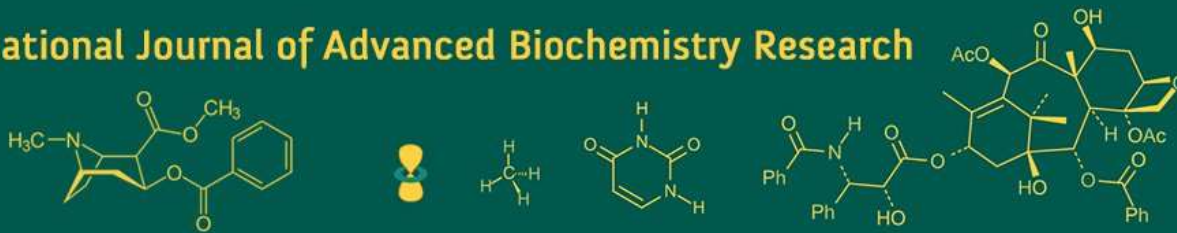


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Orchiectomy for testicular hypertrophy in an elderly canine: Clinical outcomes and considerations

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Abstract

This case report describes the successful surgical management of a geriatric dog presented with testicular hypertrophy secondary to testicular torsion and tumor, accompanied by markedly elevated packed cell volume (PCV) and haemoglobin (Hb) levels. The patient, a 17-year-old male Labrador retriever dog, showed clinical signs of pain and discomfort. Diagnostic blood work revealed a PCV of 75% and Hb of 22 g/dL, complicating the anaesthetic and surgical plan. Preoperative fluid therapy was initiated to stabilize the dog, followed by an orchiectomy. This report discusses the challenges encountered, surgical procedure, and postoperative outcomes, highlighting the importance of careful pre-surgical planning and tailored anaesthetic management in geriatric patient.

Keywords: Testicular hypertrophy, testicular torsion, sertoli cell tumor

Introduction

Testicular hypertrophy in dogs is a condition characterized by the enlargement of one or both testicles, often resulting from various underlying causes such as infection, hormonal imbalances, neoplasia or trauma. One of the less common but significant causes of testicular hypertrophy is testicular torsion, where the spermatic cord twists, compromising blood supply to the testicle (Gerritsen & Teske, 1995) [5]. This can lead to venous congestion, ischemia, infarction, and inflammation, causing the affected testicle to enlarge and become painful. It often leads to testicular necrosis and requires immediate intervention (Fossum *et al.*, 2013) [4]. In some cases, testicular torsion may coexist with other pathological conditions, such as testicular neoplasia. Neoplasms of the testicle, particularly in older dogs, can predispose the organ to torsion due to changes in size, weight, and structure. The presence of a tumor may lead to increased mobility of the testicle within the scrotum, which, combined with factors like an elongated spermatic cord, can increase the risk of torsion (Johnston *et al.*, 2001) [6]. Common testicular tumors in dogs include seminomas, sertoli cell tumors and leydig cell tumors, all of which can cause unilateral testicular enlargement (Mattoon & Nyland, 2014) [8].

Materials & Methods

A 17 years old male Labrador retriever dog was presented to the clinic with a history of lethargy, swelling of the scrotal area with frequent licking of the genital region. The dog was reported to have difficulty in sitting and showed signs of pain during scrotal palpation. On clinical examination, the left testicle was markedly enlarged, firm and non-mobile, consistent and suspected for testicular torsion (Fossum *et al.*, 2013) [4]. The owner noted that the dog's symptoms had been worsening over the past week. Blood examination revealed elevated PCV 75% (normal range: 37-55%) and elevated Hb level 22 g/dL (normal range: 12-18 g/dL) (Brown *et al.*, 2007) [1], indicating possible dehydration or an underlying polycythemic condition (Brown *et al.*, 2007) [1]. Ultrasound confirmed testicular torsion accompanied with tumor showing homogenous hypoechoic mass. (Mattoon & Nyland, 2014) [8].

Preoperative Care

Given the elevated PCV and Hb levels, the first priority was to stabilize the dog prior to surgery.

High PCV and Hb increases the risk of thromboembolism and reduces tissue perfusion, particularly under anaesthesia, where hemodynamic stability is critical. Intravenous fluid therapy with lactated ringer's solution was initiated at maintenance rates, with careful monitoring of the dog's hydration status (Feldman & Nelson, 2004) [3]. Blood gas analysis was performed to assess oxygenation and acid-base balance, which were within normal limits. Fluid therapy was continued for 12 hours before reassessing the PCV and Hb.



Fig 1: Showing enlarged testicles.

As there was a slight reduction in these values, it was determined that surgery could be performed with close intraoperative monitoring.

Anaesthetic Protocol

Anaesthetic management in this case was carefully considered due to the patient's geriatric status and elevated PCV and Hb levels. The chosen anaesthetic protocol aimed to minimize cardiovascular stress and ensure adequate oxygen delivery. Premedication was achieved using atropine sulphate @ 0.04mg/kg body weight, butorphanol @ 0.2 mg/kg body weight for analgesia and diazepam @ 0.25 mg/kg body weight to provide sedation and muscle relaxation (Plumb, 2018) [10]. Induction and maintenance were performed with propofol @ 4 mg/kg body weight (Jubb *et al.*, 2009) [7].



Fig 2: Showing marked torsion of spermatic cord along with tumorous mass.

