The Pharma Innovation Journal 2022; 11(12): 5741-5743

www.ThePharmaJournal.com

The Pharma Innovation

ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2022; 11(12): 5741-5743

www.thepharmajournal.com
Received: 01-09-2022
Accepted: 05-10-2022

Amal George
B.V.Sc, Department of Veterinary Clinical Medicine, Madras Veterinary College, TANUVAS, Chennai, Tamil Nadu, India

B. Gowri
Professor, Department of Veterinary Clinical Medicine, Madras Veterinary College, TANUVAS, Chennai, Tamil Nadu, India

K Jeyaraja
Professor, Department of Veterinary Clinical Medicine, Madras Veterinary College, TANUVAS, Chennai, Tamil Nadu, India

N Barkathulla
B.V.Sc. Student, Madras Veterinary College, TANUVAS, Chennai, Tamil Nadu, India

S Subapriya
Assistant Professor, Centralized Clinical Laboratory, Madras Veterinary College, TANUVAS, Chennai, Tamil Nadu, India

Corresponding Author:
S Subapriya
Assistant Professor, Centralized Clinical Laboratory, Madras Veterinary College, TANUVAS, Chennai, Tamil Nadu, India

Clinicopathological diagnosis and medical management of cystitis in a pony

Amal George, B Gowri, K Jeyaraja, N Barkathulla and S Subapriya

Abstract
A six-year-old female pony was presented to the Madras Veterinary College Teaching Hospital with the history of anorexia and voiding of blood in urine. On clinical examination, the animal appeared dull and on catheterization, tarry coloured urine with blood clots was observed. In urinalysis, urine sample revealed the presence of blood and protein. On ultrasonographic examination, thickening of the bladder wall was observed. Based on the above findings, cystitis was identified as the reason for haematuria in pony. The pony was thereafter treated with a combination of antibiotics Trimethoprim/sulfadiazine @ 25 mg/kg bid per oral for 5 days and Inj. Enrofloxacin @ 5 mg/kg for 5 days following which the pony recovered completely by five days after treatment.

Keywords: Equine, pony, cystitis, haematuria, dysuria, ultrasonography

Introduction
Cystitis is the term to denote inflammatory condition of the urinary bladder. In equine, cystitis develops as a primary condition or a secondary condition subsequent to bacterial infections, periparturient trauma and injuries and paralysis of bladder. Bacterial infections either ascending from a urinary tract infection (UTI) or descending from a renal infection and the development of septicaemia are the common causes of cystitis in equine (Kader *et al.*, 2018) [1]. Cystitis may occur as a secondary infection after an injury during parturition or be caused by cystic calculi, neoplasms of the urinary bladder, or bladder paralysis secondary to neurological disorders (Johnson *et al.*, 1987) [2]. Schumacher *et al.* (2002) [3] stated that repeated urinary catheterization for diagnostic or therapeutic purpose is also an important risk factor for cystitis and Aleman *et al.* (2011) [4] stated that cystitis may also develop sometimes in response to administration of drugs like cyclophosphamide and phenylbutazone. Raguvaran *et al.* (2021) [5] reported that older age horses especially mares are highly susceptible for cystitis.
The commonly encountered clinical signs in equine cases presented with cystitis include variation in the frequency of micturition such as dysuria, stranguria, polyuria, pollakiuria with scalding of urine and appearance of urine such as hematuria along with general signs of illness such as fever, lethargy and weight loss. However, haematuria accompanied with and without pyrexia can be observed in equine, due to a variety of causes and conditions other than cystitis like as in urolithiasis, urethral trauma, urinary tract infections, pyelonephritis, infectious causes like in leptospirosis as well as due to the presence of tumours in the urinary tract. Hence, diagnostic modalities such as ultrasonography and cystoscopy along with complete haematobiochemical investigation, urinalysis and urine culture should be employed to confirm cystitis in horses presented with the history and clinical sign of voiding blood in urine.
The present article describes in detail, the clinical presentation of cystitis in a pony presented with history and clinical sign of haematuria, confirmation of diagnosis by laboratory and ultrasonographic examination and the medical intervention adopted to resolve the condition.

Case history and Observations
A 6 years old, bay coloured, female pony weighing 210 kg was presented to the Large Animal Medicine ward of Madras Veterinary College Teaching Hospital (MVCTH) with the history of anorexia and voiding of red coloured urine for the past three days. The animal appeared dull and depressed with placid expression. The conjunctival mucous membrane was pink and moist and no abnormalities of posture and gait were observed.
Haematobiochemical investigation was done to assess the general health status of the animal with special reference to platelet count as thrombocytopenia could very well be a cause of blood from any of the natural orifices including urine.

Urine samples, both naturally voided and catheterised samples were analysed to identify various causes of haematuria such as calculi, cystitis, urinary tract infection, tumours etc.

