Research in
AGRICULTURE, LIVESTOCK and FISHERIES
ISSN : P-2409-0603, E-2409-9325
An Open Access Peer-Reviewed International Journal

Article Code: 512/2025/RALF
Article Type: Research Article

Res. Agric. Livest. Fish.
Vol. 12, No. 3, December 2025: 507-515.

A Case Report on Lower Urinary Tract Infection in Persian Cat at Sylhet

Md. Mahfuzul Haque[1¥*], Abdullah Al Sad[1*], Md. Julkar Nayeen[1], Md. Rezaul Bari[2], Munira Parvin Mukta[3], Tapan Kanti Paul[4], Md. Masud Parvej[5], Md. Mahbubur Rahman[6], Ratul Zaman[7¥], and Md. Matiur Rahman[8¥]

*Equal contribution as first author

[1]Department of Surgery and Theriogenology, Sylhet Agricultural University; [2]Pet and Vet Care, Sylhet; [3]Govt. College of Applied Human Science, University of Dhaka, Dhaka-1000, Bangladesh; [4]Department of Pharmacology, Sylhet Agricultural University; [5]Department of Anatomy and Histology, Sylhet Agricultural University; [6]St. Francis college, Brooklyn, New York; [7]Department of Genetics and Animal Breeding, Sylhet Agricultural University; [8]Department of Medicine, Sylhet Agricultural University

¥Equal Corresponding author: E-mail: mahfuzsau55@gmail.com; dr.ratulzaman@gmail.com; matiur.vetmed@gmail.com

ARTICLE INFO

Received
30 November 2025

Revised
15 December 2025

Accepted
20 December 2025

Key words:
Feline lower urinary tract infection
Persian cat
Urinalysis
Renal impairment
Dietary management

ABSTRACT

Small animals are increasingly kept as companion animals and are often fed diverse diets with varying nutritional quality, which may predispose them to metabolic and urinary disorders. Concurrent infection of the urinary bladder and urethra is termed lower urinary tract infection (LUTI) and is characterized by clinical signs such as dysuria, hematuria, stranguria, and periuria. This case report aims to highlight the importance of proper management practices alongside medical treatment in reducing disease progression and improving quality of life. A 3.5-year-old Persian cat weighing 4.1 kg was presented to Pet and Vet Care, Sylhet, with complaints of dysuria, vomiting, constipation, and lateral recumbency. Physical examination revealed marked enlargement of the urinary bladder and kidneys, approximately four to five times normal size. Red-colored urine was evacuated by catheterization followed by cystocentesis. Urine samples were subjected to physical, chemical, microscopic, and biochemical analyses for confirmatory diagnosis. Urinalysis revealed hematuria with low specific gravity (1.012), indicating possible renal tubular damage. The presence of protein, ketone bodies, pus cells, and elevated urobilinogen (2 mg/dL) suggested renal involvement. Significantly elevated urine creatinine (86.6 mg/dL) and urine protein (486.1 mg/dL), compared with reference values, further confirmed LUTI with renal impairment. Based on clinical history, physical findings, and laboratory results, the condition was diagnosed as LUTI. This case highlights that effective management of feline LUTI requires not only appropriate therapeutic intervention but also accurate laboratory-based diagnosis and dietary management to ensure faster recovery and improved overall health.

To cite this article: Haque M. M., A. A. Sad, M. J. Nayeen, M. R. Bari, M. P. Mukta, T. K. Paul, M M. Parvej, M. M. Rahman, R. Zaman, and M. M. Rahman, 2025. A case report on lower urinary tract infection in Persian cat at Sylhet. Res. Agric. Livest. Fish. 12(3): 507-515.

DOI: https://doi.org/10.3329/ralf.v12i3.86468

Introduction

Now a day's small animal domesticated as a companion animal worldwide. Most of the owner prefer to adopted cat as a companion because of their friendly behavior, yet owner are not very much concern about cat's nutrition requirement according to age, sex and breed along with feed habit (Ullah et al., 2024). Therefore, owner habited their cats at different types of feed without knowing the nutritive value which brings different metabolic and endocrinal diseases (Armstrong et al., 2010). In cats few metabolic diseases those are closely related to urinary system like chronic kidney diseases (CKD), urolithiasis, feline idiopathic cystitis (FIC) and urethral obstruction etc. In a broad sense these diseases or disorder collectively called feline lower urinary tract diseases (FLUTD) (Gerber et al., 2005). When urinary bladder and urethral infection occurs concurrently it's called s lower urinary tract infection (LUTI) with manifested by clinical signs like dysuria, hematuria, stranguria and periuria (Gunn-Moore 2003); (Hostutler 2005) are closely related for other FLUTD (Gerber et al., 2005).

