

Cryptorchidism as a pathology associated with testicular neoplasia: case report

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Abstract The present study aimed to report a clinical case of cryptorchidism as a pathology associated with testicular neoplasia in a dog. The patient was treated at the Veterinary Hospital of the da Universidade Federal do Piauí, Campus Professora Cinobelina Elvas Bom Jesus – PI (HVU–UFPI), being a canine animal, Pinscher breed, seven years old, male, weighing 3,950 kg. reported that the animal did not descend the testicle, but when it was four months old, a lump appeared next to the penis and, about nine months ago, the lump began to grow. After clinical care, blood samples were collected for hemogram and analysis of the biochemical profile and ultrasound. Once diagnosed, the animal was referred for surgery, performing exploratory laparotomy and orchiectomy. Postoperatively, he was treated with antibiotics, anti-inflammatory, and analgesic. After 12 days, the stitches were removed, and the animal was in good health.

Keywords: orchiectomy, sertolioma, exploratory laparotomy, testis, racial predisposition

1. Introduction

Cryptorchidism is a common congenital testicular defect in dogs and consists of a failure when one or both testicles do not descend into the scrotum. Physiologically, this descent must be complete between 10 and 42 days after birth and between 8 and 10 weeks of age. If they are still not palpable in the scrotum, these animals are considered to be suspected of developing this pathology. However, a definitive diagnosis is recommended only after six months of life, as they can still descend to their anatomical place of origin until this period (Boothe 2007).

Cryptorchidism may be unilateral or bilateral, however, the unilateral occurrence is common and more frequent (Boothe 2007). The testicle that does not descend may be located in the abdominal cavity, inguinal canal, or in the subcutaneous tissue and with a smaller size than the testis with normal descent (Nelson and Couto 2001). The predisposition of this disease is greater in dogs of the Chihuahua, Miniature Schnauzer, Pomeranian, Poodle, Siberian Husky, and Yorkshire breed, since small breeds are much more susceptible and are often more likely to suffer cryptorchidism when compared to others (Boothe 2007).

The diagnosis is made by palpating the testicles and, when checking for the presence or absence of the testicles in the pouch, if they are retained, ultrasound can be used to locate them, which will also help the surgeon plan a better approach (Bichard 1996). As a treatment, orchiectomy is indicated, which, in addition to reducing the perpetuation of the defect, thus reduces the risk of developing neoplasia in the undescended testis (Davidson 2015).

Cryptorchidism is a risk factor for the development of testicular tumors, increasing the risk of developing Sertoli cell tumors manyfold (Peters et al 2000). In undescended testes, there is an increased risk of neoplasms, such as Sertoli cell tumors and seminoma, which may exhibit more aggressive behavior than in scrotal testes (Quartuccio and Marino 2012). Dogs under six years of age have almost no testicular tumors, with the exception of dogs with cryptorchidism, which can develop tumors early. The incidence increases progressively, reaching more than 70% of dogs at different ages (Santos and Alessi 2010).

Due to the high incidence and risk factors associated with cryptorchidism, this is a pathology of great relevance in the surgical clinic of small animals. Therefore, the objective of the present study was to report the clinical case of cryptorchidism as a pathology associated with testicular neoplasia in a 7-year-old Pinscher dog.

2. Case report

An animal of the canine species, Pinscher breed, 7 years old, male, weighing 3,950 kg, was treated at the Hospital Veterinário da Universidade Federal do Piauí Campus Professora Cinobelina Elvas, Bom Jesus - PI (HVU – UFPI), with a history of a lump in the lateral region to the penis.

The tutor reported that the animal's testicle did not descend, but when it was four months old, a lump appeared near the penis, where about nine months ago, the lump began to grow and the animal began to limp. He was eating and drinking normally, normal feces and urine, as well as his normal daily habits. No history of cough, no syncope. However, she reported that he had a certain intolerance to physical exercise and intense tiredness. On physical examination, rectal temperature (39.4°C), heart rate (140/bpm), and respiratory rate (30 mov/min) were measured, which were within normal limits. The hyperstained mucosa, palpable lymph nodes, submandibular and popliteal showed no changes in mobility, consistency, temperature, size, and without ectoparasites. Loss of some teeth, tartar, increase in volume in the left inguinal region, approximately 5 cm, mobile, consistent and painless, absence of testicle in the scrotum, sensitivity to palpation in the ventral cervical region (Figure 1).



