

Intraabdominal torsion of a neoplastic testicle and prostatic cyst in a cryptorchid dog

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Summary

The present report describes a case of a nine-year old male bilaterally cryptorchid boxer presented with testicular torsion and concurrent prostatic cyst. Clinical signs included anorexia, locomotor difficulty and apathy. Abdominal palpation revealed the presence of a hard and painful mass in caudal abdomen. Ultrasonographic findings were compatible with testicular torsion and prostatic cyst, confirmed at surgery. Bilateral orchiectomy and omentalisation were performed. Histopathological examination of the torsed testicle revealed alterations consistent with seminoma.

Keywords: testicular torsion, prostatic cyst, testicular neoplasia, cryptorchidism, dog

Intraabdominale Torsion eines neoplastischen Hodens und Prostatazyste bei einem kryptorchiden Hund

Im vorliegenden Fall handelt es sich um einen 9-jährigen, beidseitig kryptorchiden Boxerrüden mit einer Hodentorsion und gleichzeitig vorhandener Prostatazyste. Klinisch zeigte der Hund Anorexie, Gehschwierigkeiten und Apathie. Bei der Palpation fiel eine harte und schmerzhaft Gewebsmasse im kaudalen Abdomen auf. Im Ultraschall zeigte sich das Bild einer Hodentorsion und Prostatazyste, was beides beim chirurgischen Eingriff bestätigt werden konnte. Es wurde eine beidseitige Orchiektomie und Omentalisation durchgeführt. Die histopathologischen Veränderungen des befallenen Hodens wiesen auf ein Seminom hin.

Schlüsselwörter: Hodentorsion, Prostatazyste, Hodentumor, Kryptorchismus, Hund

Introduction

Torsion is a twisting of the spermatic cord upon itself that results in the obstruction of blood vessels supplying the testis and epididymis. In dogs, spermatic cord torsion is a rare condition and has been related to cryptorchidism. The undescended testicles may be more frequently involved due to its greater mobility inside the abdomen (Peduzzi and Carlson, 1980; Bartlett, 2002). Testicular torsion causes venous occlusion, resulting in swelling and subsequent necrosis of the gonad. The clinical signs include: abdominal pain, anorexia, lethargy, vomiting, dysuria, locomotor difficulty and pyrexia. In combination with testicular neoplasia symmetric alopecia and pendulous prepuce may also be present (Johnston et al., 2001a; Bartlett, 2002). Presumptive diagnosis is based on symptoms and the presence of cryptorchidism. For definitive diagnosis, an exploratory laparotomy is necessary. A condition common among cryptorchid dogs due to its hereditary nature, bilateral orchiectomy is the treatment of choice (Johnston et al., 2001a; Feldman and Nelson, 2004).

Prostatic disorders as well as testicular torsion are common in older dogs, and have effects related to the urinary, digestive and locomotor systems (Chafraux,

1979). Clinical symptoms include: dysuria, intermittent bloody urethral discharge, hematuria, fever, vomiting, urinary infections not responsive to medical treatment, rectal tenesmus, dry or ribbon-like feces and locomotor difficulty (Johnston et al., 2001b). The most common prostate disorder is benign prostatic hyperplasia followed by prostatic cysts and abscesses. Prostatic cysts may be classified as either a prostatic retention cyst or a paraprostatic cyst. Prostatic cysts are defined as cavitating lesions with a distinct wall, containing fluid within the prostatic parenchyma (Johnston et al., 2001b). According to the same authors, a paraprostatic cyst is defined as a fluid-filled cavity outside the prostatic parenchyma. The pathogenesis of cystic prostatic disorders is unknown although the most accepted hypothesis is that prostatic retention cysts are caused by obstruction of ducts within the prostatic parenchyma and that paraprostatic cysts are dilated embryonal remnants of Müllerian ducts (Bray et al., 1997)