Anaesthesia was maintained with incremental doses of propofol as required to ensure stable anaesthetic depth throughout the surgical procedure (Jubb *et al.*, 2009) [7]. Hemostasis was achieved by administering tranexamic acid at a dosage of 10 mg/kg body weight (Johnston *et al.*, 2001) [6]. During surgery, monitoring included electrocardiography, capnography, pulse oximetry, and frequent assessment of blood pressure to ensure stability. Additionally, crystalloid fluids were administered throughout the procedure to maintain intravascular volume.

Surgical Procedure

After induction of anaesthesia and stabilization of vital signs, the dog was placed in dorsal recumbency. A standard scrotal approach was used for orchiectomy. A vertical incision was made through the scrotal skin over the enlarged testicle (Gerritsen & Teske 1995) [5]. Upon exposing the testicle, torsion of the spermatic cord along with neoplasia was confirmed, with evident ischemia. The spermatic cord was clamped, ligated, and transected using absorbable sutures to prevent excessive bleeding. Intraoperative hemostasis was closely monitored to prevent excessive blood loss, which could exacerbate the dog's already elevated PCV and Hb levels (Mattoon & Nyland, 2014) [8].



Fig 3: Showing untwined spermatic cord.

The hypertrophied testicle was removed and the surgical site was inspected for hemostasis. The scrotal incision was closed in routine fashion using subcutaneous and skin sutures. Throughout the surgery, blood loss was minimal, and the dog remained stable. Collected tissue sample from neoplastic testicle was sent to the laboratory for histopathological examination.

Postoperative Care

Postoperative care was focused on maintaining hydration, managing pain, and monitoring the dog's recovery. Intravenous fluids were continued for 4 hours post-surgery to further reduce PCV and Hb levels (Feldman & Nelson, 2004) [3].



Fig 4: Excised tumorous testicle.

Pain control was provided with meloxicam @ 0.2 mg/kg body weight and dexamethasone @ 0.3 mg/kg body weight for analgesia and anti-inflammatory effects respectively. Post-operative antibiotic therapy commenced by intravenous administration of (Cetriaxone + Sulbactam) @ 25 mg/kg body weight. The dog was closely monitored for any signs of postoperative complications, such as infection, bleeding or wound dehiscence which were not evident. Follow-up blood tests conducted 48 hours after surgery showed a reduction in PCV to 62% and Hb to 18 g/dL, reflecting improved hydration. The dog began eating normally within 24 hours and clinical signs of discomfort resolved.

Results and Discussion

The surgical removal of the hypertrophied testicle due to testicular torsion and tumor was successful, with the dog recovering well from anaesthesia and surgery. Postoperative monitoring revealed a gradual normalization of PCV and Hb levels, suggesting that dehydration played a major role in the elevated values observed preoperatively. The neoplastic growth resulted in the torsion of testicle that likely caused venous congestion and swelling, leading to the hypertrophy of affected testicle. While testicular torsion and its tumor both are relatively rare condition in dogs, it can be life-threatening if left untreated due to the risk of ischemia and necrosis (Johnston *et al.*, 2001)^[6].

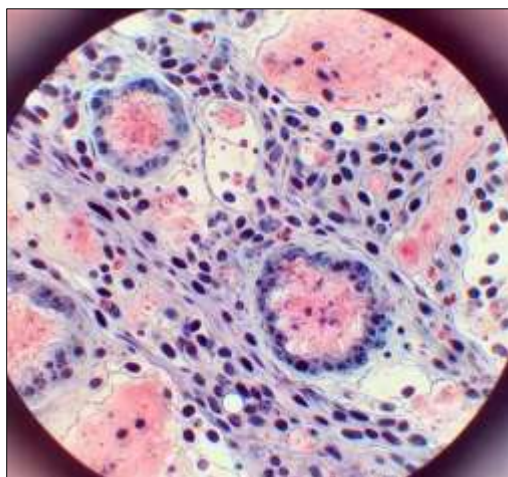


Fig 5: Histopathological section of canine testicular tissue showing poorly defined sertoli cells.

Elevated PCV and Hb in geriatric dogs may complicate anaesthesia due to the increased risk of thromboembolic events and cardiovascular instability (Brown *et al.*, 2007)^[1]. Careful fluid therapy before and after surgery was crucial in preventing complications related hyperviscosity. The anaesthetic protocol chosen for this case minimized cardiovascular depression while ensuring adequate oxygenation and tissue perfusion (Plumb, 2018)^[10]. This case emphasizes the importance of early diagnosis and intervention in testicular torsion cases, particularly in geriatric patients with pre-existing conditions. Diagnostic imaging, such as ultrasound, was essential in confirming the torsion and guiding the decision for surgery (Mattoon & Nyland, 2014)^[8]. In addition, the management of comorbidities such as dehydration and elevated PCV is critical for ensuring a positive surgical outcome. Histopathological section of canine testicular tissue demonstrating a Sertoli cell tumor. The tumor is characterized by poorly defined Sertoli cells with abundant pale eosinophilic cytoplasm, indistinct cell borders, and prominent, round to oval nuclei. Some nuclei exhibit atypia, with scattered mitotic figures. The surrounding tissue architecture is disrupted by dense fibrous stroma, indicative of the desmoplastic reaction commonly seen in canine Sertoli cell tumors (Patnaik *et al.*, 1993).

Conclusion

Testicular torsion in geriatric dogs can lead to testicular hypertrophy and significant discomfort. When coupled with elevated PCV and Hb levels, the management of such cases requires a multidisciplinary approach, including fluid therapy, tailored anaesthesia, and careful surgical technique. This case report demonstrates that with appropriate preoperative stabilization and intraoperative management, geriatric dogs with testicular torsion recovered successfully from orchietomy, even in the presence of complicating factors such as elevated blood parameters.

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