The epidemiological data of LUTI in Persian cat is not reported till now in Bangladesh, however several studies around worldwide already stated that some breeds were frequently exposed to LUTI such as Persian, Russian blue and Himalayan rather than other breeds. Along with breeds sex also act as a predisposing factor for LUTI (Nururrozi et al., 2020); (Dorsch 2014). Male cats are more prominent compare to female due to the anatomical structure of the penile urethra (Kruger et al., 2009). Weight gain due to sterilization in both sex contribute as a predisposing factor for LUTI (Heidemann et al., 2022). The prevalence of LUTI is most frequent and prominent among old cats' contrast to younger. The prevalence of renal disorder which causes mortality was 12.1% at United Kingdom where 13.6% mortality was found among companion cats those were more than 5 years old (O'Neill et al., 2015). Besides the clinical signs for detection of LUTI, biochemical test also used for confirmatory diagnosis. Serum creatinine increase (SCr), elevation of blood urea nitrogen (BUN) and presence of blood under microscope in urine is the confirmatory diagnosis for LUTI (Percivall 2009).

Once LUTI if confirmed, focus must be shift on treatment and management issue. Dietary management and special feed formulation in case of renal condition is more effective strategies for better health management (Nipu et al., 2025). The aims of this case report were to focus on LUTI managemental procedure parallel to medicinal treatment to decrease the diseases progression process with improving the life of quality. The aim of this report is to reveal the clinical presentation, diagnostic approaches, and management strategies for LUTI.

Material and Methods

A 3.5 years old Persian male was brought and admitted into the Pet and Vet care, Sylhet with a major complain of dysuria, vomiting and constipation for 3 days. The body weight of this cat was 4.1 kg. After attending the patient, the temperature recorded 95°F with lateral recumbency, abdominal distension, no defecation for last and mild dyspnea. During physical examination kidney and urinary bladder found four to five times larger than normal size. Vomition occur at the time of examination. There was no history of cat flu and rabies vaccination. Due to dysuria for 3 days, first we tried to remove urine from urinary bladder to release pressure through catheterization and tiny amount of hemorrhagic urine, so for that manual urinary decompression by cystocentesis was used because the patient's condition was getting worse a sterile syringe used to collect urine directly from bladder. After removing around 70 ml hemorrhagic urine, the clinical condition improved and wakeup for a while from lateral recumbency.

Figure 1. Due to urinary blockage, the cat's excessively enlarged abdomen was later discovered to be full with pee.

Figure 2. A distended, hard bladder and bilaterally enlarged kidneys were discovered during abdominal palpation, which was done to evaluate bladder enlargement and check for further abnormalities.

Figure 3. Systemic uremia and gastrointestinal involvement were suggested by the widespread vomiting and foul odor.

Figure 4. Clipping the area for inserting catheter

Figure 5. Inserting catheter

Figure 6. Only a little volume of bloody, frothy urine was drained after the catheter was inserted, which is suggestive of hemorrhagic cystitis and partial blockage

Figure 7. The urinary bladder was manually decompressed via cystocentesis due to the inadequate efflux of urine via the catheter; this resulted in a large efflux of urine and a significant reduction in abdominal tension.

Figure 8. Collection of Hemorragic urine

Table 1. Urine Antibiotic Sensitivity Test Procedure

Steps	Description
Sample Collection	Sterile urine collected via cystocentesis to avoid contamination.
Culture Setup	Urine inoculated onto blood agar and MacConkey agar using calibrated loop (usually 1 µL or 10 µL).
Incubation	Plates incubated at 35–37°C for 18–24 hours under aerobic conditions.
Bacterial Identification	Colonies identified based on morphology, Gram staining, and biochemical tests.
Sensitivity Testing	Pure culture tested using one of the following: Disk Diffusion (Kirby-Bauer method) Broth microdilution or automated MIC systems
Antibiotic Panel	A panel of antibiotics is selected based on common uropathogens and CLSI/ISCAID guidelines.
Interpretation	Results categorized as Susceptible (S), Intermediate (I), or Resistant (R) based on zone diameters or MIC values.
Quality Control	Standard control strains (e.g., *E. coli* ATCC 25922) used to ensure accuracy.
Reporting	Final report includes organism identification and antibiotic susceptibility profile.

Aseptically voided urine sample was sent to the laboratory for routine urinalysis, a) URINE R/E & M/E (Auto), b) URINE C/S & c) Biochemistry analysis report where indicated.