Bilateral orchiectomy is indicated as an additional treatment of prostatic disorders except in dogs with prostatic neoplasia (Rawlings, 1998). Surgical techniques such as marsupialization, subtotal prostatec-

tomy and Penrose drains have been used to remove or drain prostatic cysts and abscesses. However, prolonged post-operative care and long-term complications associated with these procedures inspired the development of a new technique using the omentum (Apparício et al., 2004) which has been shown to have angiogenic, immunogenic, dead-space filling and cicatricial repair properties. Taking this into account, White and Williams (1995) suggested that the omentum could be used as a physiological drain for prostatic cysts and abscesses. The aim of this report is to describe the clinical-surgical condition of a dog with concurrent intra-abdominal spermatic cord torsion and prostatic cyst.

Case History

A nine-year old male boxer was referred for investigation of anorexia, locomotor difficulty and apathy. On physical examination, the dog was markedly apathetic and cachectic, and the absence of both testicles from the scrotum was noticed. (bilateral cryptorchidism). Abdominal palpation revealed the presence of a hard and painful structure in the caudal portion of the abdomen. An ultrasonographic examination of the abdomen was carried out and revealed a well-circumscribed structure with a central hyperechoic area surrounded by an anechoic structure, findings compatible with testicular torsion and infarction (Fig. 1). In addition, a large anechoic area (> 8 cm in diameter) was found in the prostate gland suggesting the presence of a cyst (Fig. 2). The hematological evaluation and serum chemistry analysis were within normal limits.

Based on our findings and on the animal's condition an exploratory laparotomy was performed. Both testicles were located in the caudal abdomen. The right testicle was enlarged, firm and hemorrhagic (Fig. 3). There was > 360° (torsion of the spermatic cord, with the twist located about 1 cm proximal to the testicle. The left testicle and the sublumbar lymph node did not present macroscopic alterations. A cyst measuring about 12 cm in diameter connected to the prostatic parenchyma (prostatic cyst) was found in the caudal abdomen (Fig. 4). Gonads were removed by standard procedure and the prostate was omentalisated as described by Apparício et al. (2004). The prostate gland was packed off with Weitlaner retractor and the cyst was identified. Suction of about 300 ml of sanguinous content was performed to avoid abdominal contamination. Stab incisions were made in the ventral aspect of the gland, in both lobules, and the cavities were digitally dissected adjacent to the urethra. Prostatic omentalisation was then performed by introducing the omentum through the cavities but it was not passed around the prostatic urethra as described by

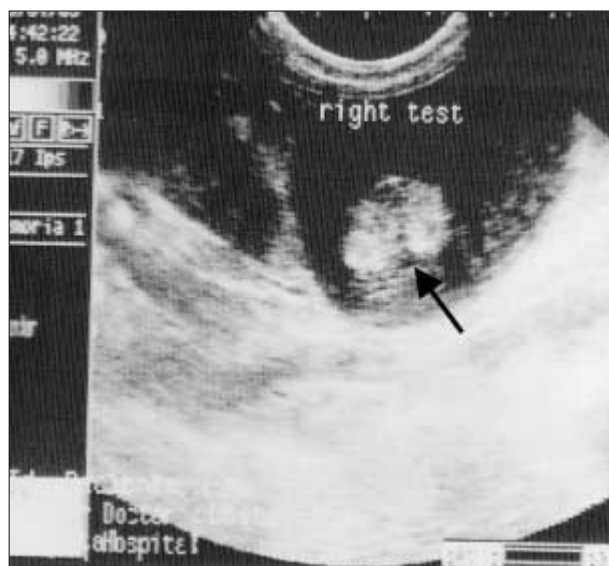


Figure 1: Sonogram of an intraabdominal testicle of a Boxer. A well-circumscribed structure with a central hyperechoic area (arrow) surrounded by an anechoic structure can be seen.



Figure 2: Sagittal ultrasonographic image of the prostate gland (pt) and the urinary bladder (bx). An anechoic area (> 8 cm in diameter) is visualized within the prostatic parenchyma (arrow), representing the prostatic cyst.

