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Hypospadias in two cats - case report

[Hipospadia em dois gatos - relato de caso]

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ABSTRACT

Hypospadias is an uncommon sexual development disorder in cats, in which the urethral opening is not in its anatomical location on the penis. The purpose of this report is to describe two cases of hypospadias in the feline species. The first cat was asymptomatic, had a history of bacterial cystitis, and was diagnosed with perineal hypospadias at an appointment for preoperative evaluation of orchiectomy. The second cat had clinical signs of dysuria and pollakiuria for 30 days and had glandular hypospadias. Both cats showed abnormalities in the urinalysis which were suggestive of lower urinary tract disease. For both cases, clinical treatment with antibiotic therapy was performed. In the first patient, surgical treatment consisted of orchiectomy, while in the second animal a perineal urethrostomy and orchiectomy were performed. The cats had a satisfactory recovery after the treatments. Performing a thorough physical examination is essential to diagnose cases of hypospadias and choose the best treatment for each patient.

Keywords: feline, male sexual development disorder, urethra, FLUTD

RESUMO

A hipospadia é uma desordem do desenvolvimento sexual pouco comum nos gatos, na qual a abertura uretral não está em sua localização anatômica do pênis. O objetivo do presente relato é descrever dois casos de hipospadia em felinos domésticos. O primeiro gato era assintomático, tinha histórico de cistite bacteriana prévio, e foi diagnosticado com hipospadia perineal em uma consulta para avaliação pré-cirúrgica de orquiectomia. O segundo gato apresentava sinais clínicos de disúria e polaquiúria há 30 dias e apresentava hipospadia glandular. A partir dos exames complementares, pôde-se observar que os animais, além do defeito anatômico, apresentavam alterações sugestivas de doença do trato urinário inferior. Para ambos os casos, foi realizado o tratamento clínico inicial com antibioticoterapia. No primeiro paciente, optou-se pelo procedimento de orquiectomia, enquanto no segundo animal foram realizadas as técnicas de uretrostomia perineal e orquiectomia. Os gatos mostraram recuperação satisfatória após os tratamentos instituídos. Dessa forma, pode-se observar a importância de se realizar um exame físico minucioso a fim de diagnosticar os casos de hipospadia e escolher o tratamento correto para cada paciente.

Palavras-chave: felino, desordem do desenvolvimento sexual dos machos, uretra, DTUIF

INTRODUCTION

The disorders of sexual development (DSD) are poorly described in cats and can be caused by chromosomal aberrations, genetic mutations, or external factors (Meyers-Wallen, 2012). They present in isolated cases or as syndromes. Animals with DSD don't usually have clinical or reproductive signs (Szczerbal and Switonski, 2020).

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Hypospadias is a urethral malformation where its opening is abnormally located in the penis (Knight *et al*., 2018), characterized as a congenital or hereditary problem. It is caused by an incomplete fusion of the median raphe of the penis, foreskin, or scrotum, due to incomplete masculinization of the urogenital sinus during urethra development (Romagnoli and Schlafer, 2006).

Cases of hypospadias in cats may be related to the XY DSD karyotype and the prevalence of the anomaly in the species is unknown (Szczerbal and Switonski, 2020).
The classification is based on the location of the defect, being glandular hypospadias when the alteration is located ventrally to the tip of the penis. When the opening is found in the penile body region, it is called penile hypospadias and scrotal if located in the scrotum region. Perineal hypospadias occurs when the opening is found in the perineal region (Romagnoli and Schlafer, 2006).

When glandular malformation occurs, it can be asymptomatic without the need for surgical treatment. With the other types, animals may be symptomatic and show clinical signs associated with lower urinary tract disease and perineal dermatitis, and clinical and surgical treatment are recommended (Romagnoli and Schlafer, 2006; Knight *et al*., 2018). Because of genetic implications, the reproduction of the animal affected is not indicated and neutering is recommended after the diagnosis of hypospadias (Romagnoli and Schlafer, 2006). The present report aims to describe two cases of hypospadias in domestic cats.

CASUISTRY

The cats were presented to a teaching hospital located in southern Brazil. The first mixed breed cat was nine months old and came for a pre-surgical evaluation of orchiectomy and had a previous history of bacterial cystitis. During physical examination, it was observed that the urethral opening was in the perineal region (Fig.1). Furthermore, the animal had an underdeveloped penis, an incomplete anal sphincter in its ventral region, and an anal orifice with a cutaneous raphe separating the testicles (Fig.1).

