Archives of Current Research International

Volume 24, Issue 11, Page 359-365, 2024; Article no.ACRI.126712
ISSN: 2454-7077

Successful Management of Cystitis in a Male Dog

Payel Kar [a], J.B. Rajesh [a++*], Chethan G.E [a], Suvendu Kumar Behera [a], Kalyan Sarma [a] and Hridayesh Prasad [a]

[a] Department of Veterinary Medicine, College of Veterinary Sciences and Animal Husbandry, Central Agricultural University (I), Selesih, Aizawl, Mizoram-796015, India.

Authors' contributions

This work was carried out in collaboration among all authors. Author PK did treatment of the case and wrote the manuscript. Author JBR guided and edited the manuscript. Author CGE did treatment of the case. Author SKB assessed laboratory examination. Authors KS and HP guided and supervised the study. All authors read and approved the final manuscript.

Article Information

DOI: https://doi.org/10.9734/acri/2024/v24i11977

Open Peer Review History:
This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: https://www.sdiarticle5.com/review-history/126712

Case Report

Received: 05/09/2024
Accepted: 12/11/2024
Published: 18/11/2024

ABSTRACT

A 5-year-old male mixed breed dog was brought with complaints of fever, vomiting, inappetence, hematuria for 1 week, dysuria, pollakiuria, pain during urination and pain on palpation in the caudal part of abdomen. Haemato-biochemical analysis showed Hemoglobin 9.1 gm/dL, RBC 4.4 million/µL, WBC 24.75 x 10^3 /µL, and Neutrophil 85%. Urine culture revealed *Staphylococci*. In USG, urinary bladder wall was markedly thickened and bladder endothelium lining was highly uneven. In urinalysis report, sanguineous color of urine with pH 7.8 and red blood cell (10 cells/HPF) were

[++] Assistant Professor;
**Corresponding author: Email: leovet@gmail.com;*

Cite as: *Kar, Payel, J.B. Rajesh, Chethan G.E, Suvendu Kumar Behera, Kalyan Sarma, and Hridayesh Prasad. 2024. "Successful Management of Cystitis in a Male Dog". Archives of Current Research International 24 (11):359-65. https://doi.org/10.9734/acri/2024/v24i11977.*

there. The management of cystitis was done with fluid therapy, broad-spectrum antibiotic, and supportive therapy for a duration one week. The condition of the dog improved and medicines were continued orally for another 2 weeks.

Keywords: Antibiotic; cystitis; dog; USG.

1. INTRODUCTION

Cystitis refers to the inflammation of urinary bladder. Clinically it is characterized by pollakiuria, dysuria, presence of inflammatory cells, bacteria in urine and hematuria. It occurs in all animals; but the prevalence is higher in dogs and cats. Compared to males it is more common in females due to trauma, tumor or infection. Allergic and emphysematous cystitis have also been reported. Hematuria may be more apparent at the end of the urination. Palpating the caudal abdomen of an animal may feel pain, and the bladder may feel thickened or irregular. Infection is mostly ascending type but descending infection may occur from embolic nephritis. Bacterial cystitis is a common issue in general practice, affecting 14% of dogs over their lifetime and bacteria like *E. coli*, *Staphylococcus* Spp., *Corynebacterium renale*, *Proteus* Spp., *Klebsiella* Spp., *Streptococcus* Spp. are often isolated (Reavill and Lennox 2020).

Bacteria reach the bladder by ascending infection from the urethra or genital tract. Normally the large proportions of bacterial load wash by outflow of urine. Obstruction caused by calculi, neoplasms, or other causes hindering the micturition process predisposes to this condition. Concentrated urine promotes bacterial proliferation. Infection can spread through trauma or during catheterization with a contaminated catheter (Heyns 2012).

Bacterial cystitis is occasionally detected in an asymptomatic animal during a normal urinalysis. Asymptomatic urinary tract infections may be caused by persistent glucocorticoid therapy, hyperadrenocorticism, chronic kidney disease, or diabetes mellitus. Asymptomatic bacteriuria occurs when bacteria are present in the urine despite the absence of a true infection (*i.e*., bladder mucosal invasion and inflammation) (Sykes and Westropp 2014).

