



## CASE REPORT

### Feline Lower Urinary Tract Disease – Report of Four Cases

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#### ABSTRACT

This report describes the lower urinary tract disease (LUTD) in four male cats with two different etiologies. All animals were under three years of age and on commercial dry diet. Treatment guidelines prescribed for obstructive and non-obstructive cases were followed. This appears to be the first clinical report on feline LUTD in Pakistan.

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#### INTRODUCTION

Irrespective of cause, prevalence of feline LUTD has been reported to vary from 1.5 to 8% (Lekcharoensuk *et al.*, 2001). Different etiologies of feline LUTD have been described including bacterial infections, neoplasia, anatomic malformations, behavioral disorders, feline idiopathic or interstitial cystitis, and neurological problems (Hostutler *et al.*, 2005). Bladder stones are another probable cause of LUTD in cats (Syme, 2012). Approximately 10 to 20% of cats with LUTD have urinary calculi or urethral plugs; and in more than 80% of these cases struvite and calcium oxalate (CaOx) are found (Lekcharoensuk *et al.*, 2001; Houston *et al.*, 2003). Increased incidence of calcium oxalate calculi could possibly relate with increased trend of commercial dry food usage in domesticated cat diet (German *et al.*, 2010). In this case report we have described two cases of feline LUTD of urinary tract infection (UTI) origin and two cases due to urethral plugs.

**Case history:** Four male cats were presented at the Department of Clinical Medicine and Surgery, University of Agriculture Faisalabad, Pakistan during a period of six months, with complaints of dysuria, stranguria and periuria progressing to anuria in two patients.

Case 1 (two and half years old entire Siamese tom) was a stranguria patient with increased vocalization for the previous two days. Case 2 (three years old entire Persian tom) was showing the increasing signs of stranguria, periuria and anorexia, during previous two days when the condition became evident to owner. Case 3, (three years old entire Persian tom) had anuria with anorexia for the past 24 hours. Case 4 (two years old entire Persian tom) was having anuria and anorexia from last 36 hours. The common history among

all these cases was dry commercial diet, with less water availability to patients.

**Clinical examination and findings:** On clinical examination case 1, 2, 3, and 4 were found to be <5, 5, 5 and <5% dehydrated, respectively. Caudal abdominal palpation revealed that all four toms had markedly expanded urinary bladder with increased sensitivity to abdominal palpation. Urethral examination revealed the presence of a plug in case 3 and 4. Based on the anamnesis and clinical findings a tentative diagnosis of LUTD was made. Blood and serum samples were taken from the toms. Urine samples were taken by cystocentesis and evaluated at the Diagnostic Lab in the Department of Clinical Medicine and Surgery. Urethral plugs were submitted to laboratory which revealed that both plugs contained struvite. The results of urinalysis revealed that case 1, 3 and 4 had struvite crystals only while case 2 had struvite and calcium oxalate dihydrate crystals. Increased urine pH and leukocytes count (more than 5 per HPF) were common findings in all urine samples, and were indicating pyuria. Urine samples were sent to laboratory for culture, which yielded positive results for *E. coli*, in case 1 and 2. The biochemical and hematological profile did not reveal any significant abnormality in all four patients.

**Treatment:** A slight sedative cocktail of Ketamine (Ketamaz<sup>TM</sup>, 8mg/kg, IM; Rotexmedica, Germany) and Diazepam (Valium<sup>TM</sup>, 0.2 mg/Kg, IM; Roche, France) was administered to the toms. To avoid hypovolemic shock and to correct the underlying fluid deficit, an IV line was established before the start of the procedure. A Naso-Gastric (NG) tube of French size 4 was used as a urinary catheter and five to six times retrograde flushing of urinary bladder was performed with normal saline. Before catheterization of

