Successful Medical Treatment of Haemorrhagic Cystitis in a Dog

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Author’s contribution

The sole author designed, analyzed and interpreted and prepared the manuscript.

ABSTRACT

Aims: To evaluate the aetiology and medical treatment of haemorrhagic cystitis in a nine-month-old Caucasian dog.

Place and Duration of Study: The study was carried out in the Veterinary Teaching Hospital, Michael Okpara University of Agriculture, Umudike for a period of 3 weeks.

Methodology: In this study, clinical examination revealed blood in urine (haematuria), painful urination (dysuria), hyperaemic mucus membrane, ocular discharges, mild tick infestation and evidence of pain on the bladder on palpation. Blood sample was collected to determine the haematological changes and to check for haemoparasites. Urine was also collected with the aid of a catheter for urinalysis and culture.

Results: No haemoparasite was seen in the thin smear stained with giemsa. The result of the haematology were as follows; packed cell volume (PCV) 22%, Haemoglobin concentration (HB) 8.0 g/dl, total leucocyte count 9500 (103/µL) and differential leucocyte counts were; neutrophils 52%, lymphocyte 36%, eosinophil 7%, monocytes 3% and basophils 2%. The urinalysis revealed the presence of oxalate crystals, nitrate, proteinuria, urine PH (6.0), bloody and turbid urine. The culture showed pure growth of Streptococcus species sensitive to gentamicin. Based on the case history, clinical examination and laboratory diagnosis, the condition was diagnosed to be canine

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1. INTRODUCTION

Haemorrhagic cystitis is an inflammatory disease of the bladder caused by infectious and non-infectious agents resulting in the bleeding from the bladder mucosa [1]. The disease is characterized by presence of blood in urine (haematuria), painful urination (dysuria) and abnormal frequent urination (pollakiuria). The most common infectious agent is bacterial and usually responds promptly to treatment. The bacteria commonly known to cause haemorrhagic cystitis are Escherichia coli, Staphylococcus saprophyticus, Proteus mirabilis and Klebsiella species [2]. The fungal organisms associated with haemorrhagic cystitis are Candida albicans, Cryptococcus neoformans, Aspergillus fumigates and Torulopsis glabrata. The polyma virus, adenovirus and herpes virus have also been implicated in haemorrhagic cystitis in pediatrics and immunocompromised patients [3,4]. Polyma virus has been reported to cause haemorrhagic cystitis in 5.7-7.7% of bone marrow transplant recipient [5]. Echinococcus granulosus infections can also lead to calified cysts formation that may penetrate the bladder wall resulting in haematuria and cystitis [1].

Chronic and recurrent haemorrhagic cystitis usually result due to cancer chemotherapy or exposure to radiation when undergoing treatment for pelvic malignancies. A wide range of chemotherapeutic agents are known to predispose dogs to haemorrhagic cystitis. Oxazaphosphprine compounds such as cyclophosphamidc and ifosfamide are the most important among the group because of its regular use in managing cancers patients. Urinary tract toxicity with these agents is usually associated with dose administered. Haemorrhagic cystitis has been reported in dogs treated with cyclophosphamide [6]. Cyclophosphamide is an immunosuppressive drug and is used in dogs for treating lymphosarcoma, mastocytoma, transmissible venereal tumor, bladder carcinoma, macroglobulinemia, multiple myeloma, and autoimmune diseases. It can cause bone marrow depression and cystitis, which may be associated with induction of transitional cell carcinoma [7]. In humans, adverse effects of cyclophosphamide ingestion can be leukopenia, anorexia, nausea, sterile haemorrhagic cystitis, which often can be fatal, and nephrotoxicity with haemorrhage and clot formation in the renal pelvis. Haematuria can persist for several months after drug withdrawal [8].

Some topical agents can also cause haemorrhagic cystitis through direct contact on bladder mucosa. Intraurethral insertion of nonoxynol-9 has also been reported to cause haemorrhagic cystitis [1]. Other agents that may lead to development of haemorrhagic cystitis include allopurinol [9], methaqualone [10], methenamine mandelate [11], gentian violet [12] and insertion of acetic acid on the bladder mucosa [13]. Contact with chemicals such as aniline and toluidine are known to cause haemorrhagic cystitis besides predisposing to development of urothelial cancer. Ingestion, inhalation or direct skin contact with the pesticide chlorodimeform, commonly used on cotton plants and fruit trees productions, can also lead to haemorrhagic cystitis which is due to its metabolite 2-methylaniline, which is an aniline derivative. In most cases, the haematuria is self-limiting once exposure to the offending chemical agent is eliminated [14].