Urinalysis often indicates elevated protein and hemoglobin levels in the urine. If the bacteria in urine are urease positive (*Staphylococcus* or *Proteus*), then urine pH will be alkaline (7.5-9). However, an alkaline urine pH on its own is not abnormal, as diet and other factors can influence urine pH. Cystitis is characterized by an increase in WBCs, RBCs, and/or bacteria counts (Thornton et al. 2018).

2. CASE PRESENTATION

A 5-year-old male mixed breed dog weighing 15 kg was brought to the Teaching Veterinary Clinical Complex, Selesih, Aizawl, Mizoram with Out Patient Department (OPD) number 1331on 17th May 2023 having a history of fever, vomiting, inappetence, hematuria for one week, dysuria, pollakiuria, pain during urination and pain on palpation in the caudal part of abdomen. Clinical examination was done and found that animal was depressed, having pink mucous membrane and rectal temperature was 103.5ºF.

Haemato-biochemical analysis showed a high TLC and neutrophils and a low TEC, hemoglobin and PCV values (Table 1). Other parameters were within the normal ranges (Table 2). USG findings revealed a markedly thickened (0.63 cm) Urinary Bladder (UB) wall with highly uneven endothelial lining (Fig. 1) ensuring cystitis. Kidney, liver, gall bladder, and spleen were normal in USG.

On urinalysis found that color of urine was sanguineous mildly turbid, pH 7.8, RBC (10 cells/HPF), and protein was present. Urine culture was done and *Staphylococci* were found (Fig. 2). Antibiotic sensitivity test recorded that amoxicillin was having a higher zone of inhibition (Fig. 3).

1st Day: The animal was treated with Inj. RL @ 100 mL IV BID, Inj. Amoxicillin @ 150 mg IV BID, Inj. Pantoprazole @ 20 mg IV BID, Inj. Ondansetron @ 1.5 mL IV SOS, Inj. Etamsylate @ 1.5 mL SOS, Inj. Dexona @ 1.5 mL IV BID and supplement with UT-KID and Syr. Haemup for seven days.

8th Day: Values of hemoglobin, TEC, PCV, Hb values were increased, and TLC and neutrophil level has reduced drastically (Table 3). USG findings showed that UB wall thickness reduced

to 0.4 cm and endothelial lining unevenness was also reduced (Fig. 4). The condition of the dog improved and medicines were continued orally for another 2 weeks with Tab. Amoxicillin @ 1/2 tab PO BID, Tab Pantoprazole @ 1 tab PO BID, Syr. UT-KID @ 1 TSP PO BID, Syr. Zipvit @ 1 TSP PO BID, Syr. Neurobion forte @ 1 TSP PO BID.

21st Day: USG findings showed that UB wall thickness comes to normal (0.2 cm) (Fig. 5).

Fig. 1. 1st day- Urinary Bladder (Sagittal view): Markedly thickening (0.63 cm) and endothelium lining was highly uneven

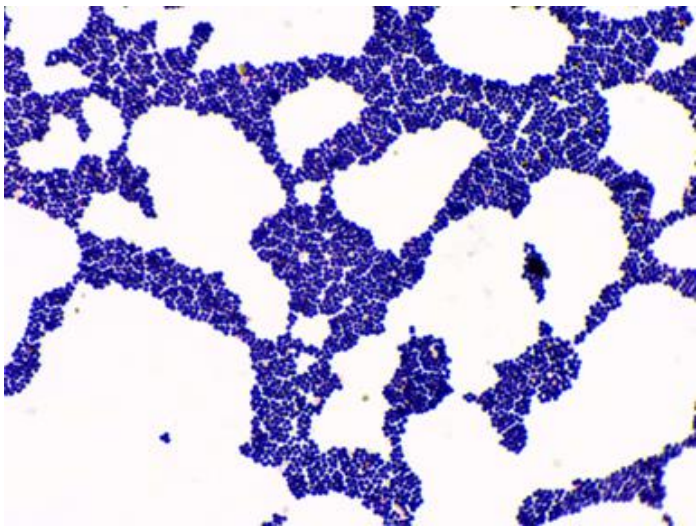

Fig. 2. Urine culture

Table 1. Hematology findings

Parameters	Value	Reference
RBC (million/ µL)	4.4	5.5-8.5
Hb (g/dL)	9.5	12-18
PCV (%)	29.1	37-55%
WBC (x10^3 /µL)	24.75	6-17
Neutrophil (%)	85	51-84