Results of Diagnostic investigation

Grossly, the naturally voided urine sample appeared reddish brown with blood clots (Plate 1). On catheterisation, 520 ml of urine was collected which also appeared red tinged (Plate 2). On urinalysis, the specific gravity was 1.023 and the sample was positive for the presence of blood cells and protein (Grimes *et al.*, 2020) [6] have suggested that proteinuria can be the result of lower urinary tract disease such as cystitis. Bagley *et al.*, (1991) [7] also stated that postrenal proteinuria may arise due to bacterial cystitis and other causes of lower urinary tract inflammation. Normally, equine urine contains less than 5 RBCs/HPF and less than 10 WBCs/HPF Reed *et al*. (2004) [8]. However, microscopic examination of urine sediment in the present case revealed the presence of numerous intact erythrocytes along with inflammatory cells such as neutrophils, desquamated epithelial cells and bacteria. Saulez *et al*. (2005) [9] detected pyuria (<3WBCs/hpf), hematuria (>500 RBCs/hpf) and bacteriuria (>10 rod-shaped bacteria/hpf; <5 cocci/hpf) along with numerous calcium carbonate crystals in a case of encrusted cystitis secondary to *Corynebacterium matruchotii* infection in a horse.

Microbiological culture of urine sample for bacterial isolation and identification revealed the presence of *E. coli* organisms. Schott (2004) [10] reported *E. coli*, *Proteus*, *Klebsiella*, *Corynebacterium*, *Staphylococcus*, *Streptococcus* and *Pseudomonas* as the most commonly isolated bacteria from horses with ascending cystitis. Antibiogram studies showed that the organisms were sensitive to the drugs enrofloxacin and sulfa trimethoprim. Traxer *et al*. (2001) [11] have also reported the effectiveness of enrofloxacin for the treatment of cystitis.

Haematological values were within the normal limits yet there was a relative increase in the proportion of neutrophils in LG stained blood smears. Biochemical analysis revealed a mild increase in the values of BUN (27. 38 mg/ dL) and Creatinine (2.45 mg/dL). Ultrasound examination of the bladder revealed an increase in the thickness of the bladder wall (Plate 4). Earlier, Freeman (2003) [12] also diagnosed haemorrhagic cystitis in a 22 year old warm blood gelding by observing a thickened bladder on transrectal ultrasonographic imaging of urinary bladder. Putting together all the above findings, cystitis was confirmed as the cause of haematuria in the present case.

Plate 1: Naturally voided tarry reddish brown urine on Day 1

Plate 2: Reddish urine collected by catheterisation

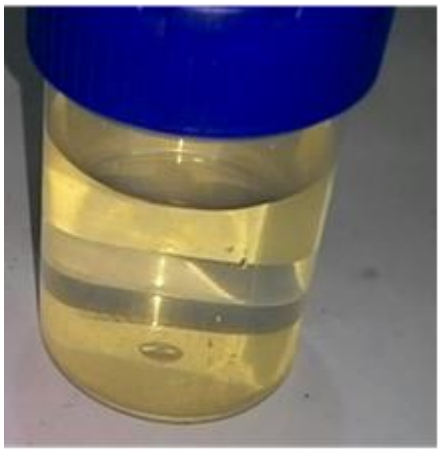

Plate 3: Clear, transparent urine post treatment

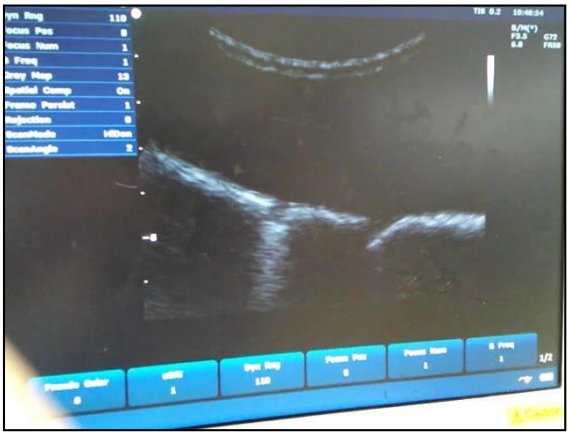

Plate 4: Thickening of bladder wall in untrasonography

Treatment and Discussion

In the present case, cystitis was suspected based on the clinical signs evinced and it was further confirmed by laboratory investigation and ultrasound imaging studies. Successful treatment of cystitis mostly depends on identifying and treating the cause which has led to the development of the condition. Schumacher *et al.* (2007) [13] have reported that primary cystitis occurs rarely in horses. Savage (2008) [14] also stated that horses have increased number of goblet cells secreting mucus into the renal pelvis and proximal ureters which protects them and for which horses rarely develop primary cystitis. Scott *et al.* (1995) [15] observed gross hematuria and pigmenturia in all horses during exercise at the

