RECURRENT BACTERIAL CYSTITIS IN DOGS: CASE REPORT

https://doi.org/10.56238/levv15n39-181

Gabriele de Almeida[1], Lauren Menegat[2], Júlia Toffoli Maronezzi[3], Manuela Rocha Costa[4], Giovana Facchini[5] and Leticia Lais Zambiasi[6]

ABSTRACT

Urinary tract infection (UTI) is one of the most frequent causes of clinical care in dogs. Escherichia coli is the agent most associated with this morbidity, however, other bacteria may be involved, and tests for definitive diagnosis are indispensable. UTI can be classified as sporadic, recurrent, subclinical bacteriuria, or pyelonephritis. The objective of this report is to describe a case of recurrent cystitis as well as its diagnostic method and therapeutic approach in an 11-year-old male mixed breed dog, weighing 25 kg and presenting persistent hematuria. After anamnesis, clinical examination, laboratory tests and imaging, the predisposing factor and the causative agent were determined, and appropriate treatment was instituted with satisfactory clinical improvement.

Keywords: Urinary Tract Infection. Antibiogram. *Proteus Mirabilis*.

[1] Academic of Veterinary Medicine at University of Passo Fundo
[2] Veterinarian graduated from the University of Passo Fundo
[3] Academic of Veterinary Medicine at University of Passo Fundo
[4] Academic of Veterinary Medicine at University of Passo Fundo
[5] Academic of Veterinary Medicine at University of Passo Fundo
[6] Academic of Veterinary Medicine at University of Passo Fundo

INTRODUCTION

Urinary tract infection occurs when there are failures in the body's defense, allowing adhesion, persistence, and multiplication of virulent bacteria in one or more segments (1). Bacteria can be limited to one or more locations: in the urinary bladder (cystitis), in the ureters (urethritis), in the kidneys (pyelonephritis) or in the urethra (urethritis) (1).

Escherichia coli is the agent most associated with UTI in dogs (1). Urinary tract disorders are classified as: sporadic bacterial cystitis, recurrent bacterial cystitis, subclinical bacteriuria or pyelonephritis (2).

Recurrent cystitis occurs when there are three or more episodes in 12 months or two episodes in six months (3-5). Imaging tests, urinalysis, culture with antibiogram and investigation of underlying comorbidities can be used in the diagnosis (6).

The report aims to describe the diagnosis and therapeutic approach in a dog with recurrent bacterial cystitis caused by *Proteus mirabilis*. It seeks to emphasize the importance of complementary tests for diagnosis and to make professionals aware of the importance of performing culture and antibiogram in order to avoid bacterial resistance with the indiscriminate use of antibiotics.

CASE DESCRIPTION

An 11-year-old mixed breed male canine, weighing 25 kg, was seen with a complaint of recurrent hematuria even after previous treatments with various antibiotics. On physical examination, significant pain in the thoracolumbar spine, slight atrophy of muscle mass in the pelvic limbs, and difficulty in lying down and standing up were observed. Other parameters were within the normal range.

Radiographs showed discopathy in the thoracolumbar spine (T12-13) and osteoarticular degenerative process in the thoracolumbar and lumbosacral spine. On ultrasound, there was thickening of the bladder wall, lumps, and a large amount of suspended sediment. A urine sample was collected by cystocentesis for urinalysis and culture with antibiogram.

Moderate presence of bacteria and traces of blood, large number of desquamative and transitional cells were noted in the urinalysis. There was growth of *Proteus mirabilis* and sensitivity to amoxicillin with clavulanate potassium in the culture and antibiogram (Figure 1).

Thus, the use of amoxicillin with potassium clavulanate 500mg, BID, was prescribed for 20 days. In addition to pregabalin 100mg, BID for 90 days, bedinvetmab 15mg/ml every 30 days and physiotherapy.

DISCUSSION

Recurrent bacterial cystitis is defined as an infection facilitated by an anatomical or functional abnormality or a comorbidity that favors the persistence or failure of treatment (7). Among the main abnormalities are the processes that interfere with the animal's immunity and urination (1).

The patient in this report presented discopathy in the thoracolumbar spine and osteoarticular degenerative process in the thoracolumbar and lumbosacral spine. These changes caused pain and discomfort in the animal when adopting a position to urinate, making it difficult to completely empty the bladder and facilitating bacterial proliferation. Initially, the animal was treated only with antibiotic therapy without paying attention to pain control, contributing to the cystitis becoming recurrent.

For the diagnosis of clinical cystitis, the presence of lower urinary tract signs such as hematuria, pyuria, bacteriuria and positive bacterial culture are considered (6). In addition to image changes such as uroliths or masses (6).

On the patient's ultrasound, there was thickening of the bladder wall, lumps, and a large amount of suspended sediment. Urinalysis showed the presence of bacteria and traces of occult blood, a high number of desquamative and transitional cells. In culture, the growth of *Proteus mirabilis was observed*. By summing these results, the presence of bacterial cystitis can be determined.

The identification and management of risk factors, as well as the analysis of relevant comorbidities, are essential for the success of treatment (6). In the case report described, bacterial infection treated with appropriate antibiotic therapy was associated with physical therapy sessions, analgesics for chronic pain, and immunomodulators to avoid recurrence or treatment failure.

The animal had developed resistance to several antibiotic classes (Figure 1). The indiscriminate use of antibiotics without the result of culture increases the percentage of resistant strains, making therapeutic intervention in affected patients difficult, facilitating dissemination in the environment and infection in other animals (8).

Figure 1 - Culture and antibiogram and canine with recurrent cystitis showing growth of the Proteus *mirabilis bacterium* in a urine sample

Cultura + Antibiograma (Aeróbicas)

Material: URINA
Metodo de obtenção: RECEBIDA
Metodologia identificação: AUTOMAÇÃO (PHOENIX-BD)
Metodologia antibiograma: AUTOMAÇÃO (PHOENIX-BD) E/OU DISCO-DIFUSÃO

Resultado: **Houve crescimento bacteriano**

Bactéria 1: **Proteus mirabilis**
Padrão de crescimento: **1.000.000 UFC/mL**

Interpretação: I = Sensível, aumentando a exposição; S = Sensível, dose padrão; R = Resistente; N =Sem critérios interpretativos.

	BACTERIA 1					
ANTIBIOGRAMA	MIC	S/I/R				
Amicacina	8	S				
Amoxicilina-Clavulanato (f)	4/2	S				
Ampicilina	>8	R				
Ampicilina-Sulbactam	-	S				
Cefalexina	>16	R				
Cefovecin	-	R				
Ceftriaxona	>2	R				
Ciprofloxacina	>1	R				
Doxiciclina	-	R				
Enrofloxacina	-	R				
Gentamicina	2	S				
Marbofloxacina	-	S				
Nitrofurantoína	>64	R				
Norfloxacina	>2	R				
Trimetoprim-Sulfametoxazol	>4/76	R				

CONCLUSION

Detailed anamnesis, complete physical examination, and complementary laboratory and imaging tests are very important, especially in chronic cases. Although *Escherichia coli* is more associated with UTI in the literature, other bacteria can colonize and cause symptoms, as in the case report presented here. In view of this, it is possible to observe the importance of urine culture testing, the identification of the agent and the characterization of antibiotic sensitivity, which can direct treatment and avoid further situations of bacterial resistance.

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