Table 2. Biochemical findings

Parameters	Value	Reference
BUN (g/dl)	28.5	8-28
Creatinine (mg/dl)	0.9	0.5-1.7
Protein (Total) (g/dl)	6.4	5.4-7.5
Albumin (g/dl)	3.4	2.3-3.1
Globulin (g/dl)	3	2.4-4.4
Bilirubin (Total) (mg/dl)	0.4	0-0.3
Direct Bilirubin (mg/dl)	0.3	0-0.3
Indirect Bilirubin (mg/dl)	0.1	0-0.1
AST (U/L)	32.5	18-56
ALT (U/L)	87.2	10-109
ALP (U/L)	56.9	1-114

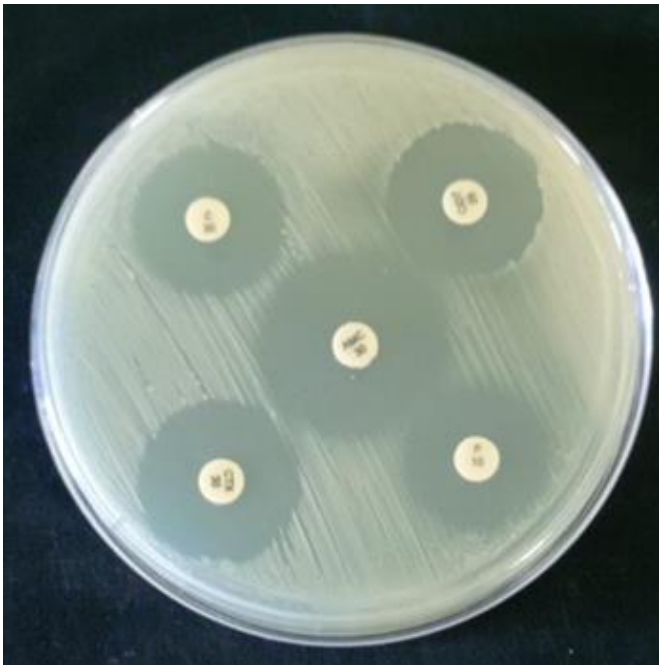

Fig. 3. Antibiotic sensitivity test

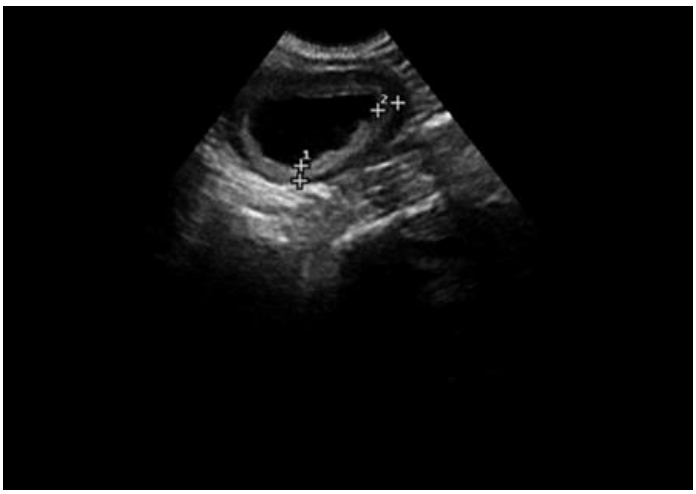

Fig. 4. 8th day- Urinary Bladder (Sagittal view): Bladder thickness is 0.4 cm

Table 3. Comparison of haematological findings

Parameter	Value (Day1)	Value (Day 8)	Reference
RBC (million/µL)	4.4	4.8	5.5-8.5
Hb (g/dl)	9.5	10.5	12-18
PCV (%)	29.1	32	37-55
WBC (x10^{3}/µL)	24.75	18	6-17
Neutrophil (%)	85	78	51-84