Cases of haemorrhagic cystitis could be challenging and frustrating problem to the clinician or urologist and could lead to unthriftiness and even death in some patients. This work therefore presents a case of haemorrhagic cystitis in a dog and the management procedures employed.

2. CASE HISTORY

A nine-month-old male Caucasian dog weighing 30 kg was presented to Veterinary Teaching Hospital, Michael Okpara University of Agriculture, Umudike with a history of blood in urine (haematuria) and painful urination (dysuria).
3. RESULTS

be more severe reoccur after prophylactic measures and could be more severe, causing pain, prolonged hospitalization and increased rate of morbidity and mortality. Severe haemorrhagic cystitis presents with gross haematuria, blood clots and life threatening complications. Several methods have been advocated in the treatment of complications arising from severe haemorrhagic cystitis. These methods include procedures such as local bladder instillation of aluminum, formalin, phenol, silver nitrate and prostaglandin or surgical interventions such as cystoscopy, suprapubic cystotomy, and open cystotomy with simultaneous urinary diversion [17,18]. Patients who are treated surgically are at more risk of death or mortality than patients whose haemorrhagic cystitis resolves with medical management only [18]. Drug induced haemorrhagic cystitis is managed by withdrawing the drug or lowering the drug dosage. Continuous bladder irrigation (CBI) is also useful in these patients, because it reduces the length of exposure of the urothelium to acrolein thereby lowering the toxicity. Mensa (sodium 2-mercaptoethane sulfonate) has also been indicated in the prevention of haemorrhagic cystitis associated with ifosfamide and cyclophosphamide [19].

Radiation induced haemorrhagic cystitis is often difficult to treat due to the ischemic nature of the disease and lack of well-known and controlled clinical trials comparing the existing treatment options and guidelines [20]. Attempts have been made towards relieving radiation induced haemorrhagic cystitis using various oral agents such as steroids, vitamin E, trypsin and orgotein with no positive result. However, focusing the irradiation field and limiting the radiation dose to the bladder have been employed in reducing the incidence of haematuria and blood clots [1]. Hyperbaric oxygen (HBO) therapy has also been indicated in the management of radiation induced injuries [21].

Conjugated estrogens are useful and have been advocated for the treatment of viral and radiation induced haemorrhagic cystitis. Estrogens are thought to act by stabilisation of the microvasculature. Several studies have reported the use of oral and intravenous administration of conjugated estrogens with a varying degree of success ranging from 60% to 86% [22]. Sodium pentosan polysulfates have been suggested due to its uroprotective qualities that aids in the reduction of inflammatory response of the urothelium [23]. This compound enhances the surface glycosaminoglycans that have been disrupted by the inciting agents, thereby reducing the rate of bacterial colonization.

4. DISCUSSION

Based on the case history, clinical examination and laboratory diagnosis the condition was diagnosed to be canine haemorrhagic cystitis. Intravenous infusion of 5% dextrose saline was first administered followed by furosemide at a dose of 3 mg/kg BW, dexamethasone 0.2 mg/kg BW, gentamicin 5mg/kg BW and 3 ml of vitamin B-complex. The animal was monitored and supportive therapy continued for 5 days before discharging. Marked improvements were observed following this medication, the haematuria and dysuria reduced gradually. After one week the dog was represented in the clinic with no observable signs of haemorrhagic cystitis. Manikandan et al., [1] recommended hydration and forced diuresis as measure of alleviating haemorrhagic cystitis. Intravenous administration of saline and whole blood have been used successful to treat sever haemorrhagic cystitis in dog [6].

Continuous bladder irrigation, mesna and intravenous hydration are commonly employed as prophylactic measures for alleviation of haemorrhagic cystitis [15,16]. The disease can reoccur after prophylactic measures and could be more severe, causing pain, prolonged hospitalization and increased rate of morbidity and mortality.
thus reduces the risk of infection which is associated with haematuria.

5. CONCLUSION

Reports of canine haemorrhagic cystitis are infrequently reported in this part of the world, which could be attributed to the ignorant of some pet owners. It was concluded from the study that medical treatment should be considered in uncomplicated form of haemorrhagic cystitis and clinicians or urologists should properly evaluate the condition to determine the aetiologic agent and the predisposing factors.

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Author has declared that no competing interests exist.

REFERENCES


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Peer-review history:
The peer review history for this paper can be accessed here:
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