

Case Report / Olgu Sunumu

Priapism and its surgical treatment in a cat

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Abstract: This study details a case of priapism in a 3-year-old, male, crossbreed cat weighing 5,4 kg treated successfully with surgery. The cat was brought to the Afyon Kocatepe University Veterinary Health Application and Research Centre for general examination and castration. Clinical examination revealed a fully erect and hard/solid penis. Serum biochemistry, complete blood count, and testosterone results of the animal were within the reference ranges except for urea. When the conservative treatment was unsuccessful, it was decided to perform a perineal urethrostomy operation. Postoperative examination on day 10 revealed healing and comfortable urination; thus, the stitches and urinary catheter were removed. In conclusion, this report of successful treatment of priapism in a cat through perineal urethrostomy can contribute to veterinary literature.

Keywords: Cat, perineal urethrostomy, priapism.

Bir kedide priapizm ve cerrahi sađaltımı

Özet: Bu çalışmada, 3 yaşında, erkek, 5,4 kg ağırlığındaki melez kedide görülen priapizm olgusu ve cerrahi sađaltımı tanımlanmaktadır. Kedi, genel kontrol ve kastrasyon isteđi ile Afyon Kocatepe Üniversitesi, Veteriner Sađlık Uygulama ve Araştırma Merkezine getirildi. Klinik muayenede penisin tamamen erekte ve katı-sert kıvamda olduđu görüldü. Hayvanın üre dışındaki serum biyokimya, tam kan ve testosteron sonuçları referans deđerler içindeydi. Konservatif tedavi başarısız olduđunda, perineal üretrastomi operasyonu yapılmasına karar verildi. Hayvanın postoperatif on gün sonra yapılan kontrolünde iyileşmenin şekillendiđi ve idrarını rahatça yapabildiđi gözlemlendi, dikişler alınarak idrar sondası uzaklaştırıldı. Sonuç olarak bir kedide perineal üretrastomi ile başarılı bir şekilde sađaltılan priapizm olgusunun, veteriner literatüre katkı sađlayacađı kanısına varılmıştır.

Anahtar sözcükler: Kedi, perineal üretrastomi, priapizm.

Priapism is defined as a painful erection of the penis that persists for more than an hour without any sexual stimulation (1, 5, 8). This erectile dysfunction, while being rare in pets, has been reported in dogs, horses, cats, rats, and sea lions (3-5, 7, 8). Priapism is due to the engorgement of corpus cavernosum. Corpus spongiosum is less swollen compared to a normal erection (3, 7, 8). When normal erection mechanism is interrupted, partial pressure of carbon dioxide of blood collected in corpus cavernosum increases and increased viscosity of blood disturbs the venous return. Obstruction of venous return and permanent erection cause oedema in the corpus cavernosum. If priapism occurs once, an erection may continue even though its underlying cause is eliminated

(5). Permanent damage to the erectile tissue is a potential result of priapism. Corporal fibrosis occurs following thrombosis and destruction of endothelial and smooth muscle cells in cavernous sinus, leading to eventual vascular stasis and corpus ischemia (8).

The causes of priapism include administration of phenothiazine derivative drugs (such as acepromazine), nematodiasis, trauma-induced spinal cord injuries, cauda equina lesions, constipation, purpura hemorrhagica, severe inflammation, and septic or aseptic secondary infections (7). Priapism occurs as a complication of distemper-related spinal cord lesions and lower urinary tract diseases (8). It can also develop secondarily after castration or due to trauma during mating (3). Majority of

mechanisms of the factors causing priapism are unknown, but phenothiazine-derivative tranquilizers inhibit sympathetic transmission that induces paralysis of retractor penis muscles resulting in priapism (7). This study details a case of priapism in a cat and its surgical treatment.

A 3-year-old, male, crossbreed, uncastrated cat weighing 5.4 kg was brought to the Afyon Kocatepe University Veterinary Health Application and Research Center for general examination and castration. According to the information provided by its owner, the cat had been routinely vaccinated. It had a normal appetite; however, its water intake had doubled. The cat had a hard penis for the last 20 days, which it was constantly licking. It had mated a few days before being brought to the clinic and did not have any history of trauma or surgery. Clinical examination revealed a body temperature of 38.3°C, respiratory rate per minute of 40 and pulse rate per minute of 130. Skin turgor and lymph nodes were normal. Inspection revealed that the penis was completely outside the preputium (Figure 1) and swollen, its tip was red and blue, and palpation revealed that it was hard and solid. Serum biochemistry, complete blood count, and testosterone results were within the reference ranges except for urea (Table 1 and 2). A rapid test kit (FIV Ab/FeLV Ag Test Kit, Bionote, Korea) confirmed that the cat was negative for FeLV and FIV. In light of these findings, the cat was diagnosed with priapism and treated accordingly. As a conservative treatment, the penis was massaged with emollients in addition to cold compressions, and blood was aspirated by puncturing the corpus cavernosum. Finally, adrenalin-containing 0.9% NaCl solution was injected intracavernously. Interviews with the owner revealed that the symptoms were slightly reduced, eating and drinking were normal, and the cat was able to urinate comfortably; however, priapism did not fully resolve, leading to the decision to perform a perineal urethrostomy.

