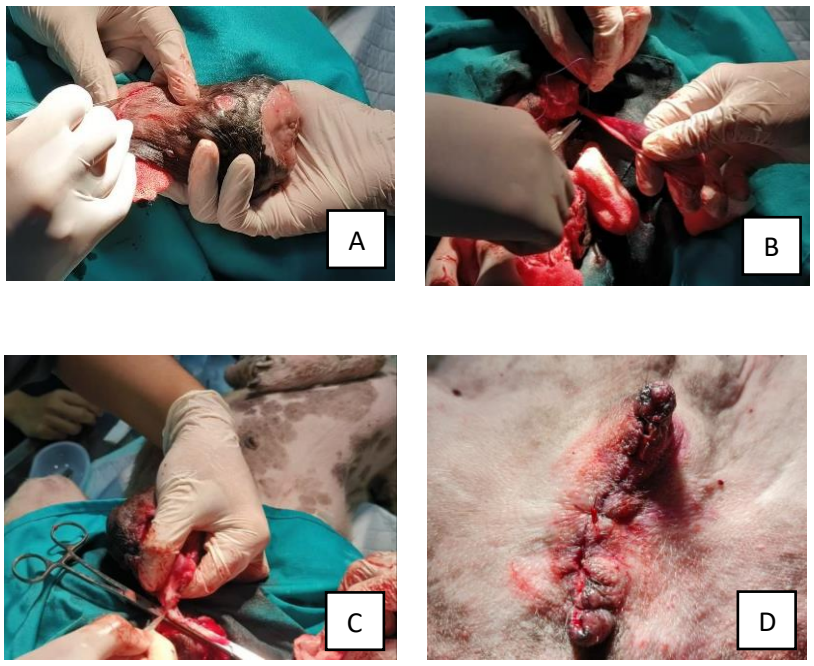

Figure 3. A) Skin and subcutaneous incision, B) Orchiectomy procedure, C) Excision of the tumor margin, D) Wound closure using 3.0 PGA suture.