urethra in case 3 and 4 urethral plugs were manually removed by applying gentle digital pressure at the base of urethra. Indwelling catheter was placed in cases with urethral plugs. Enrofloxacin (Senrox-10™, 5mg/kg, SC; *sid*, Sanna Laboratories, Pakistan) was started as an empirical treatment until sensitivity results received. Ketoprofen (Profenid™, 1mg/Kg PO; *sid* Sanofi Aventis, Pakistan) was prescribed to combat pain. The owners were also advised to administer ammonium chloride (20mg, PO *bid*) for three days and provision of water *ad libitum* to promote urination. After getting the confirmation of culture and sensitivity report, treatment of case 1, 2 and 3 was continued for next five days with Enrofloxacin and daily urinary bladder flushing for three days. Case 4 was not presented for four days. On the 5<sup>th</sup> day, case 4 was presented comatose. Despite intensive care case 4 tom did not survive. The owner did not allow performing the post-mortem.

Case 1 and 2 gradually returned to normal condition status on 4<sup>th</sup> day and the catheter of case 3 was removed on day four. Antibiotic therapy was continued for 10 consecutive days. The owners were advised to provide water *ad libitum* and gradual shifting from commercial to homemade diet with increased salt. All the three cases are under constant observation but there are no signs of recurrence yet.

## DISCUSSION

This case report describes feline LUTD of UTIs and urethral plug origin in four different toms. Major predisposing factors of feline UTIs are old age, perineal urethrostomy, low urine specific gravity, and previous catheterization history (Lekcharoensuk *et al.*, 2001). Although the relationship of UTIs with chronic renal disease, hyperthyroidism, and diabetes mellitus has been reported (Litster, 2009) but in these two toms with feline LUTD of UTI origin, serum biochemistry did not reveal any abnormality. Among feline UTIs of bacterial origin *E. coli*, *Enterococcus spp* and *Staphylococcus felis* are the most common isolates (Litster *et al.*, 2007a). The literature also reports *Corynebacterium urealyticum* as an important cause of Feline UTIs (Cavana *et al.*, 2008). *E. coli* of feline UTIs is sensitive to the broad range of antimicrobials (Litster *et al.*, 2007a; Litster, 2009). Amoxicillin/clavulanic acid is a good choice but potential adverse effects like in-appetence, vomiting, and diarrhea (Litster *et al.*, 2007b) limits its use. Alternative choices include Cefovecine, Enrofloxacin, and Pradofloxacin (Messias *et al.*, 2008). Pradofloxacin has been claimed to be highly specific for canine and feline infections. According to Silley *et al.* (2007) this new drug can be used for mixed (anaerobic/aerobic) infections in canine and feline species without causing renal toxicity even at higher doses (Messias *et al.*, 2008), which makes this drug a potential candidate for treatment of patients with renal infarct and uremia. However, newer drugs like Cefovecine and Pradofloxacin are not cost effective and their availability is also limited in developing countries. As all the reported animals were having anorexia so Enrofloxacin was chosen for UTIs culture positive and as a prophylactic measure in culture negative patients. According to Lekcharoensuk *et al.* (2001), 18 to 58% of the cats suffering from FLTUD are found to be obstructed. Clinically urethral obstruction is classified as urethral plugs, strictures, idiopathic, phimosis

and neoplasms. Irrespective of the etiology urethral obstruction requires aggressive measures to be adopted and the treatment is focused to correct acid base disproportion, fluid and the restoration of the urethral opening which may necessitates the placement of catheter. A study conducted in Zurich reports that the most common cause of euthanasia in obstructed cats was the re-occurrence of the disease (Gerber *et al.*, 2008). The frequency of obstructive feline LUTD has declined due to availability of commercial diets minimizing struvite crystalluria (Gerber *et al.*, 2008). Although certain commercial diets are recommended in cases with struvite plugs but none of the clinical case reports advocates their efficacy.

We advised the owners to shift from commercial to homemade diet with increase salt. Old age has been reported as a predisposing factor of feline LUTD but none of the patient of this case report was above 3 years of age, and had no history of previous catheterization. Obviously, all four cases in this report developed the condition due to some factors other than age and previous catheterization. The only suspected predisposing factor could be the use of dry commercial diet with the restricted water access. By relief of pain, repeated urinary bladder flushings and antibiotics treatments in these cases resulted in success with no recurrence yet reported in all three cases.

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