URINE R/E and M/E (Auto)

A complete urinalysis was performed using the Hungarian company 77 Elektronika analyzers UriSed® 3 PRO and LabUmat completely automated system in order to facilitate the continuation of action for the etiologic identification of the urine retention and debilitating state of the affected Persian cat (Urine & Analyzer, n.d.).The extremely sophisticated diagnostic apparatus combines large-capacity processing with high-precision technology to generate quick and consistent results, which are essential in emergency scenarios like the one described here where time is of the essence. Urine samples were aseptically sampled and then subjected to a multi-step analytical procedure.

Chemical analyses through the Lab Umat unit were initially performed on urine test strips. To provide valuable information on a wide range of analysis such as urinary pH, protein, glucose, ketones, bilirubin, urobilinogen, blood, leukocytes, and nitrite. The tests provided an overview of the metabolic status of the cat and potential renal or urinary tract disease. Meanwhile, digital microscopic analysis of the urine sediment was being conducted with the UriSed 3 PRO system. The sample was centrifuged and imaged automatically in multiple fields of view at high magnification. Advanced image recognition software detected and enumerated organized collections such as erythrocytes, leukocytes, epithelial cells, squamous cells, casts, crystals, and bacteria. This provided complete cytological analysis without human microscopic subjectivity error. Most importantly, HOLEMAC was controlled and optimized through interfacing software to cross correlate the microscopic and chemical results online. All results were on-screen authenticated and signed by a qualified laboratory technician to ensure accuracy and clinical utility. This type of analysis not only minimized the possibility of human error, but allowed clinicians to make immediate evidence-based decisions in the cat's acute urinary crisis.

Table 2. Urine Biochemistry Analysis

Parameter	Analytical Method	Purpose
Urine Creatinine	Enzymatic	Assesses renal filtration; used in calculating ratios like urine protein-to-creatinine
Urine Amylase	Enzymatic colorimetric assay	Evaluates pancreatic enzyme excretion; detects pancreatic injury or urinary tract pathology
Urine Total Protein	Turbidimetric assay (e.g., benzethonium chloride method)	Screens for proteinuria, indicating potential glomerular damage or renal tubular dysfunction

Treatment

After evacuating urine from urinary bladder, the cat received Kidney Tonic (Urinex®) (0.05 ml given twice daily) for 14 days orally, Antiemetic's drug (Emistat) (0.05 mg/kg given twice daily) for 3 days, Laxatives (Avolac) (0.05 ml given once daily) for 3 days, Ant gastritis drug (100mg/kg every 12 hours interval) for 3 days and bradycardia drug (Atrovet) given once for increasing temperature. Moreover, the patient was prescribed oral saline and vitamin C for 15 days and was briefed on the importance of post-operative care, potential complications, and the recovery process.

Results

Physical Examination

The ill cat admitted to the clinics with dysuria, vomiting and constipation clinical signs for last few days. After physical examination the color of urine found red and very turbid where the reference color appearance is straw and clear. Reed color of urine indicate hematuria condition which mainly occurred when urinary system affected with LUTI. Specific gravity of urine also found below from reference value.

Table 3. Physical Examination

Parameter	Result	Reference Range (Cat)
Color	Red	Straw
Appearance	Reddish	Clear
Specific Gravity	1.012	1.035–1.060

Chemical Examination

In chemical examination of urine, the level of pH (reaction), glucose, bilirubin and nitrite found within reference value. Present of protein, ketones and urobilinogen in higher level in urine which indicate LUTI as well as renal disorder.

Table 4. Urine Biochemistry Analysis

Parameter	Analytical Method	Purpose
Urine Creatinine	Enzymatic	Assesses renal filtration; used in calculating ratios like urine protein-to-creatinine
Urine Amylase	Enzymatic colorimetric assay	Evaluates pancreatic enzyme excretion; detects pancreatic injury or urinary tract pathology
Urine Total Protein	Turbidimetric assay (e.g., benzethonium chloride method)	Screens for proteinuria, indicating potential glomerular damage or renal tubular dysfunction

Microscopic Examination

The urinalysis examination revealed the microscopic parameter of urine. In results, epithelial cells, casts (all types), crystals and yeast/parasites all parameters remained in their normal reference values. Besides this, pus cells found 12 per high power field whereas normal reference value is 0-5/HPF. On the other hand Elevated amount of RBCs, approximately 250/HPF was observed which exceeding the normal value 0-5/HPF range.