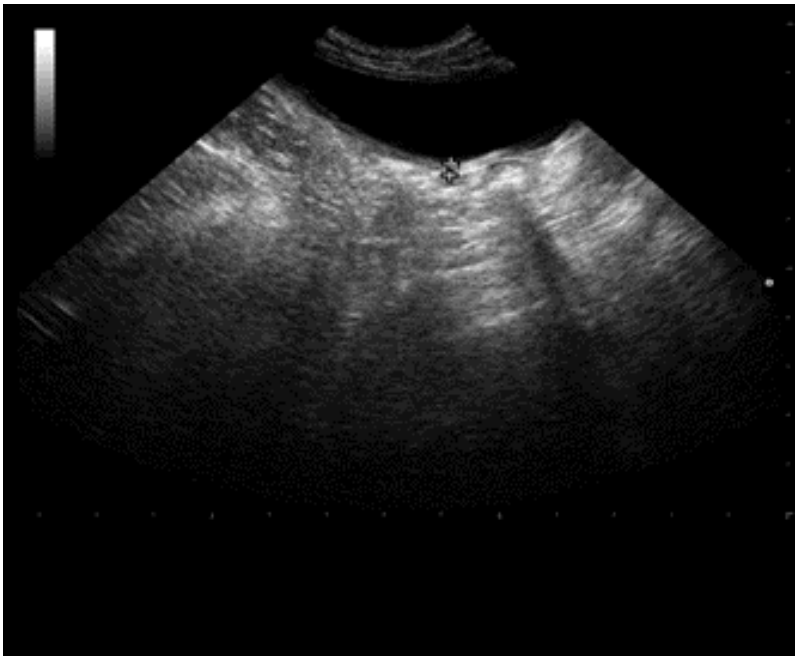

Fig. 5. 21st day- Urinary Bladder (Sagittal view): Bladder thickness is 0.2 cm

3. DISCUSSION

Cystitis is more reported in female dog since the chances of bacterial urinary tract infection is more in female dog. Female dogs are at high risk for Urinary Tract Infection (UTI) due to easier entry of bacteria through a shorter urethra (Budreckis et al. 2015). In this report we found cystitis in a male dog. Clinical signs were pollakiuria, dysuria, urinary incontinence, and haematuria at the end of the urine stream which can be attributed to the damage of transitional epithelium of bladder and due to the inflammatory process (Piech and Wycislo 2019). The animal exhibited pain on palpation of the caudal abdomen and this also may be due to inflammatory changes. Cultural examination of the urine sample revealed the presence of *Staphylococci*. The common pathogens associated with urinary tract infections in dogs are *E. coli*, *Proteus*, *Staphylococci*, *Streptococci*, *Enterococus*, and *Pseudomonas* (Kandula et al. 2017).

In haemato-biochemical findings, the values of haemoglobin were low and this was in agreement with the observations of Kamble et al*.* (2011). The lower RBC count, Hb and PCV may be connected to a mild anaemia due to haematuria (Shashank et al. 2022). WBC and neutrophils were high and this may be related to the infection. Similarly, neutrophilia symptoms were reported by Sarma and Kalita (Sarma and Kalita 2019) in their study on cystitis.

Thickening of UB walls and uneven surface of bladder endothelial lining in USG, was due to inflammation and these findings were in agreement with Elgazar et al*.* (2021) and Dinesh et al*.* (2015).

The antibiotic was selected based on the results of antibiotic sensitivity test. The ABST was recommended for treating cases of cystitis by other workers also. This is required for a responsible use of antibiotic and for a better response based on the susceptibility spectrum of bacteria (Warland and Bestwick 2017). In ABST,

amoxicillin was showing higher zone of inhibition and hence selected. Workers like Kandula et al. (2017) also opined that amoxicillin and enrofloxacin are highly effective against *Staphylococci* and *E. coli* infections of urinary tract. The most often given medications for sporadic bacterial cystitis were amoxicillin and amoxicillin/clavulanic acid (Weese et al. 2021).

4. CONCLUSION

A case of cystitis in a male dog is described along with its diagnosis, treatment and management. USG findings along with clinical symptoms and laboratory findings were helpful in diagnosing the case. ABST is an effective tool in selecting the proper antibiotic. Antibiotic and supportive therapy could alleviate the condition.