Figure 1 Physical examination, 7-year-old Pinscher dog weighing 3,950kg, with cryptorchidism. Source: HVU/CPCE/UFPI.

After clinical care, blood samples were collected for hemogram and biochemical analysis of urea, creatinine, glutamic-pyruvic transaminase (GPT), and alkaline phosphatase (AF) (Table 1). The hemogram showed a mild leukocytosis and no other significant changes (Table 2), in addition to the FNAC cytological examination, where the conclusion was suggestive of interstitial cell tumor (Leydig). After this, a histopathological examination was suggested for the differentiation between interstitial cell tumor, seminoma, and Sertoli cell tumor.

Table 1 Biochemical: reference values found in the patient.

Biochemical	Values found	Reference Values
Urea	35.0 mg/dL	15 - 40
Creatine	0.99 mg/dL	0.5 - 1.6
Pyruvic-glutamic transaminase	73.0 IU/L	10 - 88
Alkaline phosphatase	31.0 IU/L	20 - 156

Table 2 Blood count: reference values found in the patient.

Erythrogram	Values found	Reference values
Red blood cell	6.8	5.5 - 8.5
Hemoglobin	10.1	12 - 18
Hematocrit	39.0	37 - 55
MCV	67.0	60 - 77
MCHC	32.8	32 - 36
RDW (%)	20.0	16 - 24
Leucogram	Values found	Reference values
Total Leukocytes (Cel/ μ L)	17,400	6,000 - 17,000
Relative (%) / Absolute (μ)		Relative (%) / Absolute (μ)
Myelocytes	0 0	0 / 0
metamyelocytes	0 0	0 / 0
Rods	0 0	0 - 3 / 0 - 300
Segmented	58,032	60 - 77 / 3,000 - 11,500
Lymphocytes	2,496	12 - 30 / 1000 - 4,800
Eosinophils	624	2 - 10 / 100 - 1,250
Monocytes	1,248	3 - 10 / 150 - 1,350
Basophiles	0 0	Rare

In the ultrasound evaluation of the scrotum, it was possible to visualize the left testicle with an increase in size and absence of the right testicle, confirming cryptorchidism, the evaluation of abdominal structures such as: bladder, kidneys, liver, spleen, and intestine, without change, however not it was possible to visualize the other testis (right) absent in the scrotum. Orchiectomy was then recommended, and in this case, to prevent the diagnosed neoplasm from metastasizing and thus worsening the animal's health status, which could lead to death since neoplasms are still the main cause of death in whole male animals and with this pathology.

Through exploratory laparotomy, an exploration of the cavity was carried out, in which it was possible to find another testicle, the right one, which until then had not been revealed in the ultrasound examination, this one was involuted, and under the viscera, making the difficult diagnosis by the most convincing method. After the entire process, the testis was removed from the abdominal cavity, and the cavity was then closed with three patterns of sutures and skin.

Then, the removal of the left testicle, which was larger and thicker and was located in the left inguinal region, through a simple incision in the skin and subcutaneous tissue. This one, in turn, was much more developed and with a different aspect from normal, a cut was made to obtain the physical characteristics, and it possibly presented a mass with neoplastic characteristics (Figure 2). With this suggestion, he was then asked to perform a histopathological examination for accurate confirmation of the type of neoplasm.



Figure 2 A - Surgical procedure right testis, found in the abdominal cavity, involuted. B - Left testicle removed from the inguinal region, well developed. C - Cut being made in the tunica vaginalis to remove the left testicle. D - Cut made in the left testicle taken from the inguinal region. Source: HVU/CPCE/UFPI.

Postoperatively, the prescribed treatment was: analgesia with tramadol chloridate 3mg/kg, orally, B.I.D. for five days; antibiotic therapy, an association of enrofloxacin 5 mg/kg, orally, BID for ten days with metronidazole 15 mg/kg, orally, B.I.D., anti-inflammatory, meloxicam 0.1 mg/kg, orally, S.I.D., for five days and omeprazole 1mg /kg, orally, S.I.D., for ten days.

Samples were collected from the testes. They were then fragmented, with the right one in the abdominal cavity and the left one in the left inguinal region. From these testicles, fragments were made and placed in buffered formalin for 24 hours to then perform the histopathological examination. After 24 hours, smaller cuts were made again in the testicles to allow for greater dehydration and the material to be more accurate for diagnosis. After the buffered formaldehyde, new processes were carried out, with the alcohol steps starting with 70% alcohol, remaining overnight or for an hour, followed by 80%, 90%, 95%, 100%, 100% I, 100%II, 100%III, Xylol I, Xylol II and Xylol III, Paraffin I, Paraffin II. After this procedure, the slides were embedded and made for later exam reading.