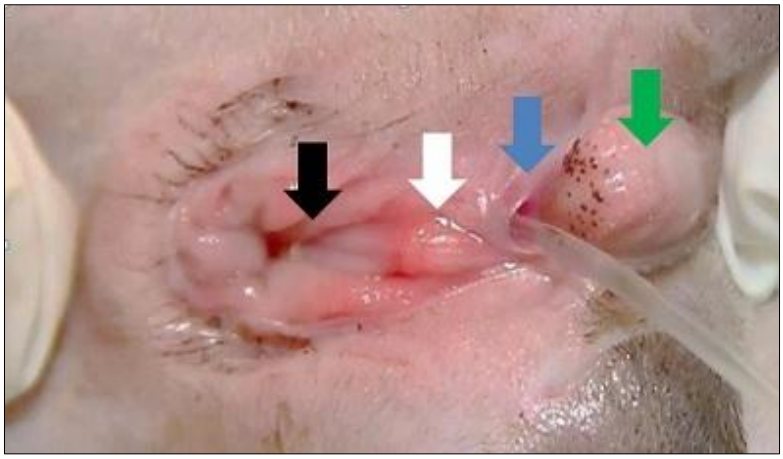

Figure 1. Incomplete anal sphincter (black arrow), underdeveloped penis (white arrow), glandular hypospadias (blue arrow) and cutaneous raphe separating the testicles (green arrow) in a mixed breed cat.

Based on the history and physical examination, the clinical suspicion was perineal hypospadias and blood count, biochemical and urinalysis tests were requested, being the urine sample obtained by the cystocentesis method.

Abdominal ultrasound showed sediment in the urinary bladder, no images compatible with the uterus and ovaries were visualized, and the testicles located in the scrotum did not present sonographic changes. The blood count and biochemical tests showed no abnormalities. In the urinalysis, there were squamous cells (0-1/field) and transition (0-3/field), spermatozoa (3+), pyuria (20-100/field), microscopic hematuria (20-100/field), bacteriuria (3+) and

presence of triple phosphate crystals (1+). In chemical analysis there was proteinuria (3+). Urine culture was not performed due to the financial restrictions of the owner.

As the defect of the urethra was minimal and the animal did not present clinical signs at the appointment, it was decided to perform surgical treatment consisting of orchiectomy and antibiotic therapy. The antibiotic of choice was amoxicillin and clavulanate at a dose of 22 mg/kg at PO, q12, for 10 days. The cat was discharged well, returned in 10 days for surgical stitches removal, and then in one month for clinical evaluation. The surgery had no postoperative complications and the animal recovered satisfactorily after treatment.

The second case was a three-month-old male Persian cat who had been presented with a clinical complaint of dysuria and pollakiuria for 30 days. The patient had a history of being born to a consanguineous crossbreed. On physical examination, it was observed that the opening of the urethra was inserted into the glans, ventrally to the tip of the penis, the cat also had no scrotum, and the testicles were in the subcutaneous tissue lateral to the penis (Figs. 2A and 2B).

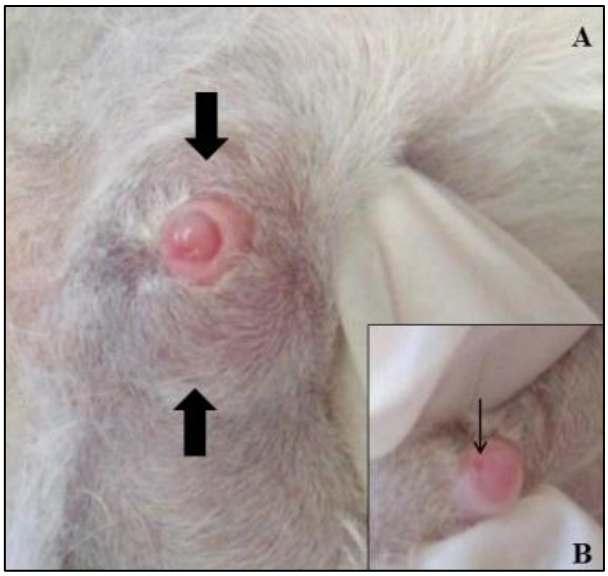

Figure 2. Glandular hypospadias in a Persian cat. A: Testicles in the lateral region of the penis in the subcutaneous tissue (arrows) and absence of scrotum. B: Urethral opening.