two higher intensities. Fischer *et al.* (1985) [16] reported on rectal examination to identify the effect of bladder neoplasia in horses. Hence, rectal examination was done in the pony to rule out the presence of primary and metastatic tumour masses which may be a reason for the development of cystitis. Urine sediment findings and imaging studies didn't reveal the presence of uroliths. Secondary causes other than bacterial infection could not be identified in our case. Hence, the pony was treated with combination of antibiotics, Trimethoprim/sulfadiazine @ 25 mg/kg bid per oral for 5 days and Inj. Enrofloxacin @ 5 mg/kg b.wt for 5 days along with styptics to arrest the bleeding. Earlier, Schumacher (2007) [13a] also opined that horses with haematuria should be treated with an antimicrobial drug that can be excreted in high concentration in urine such as penicillin, gentamicin, amikacin, enrofloxacin, or trimethoprim-sulfa based on drug sensitivity studies. Smith *et al.* (2018) [17] have also treated all horses affected with hemorrhagic cystitis in their study by administering trimethoprim-sulfa drugs. Bladder lavage was done with 500 ml of normal saline for the initial two days. Post treatment, the animal resumed to its normal feeding habits and voided clear, transparent urine without any blood tinge or shreds (Plate 3). The sample was collected and analysed microscopically which also showed the absence of blood cells and inflammatory cells. The pony recovered completely after five days with no relapse of the condition when reviewed further at weekly intervals for a month.

Conclusion

The clinical presentation of cystitis in a pony and its diagnosis by clinical examination, laboratory investigations and ultrasonographic findings and successful treatment with a combination of antibiotics and styptics has been discussed.

Acknowledgements

The Authors are thankful to the Director of Clinics, Madras Veterinary College, TANUVAS for providing the necessary facilities for the conduct of the study.

Conflicts of Interest

There is no conflict of interest.

References

1. Kader, NAAE, Farghali HA, Abu-Seida AM, Salem NY, Khattab MS. Evaluation of chromo cystoscopy in the diagnosis of cystitis in female donkeys. Plos one. 2018;13(8):e0202596.
2. Johnson PJ, Goetz TE, Baker G, Foreman JH. Treatment of two mares with obstructive "vaginal" urinary outflow incontinence. Journal of the American Veterinary Medical Association. 1987;191:973-975.
3. Schumacher J, Schumacher J, Schmitz D. Macroscopic hematuria of horses. Equine Veterinary education, 2002;14:201-210.
4. Aleman M, Nieto JE, Higgins JK. Ulcerative cystitis associated with phenylbutazone administration in two horses. Journal of the American Veterinary Medical Association. 2011;239:499-503.
5. Raguvaran R, Gahlot H, Yadav N, Saxena AC, Singh BR. Therapeutic management of haemorrhagic cystitis in a horse. The Haryana Veterinarian. 2021;60:149-151.
6. Grimes M, Heseltine JC, Nabity MB, Lawhon SD, Wheeler L, Cigarroa A, Lidbury JA. Characteristics associated with bacterial growth in urine in 451 proteinuric dogs (2008-2018). Journal of Veterinary Internal medicine. 2020;34(2):770-776.
7. Bagley RS, Center SA, Lewis RM, Shin S, Dougherty SA, Randolph JF, Erb H. The effect of experimental cystitis and iatrogenic blood contamination on the urine protein/creatinine ratio in the dog. Journal of Veterinary Internal medicine, 1991;5(2):66-70.
8. Reed SM, Bayly WM, Sellon DC. Equine internal medicine. 2nd Edn, Saunders, Elsevier, USA, 2004.
9. Saulez MN, Cebra CK, Heidel JR, Walker RD, Singh R, Bird KE. Encrusted cystitis secondary to *Corynebacterium matruchotii* infection in a horse. Journal of the American Veterinary Medical Association. 2005;226(2):246-248.
10. Schott H. Urinary tract infections. In: Reed, S., Bayly, W. and Sellon, D. (Edn.), Equine Internal Medicine. 2nd Edn, WB Saunders, Philadelphia. 2004, 1253-1258.
11. Traxer O, Desgrandchamps F, Sebe P. Hemorrhagic cystitis: etiology and treatment. Progres En Urologie. 2001;11:591-601.
12. Freeman SL. Diagnostic ultrasonography of the mature equine abdomen. Equine Veterinary Education. 2003;15(6):319-330.
13. Schumacher J. Hematuria and pigmenturia of horses. Veterinary Clinics of North America: Equine Practice. 2007;23:655-675.
14. Savage CJ. Urinary clinical pathologic findings and glomerular filtration rate in the horse. Veterinary Clinics of North America: Equine Practice. 2008;24(2):387-404.
15. Scott HC, Hodgson DR, Bayly WM. Hematuria, pigmenturia and proteinuria in exercising horses. Equine Veterinary Journal. 1995;27:67-72.
16. Fischer AT Jr, Spier S, Carlson GP, Hackett RP. Neoplasia of the equine urinary bladder as a cause of hematuria. Journal of the American Veterinary Medical Association. 1985;186:1294-1296.
17. Smith FL, Magdesian KG, Michel AO, Vaughan B, Reilly CM. Equine idiopathic hemorrhagic cystitis: Clinical features and comparison with bladder neoplasia. Journal of Veterinary Internal medicine. 2018;32(3):1202-1209.