Table 5. Microscopic examination

Findings	Result	Reference (Cat)
Epithelial cells	4–5 / HPF	15–20 / HPF
Pus cells (WBCs)	12 / HPF	0–5 / HPF
RBCs	250/HPF	0–5 / HPF
Casts (All types)	None (except hyaline)	0–2 / LPF (normal types)
Crystals	None	None
Yeast/Parasites	Nil	Nil

Biochemical analysis

Urine creatinine level exceeds the normal reference value and found at 86.6 mg/dL, whereas urine amylase was found markedly below from reference value. Presence of protein in urine found far elevated level from reference value less than 30mg/dL.

Table 6. Biochemical analysis

Parameter	Result	Reference (Cat)
Urine Creatinine	**86.6 mg/dL**	0.6–2.4 mg/dL
Urine Amylase	**57 U/L**	603–2000 U/L
Urine Protein	**486.1 mg/dL**	< 30 mg/dL

Discussions

All the findings from physical, chemical, microscopic and biochemical analysis collectively indicate that the cat was suffering from LUTI. When admitted to pet and vet care, Sylhet the cat was found with the history of dysuria, anorexia, vomiting, weakness, in anemic condition and laid on lateral recumbency those were collectively indicating the case as a LUTI. Catheterization and cystocentesis performed to collect urine and the reddish color urine deviating markedly from reference color of urine. The red coloration of urine directly indicates hematuria which typically involved with lower urinary tract (LUT) (Jackowska-Pejko 2019). Additionally, the specific gravity 1.012 was considerably lower from feline reference value 10.35-1.060, indicate renal dysfunction or tubular damage (Bovens 2011).

In chemical analysis, pH, glucose, bilirubin and nitrite were remains in feline reference value where protein, ketones and urobilinogen levels showed higher from reference value. Presence of protein in urine define sever renal disease with the impaired functional activity of LUT. Ketone bodies detection refer the reduce food intake condition or early metabolic imbalance or stress condition of cat (Aguirre 2012). The reference value of pus cells and red blood cell is 5/HPF where in microscopic examination pus cell found 12/HPF and red blood cells markedly increased at 250/HPF. The findings strongly support the presence of

active inflammation in LUT caused LUTI with sever hematuria which align with previous study (Bovens 2011). Although in examination presence of casts except hyaline didn't mean that the exclusion of renal involvement.

The clinical diagnosis of LUTI was confirmed by biochemical analysis. Excess level of urine creatinine (UC) (86.6 mg/dL) and urine protein concentration (UP) (486.1mg/dL) suggesting the renal clearance indicating LUTI which support the previous studies (Mustafa 2023). Conversely, urine amylase was significantly lower than expected, which may also indicate tubular dysfunction or impaired enzyme filtration (Aldafaay 2021).

Conclusion

Age, sex and breed are the major predisposing factor for LUTI in cat with feed type and habit. Persian male and old cats are more susceptible compare to female and young. However, there is no clear epidemiological data of LUTI among different age, breed and sex of cat along with early detection at young stage. Owner complain, physical, chemical, microscopic and biochemical findings all collectively conclude this condition as a LUTI. Increased amount of UC and UP with hematuria strong support the case as LUTI. The case report highlights that in case of renal diseases not only treatment gives better result but also lab-based diagnosis is very much important with feed habit management for faster recovery and better health of affected cat.

Funding

This study received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Declarations of Competing Interest

The authors declare that they have no competing interests relevant to this manuscript.

References

1. Ullah, M. N., Azad, M. A. K., Gofur, M. R., & Sarder, M. J. U. (2024). Perceptions of Cat Rearing, Feeding, and Health Management by Cat Owners in Rajshahi. Asian Journal of Biology, 20(1): 32-42.
2. Armstrong, P. J., Gross, K. L., Becvarova, I., & Debraekeleer, J. (2010). Introduction to feeding normal cats. Small Animal Clinical Nutrition; Hand, MS, Thatcher, CD, Remillard, RL, Roudebush, P., Novotny, BJ, Eds, 371-372.
3. Gunn-Moore, D. A. (2003). Feline lower urinary tract disease. Journal of Feline Medicine and Surgery, 5(2): 133-138.
4. Hostutler, R. A., Chew, D. J., & DiBartola, S. P. (2005). Recent concepts in feline lower urinary tract disease. Veterinary Clinics: Small Animal Practice, 35(1): 147-170.
5. Gerber, B., Boretti, F. S., Kley, S., Laluha, P., Müller, C., Sieber, N., Unterer, S., Wenger, M., Flückiger, M., Glaus, T., & Reusch, C. E. (2005). Evaluation of clinical signs and causes of lower urinary tract disease in European cats. Journal of Small Animal Practice, 46(12): 571-577.
6. Forrester, S. D., & Towell, T. L. (2015). Feline idiopathic cystitis. Veterinary Clinics: Small Animal Practice, 45(4): 783-806.
7. Dorsch, R., Remer, C., Sauter-Louis, C., & Hartmann, K. (2014). Feline lower urinary tract disease in a German cat population. Tieraerztliche Praxis Ausgabe K: Kleintiere/Heimtiere, 42(04): 231-239.
8. Sævik, B. K., Trangerud, C., Ottesen, N., Sørum, H., & Eggertsdóttir, A. V. (2011). Causes of lower urinary tract disease in Norwegian cats. Journal of feline medicine and surgery, 13(6): 410-417.