Based on the history, clinical signs, and physical examination, the clinical suspicion was glandular hypospadias.

Additional tests included abdominal ultrasound, blood work and urinalysis. There was a large amount of sediment in the urinary bladder and urine culture was positive for *Escherichia coli* and coagulase-negative *Staphylococci*. Both were sensitive to sulfonamide and trimethoprim, and the cat were treated at a dose of 15 mg/kg, PO, q12, for 10 days.

The cat was then submitted for perineal urethrostomy and orchiectomy. The testicles were sent for histopathology and showed no abnormalities. The patient was discharged well and returned in 10 days with the surgical wound healed and showing no further signs of lower urinary tract disease.

DISCUSSION

The cases of hypospadias described in this report occurred in two cats, one was nine months old mixed breed, and the other was Persian and three months old. King and Johnson (2000) described a case of hypospadias in a Himalayan cat that was one year old and Nowacka-Woszuk *et al.* (2014) described three cases of hypospadias in cats that were eleven months, six, and ten years

old, suggesting there are no predisposed breeds and ages for diagnosing this condition.

Cats are rarely affected by penile defects, such as hypospadias (King and Johnson, 2000, Reynolds *et al*., 2014, Knight *et al*., 2018). This congenital anomaly is infrequently reported in the literature and its prevalence in this species is not well known (Szczerbal and Switonski, 2020). In the cases described, one animal had the defect of glandular hypospadias, and one had perineal hypospadias, while in the reports of Nowacka-Woszuk *et al.* (2014) two animals had perineal hypospadias and one penile hypospadias. In the case of the Himalayan breed cat the hypospadias was classified as glandular (King and Johnson, 2000). Such reports, associated with this one, suggest that it is also possible that in domestic cats this condition affects different segments of the urethra.

The diagnosis is realized by the history of the animal and observing the defect in the urethra during a physical examination (Fossum, 2015). In asymptomatic patients undergoing clinical care, cases of hypospadias may be incidentally observed in patients' evaluation for orchiectomy (Szczerbal and Switonski, 2020). The diagnosis of hypospadias in the two domestic cats was performed as described by Fossum (2015), and in the case of glandular the presence of the congenital defect was similar to that described by Szczerbal and Switonski (2020), where the defect was observed during physical examination in a pre-surgical orchiectomy evaluation.

In the second case, besides glandular hypospadias, on physical examination, it was observed that the animal had no scrotum, and the testicles were located laterally to the penis in the subcutaneous tissue. Reynolds *et al.* (2014) described a case of a two-month-old cat that presented hypospadias and other alterations such as imperforate anus, rectourethral fistula, and genital dysgenesis (absence of foreskin, bifid scrotum, and penis restricted to the glans penis). It is noteworthy that other anatomical abnormalities may occur concomitantly with hypospadias, as in the present report.

Both patients presented with imaging findings consistent with lower urinary tract disease. Since the urethral opening defects in the cats in the present report were observed near the anus, it is suggested that in both cases, the bacterial cystitis was caused by the ascension of bacteria through the external urinary meatus. King and Johnson (2000) reported a case of glandular hypospadias associated with chronic cystitis, demonstrating that the defect may predispose to bacterial infections in the lower urinary tract of cats.

Treatment is performed according to the anatomical classification, and clinical signs (Fossum, 2015). In the glandular hypospadias cases of, the patient may not show clinical signs and may not require surgical correction (Romagnoli and Schlafer, 2006). However, although the animal in the second case was diagnosed with glandular hypospadias and presented clinical signs of dysuria and polyuria for 30 days, surgical correction was chosen, as well as treatment with antibiotic therapy due to secondary bacterial cystitis.

In cases of perineal, scrotal, and penile hypospadias, surgical treatment is generally indicated (Romagnoli and Schlafer, 2006). In the first case described with perineal hypospadias, only the orchiectomy was performed. The animal had no clinical signs, so it was planned to follow the patient during its growth phase to evaluate the need for a future perineal urethrostomy. According to Romagnoli and Schlafer (2006), neutering should be performed due to the genetic implications of this anomaly.

CONCLUSIONS

The cats had a satisfactory recovery after the instituted treatments. However, performing a thorough physical examination is essential to diagnose cases of hypospadias and choose the best treatment for each patient.

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