In the cytological examination, the cells presented a cuboid shape and their cytoplasm contained acidophilic lines and with many granulations suggestive of interstitial cell neoplasia (Figure 3). In the histopathological examination, it was possible

to visualize in the right testis atrophy of the seminiferous tubules with intense vacuolization, the left testis, with degeneration and intense vacuolization, large nucleus and several nucleoli, little connective tissue, azoospermia and tubular infiltration, suggestive of sertolioma (Figure 4).

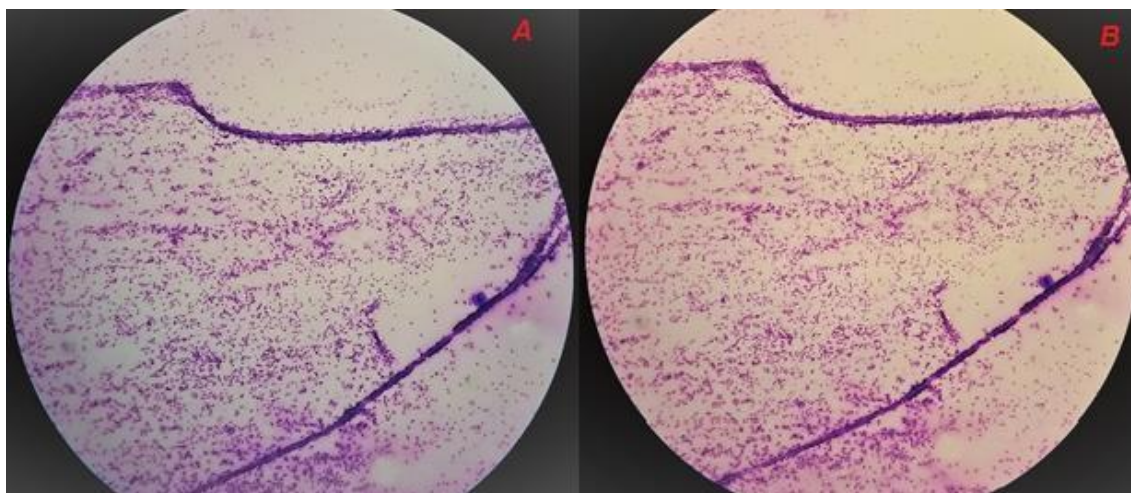


Figure 3 Photomicrograph of slides A and B, after a cytological examination (FNA), suggestive of interstitial cell neoplasia. Source: HVU/CPCE/UFPI.

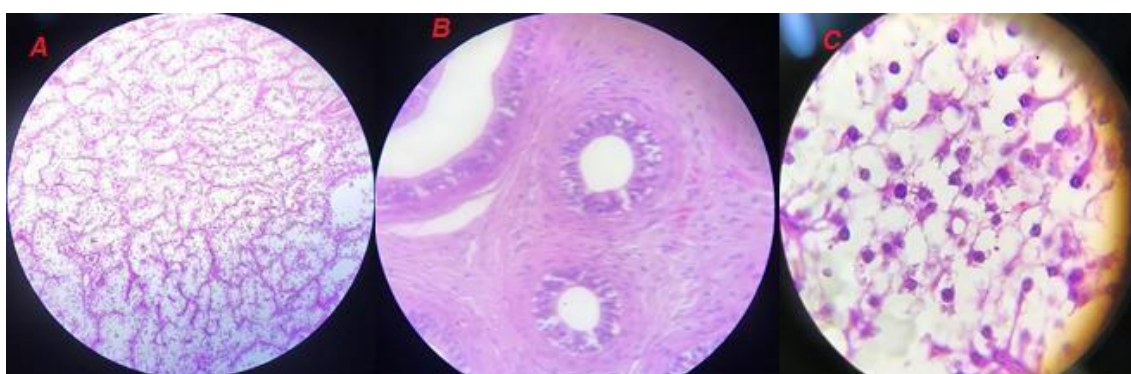


Figure 4 Photomicrographs. A and B - Right testis, atrophy of seminiferous tubules and within these tubes, intense vacuolization and azoospermia. C - Left testis, with intense degeneration and vacuolization, little connective tissue, and azoospermia. Both without mitosis. Source: HVU/CPCE/UFPI.