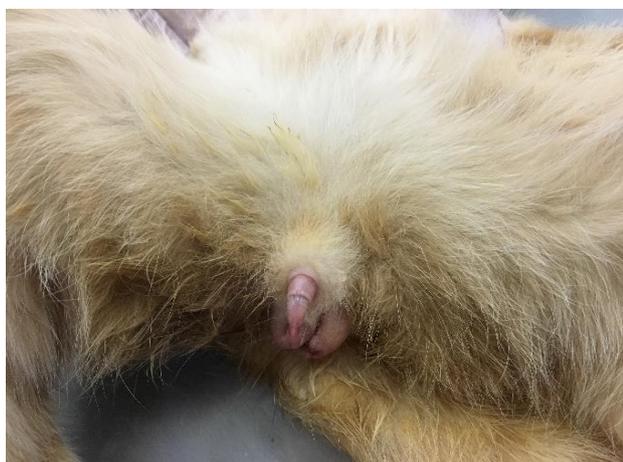


Figure 1. Preoperative clinical presentation

Table 1. Complete blood count results

Parameters	Value	Reference ranges
WBC ($10^9/L$)	12.5	5.5-19.5
Lymph# ($10^9/L$)	4.2	0.8-7.0
Mon# ($10^9/L$)	0.7	0.0-1.9
Gran# ($10^9/L$)	7.6	2.1-15.0
Lymph (%)	33.5	12.0-45.0
Mon (%)	5.5	2.0-9.0
Gran (%)	61	35.0-85.0
RBC ($10^{12}/L$)	7.69	4.60-10.00
HGB (g/dL)	12	9.3-15.3
HCT (%)	34.2	28.0-49.0
MCV (fL)	44.6	39.0-52.0
MCH (pg)	15.6	13.0-21.0
MCHC (g/dL)	35	30.0-38.0
RDW (%)	12.7	14.0-18.0
PLT ($10^9/L$)	357	100-514
MPV (fL)	11.4	5.0-11.8
PDW	15.9	
PCT (%)	0.406	
Eos (%)	1.2	

Table 2. Serum biochemistry results

Parameters	Value	Reference ranges
Chol (mg/dL)	100.3	71-156
Glucose (mg/dL)	115.5	60-120
Crea (mg/dL)	1.04	0.9-2.2
Uric Acid (mg/dL)	0.1	0-0.5
Na (mmol/L)	151	146-156
K (mmol/L)	4.57	3.7-6.1
Cl (mmol/L)	117.7	115-130
P (mg/dL)	4.61	3.0-6.1
Total Protein (g/dL)	6.77	6.0-7.9
Albumin (g/dL)	3.71	2.8-3.9
AST (U/L)	31.5	7-38
ALT (U/L)	41.1	25-97
Bild2 (mg/dL)	0.045	0-1.7
CA (mg/dL)	9.43	8.7-11.7
LDLC3 (mg/dL)	9.5	
Urea (mg/dL)	40.6	19-34
Trigl (mg/dL)	30.3	25-160
Total Bilirubin (mg/dL)	0.036	0-0.1
Testo (ng/dL)	0.4398	<0.5



Figure 2. Preoperative view of the case.



Figure 3. Postoperative view of the case.

Routine examination was performed prior to the operation. For premedication, atropine sulphate at a dose of 0.045 mg/kg was injected subcutaneously. The cat was sedated with intramuscular injection of 2 mg/kg Xylazine HCl and general anaesthesia was induced with an IM injection of 10 mg/kg Ketamine HCl.