9. Kruger, J. M., Osborne, C. A., & Lulich, J. P. (2009). Changing paradigms of feline idiopathic cystitis. Veterinary Clinics of North America: Small Animal Practice, 39(1): 15-40.
10. Lekcharoensuk, C., Osborne, C. A., & Lulich, J. P. (2001). Epidemiologic study of risk factors for lower urinary tract diseases in cats. Journal of the American Veterinary Medical Association, 218(9): 1429-1435.
11. Lew-Kojrys, S., Mikulska-Skupien, E., Snarska, A., & Krystkiewicz, W. (2017). Evaluation of clinical signs and causes of lower urinary tract disease in Polish cats. Veterinární medicína, 62(7).
12. Poly, N. S., Ahasan, A. L., Mannan, A., Rahman, M., Uddin, M. I., Uddin, M. M., & Chowdhury, M. Y. E. (2020). A case report on chronic kidney disease in cat.
13. O'Neill, D. G., Church, D. B., McGreevy, P. D., Thomson, P. C., & Brodbelt, D. C. (2015). Longevity and mortality of cats attending primary care veterinary practices in England. Journal of feline medicine and surgery, 17(2): 125-133.
14. Nururrozi, A., Yanuartono, Y., Sivananthan, P., & Indarjulianto, S. (2020). Evaluation of lower urinary tract disease in the Yogyakarta cat population, Indonesia. Veterinary world, 13(6): 1182.
15. Nipu, M. N. U. (2025). Chronic Kidney Disease in a Dog: A Case Report. Asian Journal of Advances in Research, 8(1), 10-56557.
16. Manoni, F. (2024). Physical, Chemical, and Morphological Urine Examination. In Clinical and Laboratory Medicine Textbook (pp. 253-267). Cham: Springer International Publishing.
17. Heidemann, J., Kalder, M., & Kostev, K. (2022). Association between contraceptive use and risk of lower urinary tract infection (LUTI): A case-control study. International Journal of Clinical Pharmacology and Therapeutics, 60(4), 167.
18. Percivall, A. (2009). Laboratory tests. Merriman's Assessment of the Lower Limb, 365.
19. Jackowska-Pejko, N. (2019). Urine test in cats–a simple study that covers many secrets. Science And Empathy Are Our by Words., 7.
20. Bovens, C. (2011). Feline Lower Urinary Tract Disease. A diagnostic approach. Feline update pp, 1-12.
21. de Moraes, R. S., Neto, A. C. S., Germano, G. L., Ferraz, H. T., & Romani, A. F. (2020). Chronic kidney disease in a dog of the Teckel breed: case report. Acta Veterinaria Brasilica, 14(4).
22. King, J. N., Tasker, S., Gunn-Moore, D. A., & Strehlau, G. (2007). Prognostic factors in cats with chronic kidney disease. Journal of Veterinary Internal Medicine, 21(5): 906-916.
23. da Mota, A. F. M. (2020). The relationship between specific gravity and refractive index for cats and dogs: an equivalence study (Master's thesis, Universidade de Tras-os-Montes e Alto Douro (Portugal)).
24. Aguirre, A., & Darling, T. (Eds.). (2012). Urinary and Renal Diseases. Small Animal Internal Medicine for Veterinary Technicians and Nurses, 289-347.
25. Mustafa, B., Gouda, H., Shehta, A., & Shety, T. (2023). Monitoring the inflammatory process of feline lower urinary tract disease. Slovenian Veterinary Research, 60(25-Suppl), 173-83.
26. Aldafaay, A. A., Amir, H. A. A., Abdulhussain, H. A., Badry, A. S., & Abdulsada, A. K. (2021). The use of urinary α-amylase level in a diagnosis of chronic renal failure. Research Journal of Pharmacy and Technology, 14(3): 1597-1600.