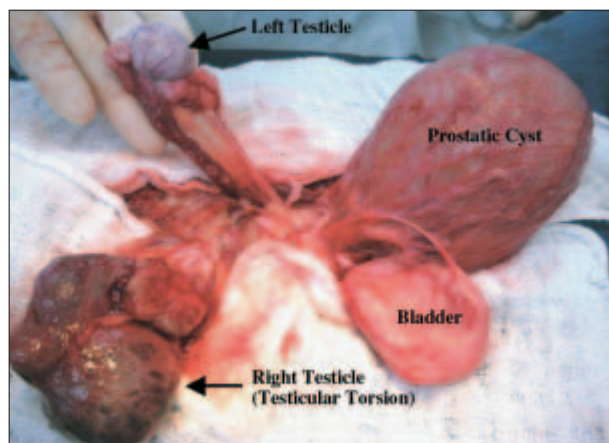


Figure 3: Testicular torsion and prostatic cyst in an adult Boxer.

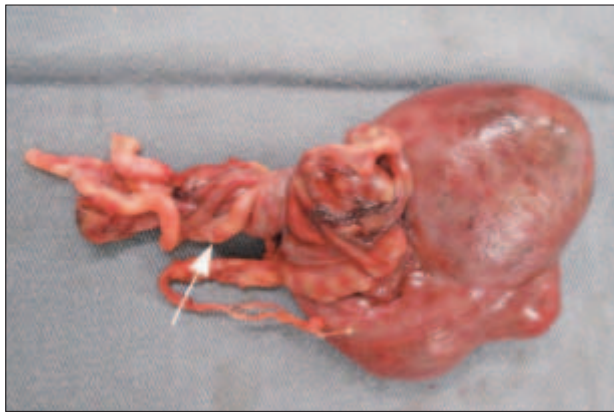


Figure 4: Macroscopic appearance of the right testicle and spermatic cord. Note the deformity and hemorrhage of the testicular and spermatic cord (arrow).

White and Williams (1995). After sufficient omentum was placed to fill the entire space within the prostatic cavities, it was anchored in place with simple continuous sutures of 3/0 Vicryl, engaging both the omentum and prostatic capsule. The abdomen was closed by standard procedure in three layers. Histopathologic examination of the twisted testicle revealed alterations consistent with seminoma: proliferation of seminiferous tubules characterized by round cells with a large round nucleus, the presence of nucleoli, cellular pleomorphism and figures of mitosis. Post-surgical treatment consisted of enrofloxacin (5 mg/kg IM bid, for 10 days) and meloxicam (0.1 mg/kg IM sid, for 5 days). Ten days after treatment cutaneous sutures were removed and the dog was sent home.

Discussion

Torsion of the spermatic cord in dogs is a rare condition. Reports have described that 36% of the torsions occurred in animals with testicular neoplasia (Johnston et al., 2001a) and commonly in cryptorchids (Laing et al., 1983; Feldman and Nelson, 2004). Pearson and Kelly (1975) reviewed 13 cases of spermatic cord torsion from which 11 involved testicles retained in the abdomen and only one in the inguinal ring. Therefore, breeds that have high prevalence of cryptorchidism, such as the Boxer, Poodle, and Yorkshire (Laing et al., 1983; Bartlett, 2002; Hecht et al., 2004) are more frequently involved. Despite the etiology of intra-abdominal testicular torsion not being well defined, it is presumed that the ectopic position and neoplastic alteration allow for greater movement of the testicle within the abdominal cavity (Laing et al., 1983; Johnston et al., 2001a). In the present case, the male boxer presented intra-abdominal testicular torsion and neoplasia, confirming that the three associated conditions (breed, ectopic and neoplastic testis) may have contributed to the torsion. Interestingly,

only the right testis presented histopathologic characteristics of neoplasia, even though the dog was a bilateral cryptorchid. Reif and Brodey (1969) have reported that the right testis is more frequently affected by tumors than the left one, but up to date there is no explanation for this incidence.