Perineal region, including 4-5 cm at the ventral base of the tail, was shaved and prepared for surgery. The animal was laid ventrally and its hind legs were tied slightly tight and its tail was secured to its back. Paying attention to the anal sacs, the anus was closed with a 3-0 nylon stitch using the circular suture technique. First, castration was performed. Urethra was catheterized to determine its location. An elliptical incision was made to skin from the side of the penis and preputium. Penis and ischiocavernosus and ischiourethral muscles were dissected bluntly with subcutaneous tissues and penis was freed from its surrounding attachments (Figure 2). Penile

urethra was incised from the dorsal end of penis to the bulbourethral gland using thin-tipped scissors. Approximately two-thirds of the incised pelvic urethra and penile urethra were stitched to the skin with simple interrupted suturing using a 3-0 monofilament polypropylene suture material. Penis and urethra remaining outside urethrostomy region were removed. A permanent urinary catheter was secured to the skin (Figure 3) and the circular stitching of the anus was removed. An Elizabethan collar was put on the cat to protect the region from licking for 7-10 days after the operation and until the stitches were removed. Amoxicillin/clavulanic acid at a dose of 8.75 mg/kg was administered IM for post-operative 5 days. Post-operative check up on day 10 revealed that the cat had fully recovered and was able to urinate comfortably; thus, stitches and urinary catheter were removed.

Although it can be observed at any age, priapism has usually been reported in animals older than one year (1, 5, 6, 8). While most of the priapism cases in cats have been observed in Siamese cats (1) priapism has also been observed in crossbreeds (1, 5, 6, 8). The three-year-old crossbreed cat described in this case is in line with the data found in the literature.

It has been reported that paraphimosis or priapism can develop both in uncastrated and castrated cats and both cases are urgent and should be treated immediately (2). Literature typically includes mating (1), castration (5), FIP (1, 8) hCG application (6) and unknown causes (1) related to the etiology of priapism. In the case presented here, the cat was brought to the clinic for castration. Moreover, the owner reported that the cat mated a few days prior to their visit to the clinic and penis was protruded before mating. Accordingly, we concluded that priapism, in this case, was not due to castration or mating. In addition, the cat was negative for FIP, which is listed among the possible causes of priapism.

Priapism can be mistaken for paraphimosis or penile paralysis (4, 7). In priapism, the penis is erect and hard, whereas it is soft in paraphimosis and penile paralysis (3, 4). In paraphimosis, preputial orifice is too narrow and, thus, blocks the entrance penis to preputium, while in penile paralysis, soft penis cannot enter preputium (7). In priapism, preputium can easily be moved to tip of the penis, which helps distinguishing priapism from paraphimosis (5). In line with the literature, in the presented case, the penis was hard and remained erect and a manual inspection revealed that preputium could easily cover penis and penis easily moved inside preputium. These types of clinical findings should be considered during diagnosis of priapism.

In priapism, penile mucosa changes color to varying degrees from red to purple due to congestion, and becomes dry, inflamed, and excoriated (3, 7). Male cats frequently

lick the area because of the pain, and by doing so, damage the penis. If the condition is neglected, it can lead to necrosis. In the case of urethral congestion, strangury may occur, and if untreated, secondary uraemia may emerge due to rupture of the urinary bladder (3). In this study, the congestion and change of color in the penis and the continuous licking of the penis were in line with the data found in the literature. In addition, the cat was able to urinate comfortably.

The main purposes of the treatment of priapism are to allow normal blood circulation in the penile erectile tissues and protect the penis from severe injuries, drying, ischemia, necrosis, and urethral obstruction (3). Conservative treatments include various combinations of cold-water compresses, topical hypertonic solutions, massaging, hydrotherapy, anti-inflammatory drugs, broad-spectrum antibiotics, and diuretics. A fully-erect penis is too large and too long to be pulled back into the preputium and, thus, becomes congested, dry, and eventually necrotic (3, 10). Venous return can be increased with a combination of intracavernous phenylephrine infusion and rinsing and drainage with heparin-containing salt (0.9% NaCl) solution (3). If intracavernous drainage and injections fail, or serious tissue damage occurs, amputation of the penis or a perineal urethrostomy might be necessary (4, 9). Conservative methods are usually unsuccessful in treatment of priapism (3, 7). In this case, penis was massaged with emollients along with cold compressions as reported in the literature. Corpus cavernosum was punctured, a fair amount of blood was aspirated, and adrenalin-containing 0.9% NaCl was applied intracavernously; however, these applications did not yield successful results. Thus, the case was eventually treated with a perineal urethrostomy and no complications were observed during postoperative period.

In conclusion, documentation of our successful treatment of a case of priapism in a cat via perineal

urethrostomy can contribute to veterinary literature and help veterinary practitioners.

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Ethical Statement

This study does not present any ethical concerns.

Conflict of Interest

The authors declared that there is no conflict of interest.

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