

SURGICAL MANAGEMENT OF UNILATERAL TESTICULAR CYSTIC FIBROSIS IN A BILATERALLY CRYPTORCHID LABRADOR RETRIEVER

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ABSTRACT

The incidence of testicular pathologies are common among cryptorchid dogs. A ten-year-old bilaterally cryptorchid male Labrador retriever was presented with a large mass below the right caudal abdomen parallel to the prepuce. The mass had progressively enlarged in size over the past few weeks. On abdominal ultrasound, the mass measured 6.89 cm × 8.22 cm and appeared mixed in echogenicity with multifocal anechoic areas and well-defined borders. The retained left testicle could be located anterior to the left inguinal canal subcutaneously. Based on the history, physical examination and ultrasonographical examination findings, a tentative diagnosis of the mass being of testicular origin was made. The affected and retained testes were surgically removed under general anesthesia. The histopathological examination confirmed the testicular pathology as testicular cystic fibrosis, which was an unusual finding.

Keywords: Testicular cystic fibrosis, Cryptorchid, Dog

INTRODUCTION

The incidence of testicular pathologies associated with undescended testicles have been reported frequently in dogs than in any other species (Peters and van Sluijs, 1996). Various pathologies of retained testicles that have been reported in dogs includes testicular atrophy, testicular torsion, testicular tumours such as seminomas, Sertoli cell tumour and Leidig cell tumours (Ramankutty *et al.*, 2020; Romagnoli, 1991). The retained testicles may be located either in the abdomen caudal to the kidneys, below the bladder, inguinal canal and superficial inguinal ring or subcutaneously along the inguinal region or caudal abdomen (Felumlee *et al.*, 2012). The undescended testicles, regardless of their location, possess a greater risk of developing into a benign or malignant tumour (Yates *et al.*, 2003). The present

case reports testicular cystic fibrosis in a ten-year-old bilaterally cryptorchid male Labrador retriever and its successful surgical management.

CASE HISTORY AND OBSERVATION

A ten-year-old bilaterally cryptorchid male Labrador retriever was presented with a large mass below the right caudal abdomen. The mass had progressively enlarged in size over the past few weeks. Mild enlargement of all the teats and diffuse hyperpigmentation was also observed. On physical examination, a large, hard, smooth, movable and non-pedunculated mass was felt on the ventral right caudal abdomen parallel to the prepuce (Fig.1A). Occasional stranguria was also observed. The mass measured 6.89 cm × 8.22 cm with B-mode trans-abdominal

ultrasonography and appeared mixed in echogenicity with multifocal anechoic areas and well-defined borders on diagnostic abdominal ultrasound. A discernible mediastinum testis was lacking (Fig.1B). Also, the retained left testicle (2.05 cm × 2.71 cm) could be located anterior to the left inguinal canal subcutaneously (Fig.1C). The prostatic sonogram was normal. The lateral thoracic radiographs appeared normal (Fig.1D). The haematological and serum biochemical parameters were normal. The serum oestrogen level (16 pg/mL; range 8.6 - 31.5 pg/mL) was within normal limits while the serum progesterone level (1.12 ng/mL; range <0.2 ng/mL) was elevated. Based on the history, physical examination, radiographic and ultrasonographic findings, a tentative diagnosis of the affected mass being of testicular origin was made.



Fig. 1: The mass on the ventral right caudal abdomen parallel to the prepuce (A) The 6.89 cm × 8.22 cm mixed echogenic mass with multifocal anechoic areas and well-defined borders on diagnostic abdominal ultrasound (B) and the retained testicles with discernible mediastinum testis on diagnostic ultrasound (C). The lateral thoracic radiograph appeared normal (D).

TREATMENT AND DISCUSSION

Bilateral orchidectomy was resorted to under general anaesthesia. Preoperatively, the dog was administered with ceftriaxone sodium (Intacef, Intas Pharmaceuticals Ltd., Ahmedabad, India) at the rate of 20mg/kg body weight, tramadol (Supridol, Neon Laboratories Ltd., Mumbai, India) at the rate of 4 mg/kg body weight and xylazine hydrochloride (Xylaxin, Indian Immunologicals Ltd., Telangana, India) at the rate of 1.5 mg/kg body weight intramuscularly. The skin over the ventral abdomen extending from umbilicus to pubis was clipped, shaved, scrubbed with 1% chlorhexidine solution and aseptically prepared with povidone iodine (5%) solution. General anaesthesia was induced with ketamine hydrochloride (Aneket, Neon Laboratories Ltd., Mumbai, India) at the rate of 5 mg/kg intramuscularly followed by diazepam (Calmpose, Ranbaxy Laboratories Ltd., Baddi, India) at the rate of 0.2 mg/kg intravenously. Endotracheal

intubation was done and anaesthesia was maintained using 1-2% isoflurane in oxygen. Bilateral open covered method of orchidectomy was performed through separate skin incisions above the respective testis along the caudal abdomen parallel to the prepuce (Fig.2A&B). The subcutaneous attachments of the affected testis was separated by blunt dissection. The subcutaneous tissue were apposed in simple continuous suture pattern using No. 1-0 polyglactin 910 (Ethicon, Johnson and Johnson Pvt. Ltd., Aurangabad, India) followed by the skin in horizontal mattress suture pattern using No. 2-0 monofilament polyamide (Dynalon, Bentley Healthcare Pvt. Ltd., Malur, India). Postoperative antibiotics and analgesics were administered for five more days. The skin sutures were removed on the 14th postoperative day and the animal had an uneventful recovery.