CONFERENCE DISCLAIMER

Some part of this manuscript was previously presented and published in the conference: Multifaceted approaches for integrating veterinary medicine and one health for a holistic future At: Thrissur, Kerala - February 2024 in Kerala, India, Web Link of the proceeding: https://www.researchgate.net/publication/383212079_Successful_Management_of_Cystitis_in_a_male_Dog

DISCLAMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declares that no AI technologies such as Large Language Models (ChatGPT, COPILOT, *etc*) and text-to-image generators have been used during writing or editing of manuscripts

ETHICAL APPROVAL

The work carried as per the animal ethics norms.

ACKNOWLEDGEMENT

The authors are thankful to Vice Chancellor of Central Agricultural University, Imphal and Dean of CVSc and AH, Selesih, Aizawl for providing the facilities.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

Budreckis, D. M., Byrne, B. A., Pollard, R. E., Rebhun, R. B., Rodriguez Jr, C. O., & Skorupski, K. A. (2015). Bacterial urinary tract infections associated with transitional cell carcinoma in dogs. *Journal of Veterinary Internal Medicine*, *29*, 828–833.

Dinesh, D., Behl, S. M., Singh, P., Tayal, R., Pal, M., & Chandolia, R. K. (2015). Diagnosis of urinary bladder diseases in dogs by using two-dimensional and three-dimensional ultrasonography. *Veterinary World*, *8*, 819.

Elgazar, Y. Y., Ghanem, M., Abdel-Raof, Y. M., & Helal, M. (2021). Clinical, haemato-biochemical and ultrasonographic diagnostic tools of different urinary tract affections in dogs. *Benha Veterinary Medical Journal*, *40*, 119–124.

Heyns, C. F. (2012). Urinary tract infection associated with conditions causing urinary tract obstruction and stasis, excluding urolithiasis and neuropathic bladder. *World Journal of Urology*, *30*, 77–83.

Kamble, M., Kale, V. D., & Raut, S. U. (2011). Urethral calculi in a dog and its surgical management. *Intas Polivet*, *12*, 369–371.

Kandula, S., Karlapudi, S. K., & Nagaraj, P. (2017). Cultural studies of urine from cystitis dogs. *Pharmacology and Pharmacy*, *6*, 247.

Piech, T. L., & Wycislo, K. L. (2019). Importance of urinalysis. *Veterinary Clinics of North America: Small Animal Practice*, *49*, 233–245.

Reavill, D. R., & Lennox, A. M. (2020). Disease overview of the urinary tract in exotic companion mammals and tips on clinical management. *Veterinary Clinics of North America: Exotic Animal Practice*, *23*, 169–193.

Sarma, B. K., & Kalita, D. (2019). Changes of haematological and biochemical parameters of canines having urinary system disorders. *International Journal of Chemical Studies*, *7*, 501–504.

Shashank, J., Kumar, K. S., Kumar, V. A., Kumar, B. A., & Lakshman, M. (2022). Hematological alterations in bacterial lower urinary tract infection (cystitis) of geriatric dogs. *Pharmacology and Pharmacy*, *264*, 220–236.

Sykes, J. E., & Westropp, J. L. (2014). Bacterial infections of the genitourinary tract. In

Canine and feline infectious diseases (p. 871).

Thornton, L. A., Burchell, R. K., Burton, S. E., Lopez-Villalobos, N., Pereira, D., MacEwan, I., & Gal, A. (2018). The effect of urine concentration and pH on the growth of *Escherichia coli* in canine urine in vitro. *Journal of Veterinary Internal Medicine*, *32*, 752–756.

Warland, J., & Bestwick, J. (2017). Canine cystitis: Diseases, causes, and treatments. *Veterinary Times*, *47*, 8–10.

Weese, J. S., Webb, J., Ballance, D., McKee, T., Stull, J. W., & Bergman, P. J. (2021). Evaluation of antimicrobial prescriptions in dogs with suspected bacterial urinary tract disease. *Journal of Veterinary Internal Medicine*, *35*, 2277–2286.

Peer-review history:
The peer review history for this paper can be accessed here:
https://www.sdiarticle5.com/review-history/126712