3. Discussion

Cryptorchidism is a pathology of the male reproductive system, which is autosomal hereditary and quite common in dogs, where a failure occurs when one or both testicles do not descend into the scrotum. In dogs, descent occurs 10 to 42 days after birth, and, therefore, the diagnosis is made at around six months of age (Boothe 2007). In the case in question, it is a 7-year-old Pinscher dog, in which the pathology was confirmed through palpation and ultrasound examination.

Unilateral incidence is higher than bilateral, 79.8% and 20.2%, respectively (Johnston 2001) confirmed in this case, which was unilateral (right testis). According to Yates (2003), the most common form of the pathology occurs with the right testicle, the first retained in the inguinal region and the second inside the abdominal cavity, corroborating the present report, where the animal presented the retained right testicle in the abdominal cavity.

For Ackerman (1999), the most common breeds to develop the pathology are: Chihuahua, Boxer, Cairn Terrier, Border Collie, Toy and miniature Poodle, Maltese, Siberian Husky, Silky Terrier, English Bulldog, Greyhound, German Spitz, Miniature Dachshund, Shetland Shepherd Dog, Yorkshire Terrier, Lakeland Terrier, Pekingese, Miniature Schnauzer, Whippet, and Old English Sheepdog. The pinscher breed is not a breed prone to developing this pathology, but it can present cryptorchidism as well as neoplasia if not treated properly, which was observed in this report.

The diagnosis is possible through palpation and definitive with the aid of ultrasound, which can observe the presence/absence of the testicle in the scrotum, as well as the location of the absent testicle (Memom 2001). In the case in question, on ultrasound, it was possible to observe only the absence of the right testicle in the scrotum, not being visualized in the abdominal cavity.

Cryptorchidism is a predisposing factor for the development of testicular neoplasms (Peter et al 2000). In this case, it is possible to suggest that the predisposing factor for sertolioma was unilateral cryptorchidism. According to Morris and Dobson (2001), the testis most affected is usually the one present in the abdominal cavity. However, in this report, the affected testis was actually the one present in the scrotum (left), with greater vacuolization, intense degeneration, and azoospermia, without the presence of mitosis. Borbil and Catoi (2007) state that the tumor cells present oval nuclei, with vacuolated and dense cytoplasm with pigmented and lipochromic granules, where it was possible to visualize in this report the oval left testis cells, azoospermia, dense vacuolization, and the presence of connective tissue.

According to Faria (2018) and Marques (2020), the recommended treatment is bilateral orchiectomy, together with histological examinations to confirm the existing type of neoplasm. This was performed in the present report, where a laparotomy was performed to remove the right testicle present in the abdominal cavity and the removal of the left testicle in the scrotum, with a successful surgical procedure, with the collection of samples for histological examination. For Albers et al (2009), sertoliomas have both benign and malignant forms, and in the latter, neoplastic cells have pleomorphic nuclei and evident nucleoli, in addition to mitotic activities. In this case reported, in the histological examination, it was not possible to visualize any of these forms, thus confirming its benignity.

The laparotomy procedure to remove the right testicle, concomitantly with the removal of the other testicle present in the scrotum, was a success. The patient reacted well to the entire surgery, and in the postoperative period, the prescribed treatment was opioid (tramadol), which is mainly used as an analgesic, for the treatment of moderate to severe pain, a combination of broad-spectrum antibiotics - Fluoroquinolones (Enrofloxacin 5mg/kg) effective against Gram-negative and positive, acting mainly in urinary tract infections and Nitroimidazoles (metronidazole 15 mg/kg) indicated in intra-abdominal infections, Meloxicam 0.1 mg/kg: a non-steroidal anti-inflammatory (NSAIDs) belonging to the class of enolic acid, which in pharmacological studies has anti-inflammatory, analgesic, and antipyretic properties - The gastric protector Omeprazole (1mg/kg), corroborating the treatment described by Marques (2020).

4. Final considerations

Cryptorchidism is a very common pathology in the small animal clinic, in which there is still the problem of controlling the disease. In addition to the late choice of treatment, genetic control is needed because it is a hereditary disease, with bilateral orchiectomy being the treatment of choice, in addition to controlling the spread of the disease, such as avoiding neoplasms. Therefore, the recommended treatment was effective, achieving success and rapid recovery of the patient, with a good prognosis, mainly because it is benign and the absence of metastasis.

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Conflict of Interest

The authors declare that they have no conflict of interest.

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