Testicular torsion is also observed in dogs with both testes in the scrotum, but this appears to be very rare (Hulse, 1973; Zymet, 1975; Young, 1979). On the other hand, testicular torsion is not rare in humans, usually affecting children and newborns that present intrascrotal testicles (Pinto et al., 2001). Zymet (1975) speculated that excessive sexual and physical aggression may be a contributing factor of intrascrotal testicular torsion in dogs.

The most common clinical signs of testicular torsion are abdominal pain, anorexia, lethargy, vomiting, dysuria, locomotor difficulty and pyrexia (Johnston et al., 2001a; Bartlett, 2002) which, however, may also be present in dogs with prostatic cysts. In our case, the dog displayed some of the symptoms referred to in the literature (apathy, anorexia and locomotor difficulty) which, together with our clinical observations and ultrasonography (absence of testicles in the scrotum or inguinal ring; presence of a palpable and painful structure in the caudal abdomen) lead us to a presumptive diagnosis, confirmed by laparotomy. It is difficult to point out the principal cause of clinical symptoms, but as dogs with prostatic cysts may also be asymptomatic (Johnston et al., 2001) and torsion of the spermatic cord is a surgical emergency, we believe that the symptoms presented by the dog were more related to the testicular torsion.

Ultrasonography is important in the diagnosis of testicular torsion and to differentiate it from other pathologies that may present similar signs, such as orchitis, epididymitis, pancreatitis, splenic torsion and intestinal obstruction. On sonography the twisted testicle is usually enlarged and hypoechoic compared with the contralateral normal testicle, and may contain echogenic areas representing hemorrhage. Hecht et al. (2004) related a case of acute testicular torsion in a dog with increased echogenicity of the twisted testicle. Other findings include an enlarged epididymis and spermatic cord. Color Doppler which was not carried out in this case is also a helpful tool, showing decreased or absent blood flow within the twisted testicle (Pinto et al., 2001; Bartlett, 2002; Hecht et al., 2004). On ultrasonography lymphadenopathy, as reported by Miyabayashi et al. (1990) was not seen. It is important to note that even though ultrasonography lead us to a quick diagnosis, only histopathologic examination made a conclusive diagnosis (seminoma) possible. Thus, an ultrasound guided biopsy may be a valuable diagnostic technique for histological confirmation.

It is known that unilateral spermatic cord torsion

causes damage to the contralateral testis in affected humans and animals. Electromagnetic and radioisotope studies have shown that unilateral torsion compromises the blood flow not only in the torsed testicle but also in the reperfusion of the contralateral testicle (Heindel et al., 1999). Concentrations of the biochemical indicators of hypoxia and oxidative stress, such as lactic acid and hypoxanthine, are also elevated in the twisted and contralateral testicle (Heindel et al., 1999; Pinto et al., 2001). Visser and Heyns (2003) described that contralateral testicular biopsies showed extensive apoptosis in the germinal epithelium, atrophic Leydig cells, malformation of late spermatids and pathological changes in Sertoli cells resulting in reduced fertility (Cosentino et al., 1985). Considering that testicular torsion – a hereditary condition in dogs – is mainly observed in cryptorchids, the alterations described above reinforce the importance of bilateral orchiectomy as a treatment of this disorder.

In the present case, the dog had a concurrent prostatic cyst characterized by the connection between the prostatic parenchyma and the cyst capsule. Prostatic

cysts are caused by the accumulation of prostatic secretions due to the obstruction of ducts within the prostatic parenchyma (White and Williams, 1997; Johnston et al., 2001b) and although we did not measure estrogen or androgen concentrations in plasma, we speculate that the presence of the seminoma did also contribute to the development of the prostatic cyst. This type of tumor may occasionally release androgens that promote growth of the prostatic parenchyma, consequently leading to the development of cystic hyperplasia and obstruction of ducts. In conclusion, even though a male dog presents clinical symptoms due to testicular torsion, other pathologies of the genital tract may be present at the same time. Ultrasonography is useful in characterizing a twisted testicle and thus contributing towards a diagnosis.

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