On gross examination, the affected testicle appeared firm, pale, round, smooth surfaced and encapsulated. The mass

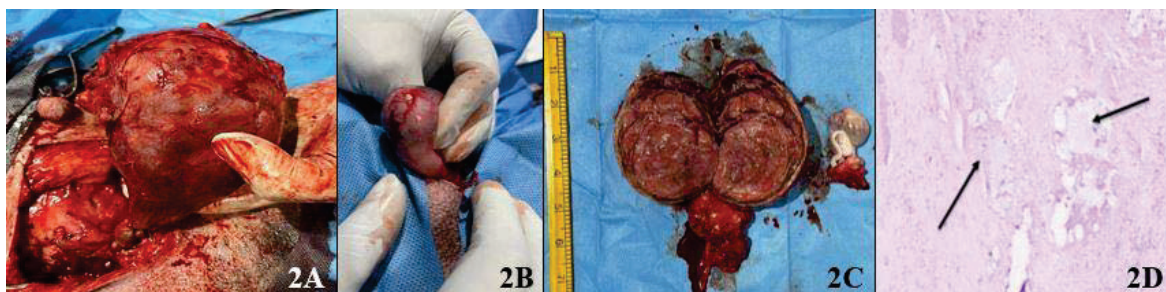


Fig. 2: Intraoperative appearance of the affected (A) and retained normal testicles (B). The cross section of affected testis showed poorly differentiated testicular parenchyma (C). Histomorphological examination of the affected testes showed testicular fibrosis, diffuse tubular atrophy, germ cell depletion and presence of multifocal cysts (H& E, 1000X) (D).

weighed about 530 grams and was 4.9 cm × 4.7 cm × 4.5 cm in dimensions. The mass appeared pale on cross section with poorly differentiated testicular parenchyma (Fig.2C). The contralateral testicle appeared grossly smaller in size than normal (1.3 cm × 1.4 cm). Histomorphological examination of the tissue sections from the affected testes showed severe diffuse tubular atrophy of the seminiferous tubules and depletion of germ cell. Also, the testicular parenchyma was replaced by fibrous tissue with multifocal cysts inside the fibrotic mass (Fig.2D). The cystic structures contained necrotic and eosinophilic liquefied material (Haematoxylin and Eosin, 1000X). The histomorphological diagnosis was testicular cystic fibrosis.

The testicular diseases in older cryptorchid dogs are often associated with feminisation syndrome (Quartuccio *et al.*, 2012). Considering the history, physical examination findings and the reproductive status of the animal, the testicular mass was assumed to be a probable developing tumour. In addition, older cryptorchid dogs have been reported to be at a greater risk of developing testicular tumours (Yates *et al.*, 2003). However, the histopathological results confirmed the mass to be cystic fibrosis of testis. The various pathologies of the undescended testis develop as a result of the higher temperature of the

abdomen that destroys the spermatogenic cells which may eventually lead to the uncontrolled growth of Sertoli cells. Often, the testicular parenchyma may be replaced with fibrous tissue with multifocal cysts as in the present case (Johnston *et al.*, 2001). Tesi *et al.* (2020) have observed a gradual rise in the collagen content in the testicular interstitium of relatively older dogs with normal descended testis. Also, the proportion of testicular interstitial fibrosis and severity of germ cell degeneration was found to increase gradually with age in them (Bhanmeechao *et al.*, 2018). The mild enlargement of nipples may be attributed to senescence and to the influence of elevated serum progesterone level or due to the influence of oestrogen secreted by the hyperplastic testicular cells before it underwent fibrosis (Peters and van Sluijs, 1996; Frank *et al.*, 2003). The rise in serum progesterone level may be associated with the aberrant adrenocortical activity which was not evaluated (Norman *et al.*, 1999). However, remission of concurrent stranguria was observed by the second week following orchidectomy. Testicular cystic fibrosis may hence be considered as a differential in older cryptorchid dogs presented with retained testicular masses.

SUMMARY

A case of testicular cystic fibrosis in a bilaterally cryptorchid Labrador

retriever, its clinical, ultrasonographic and histopathological findings along with the treatment and its outcome is placed on record.

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