

Antimicrobial sensitivity of gram negative bacteria isolated from recurrent pyoderma in dogs

B. Sudhakara Reddy¹, K. Nalini Kumari² and S. Sivajothi³

¹Department of Veterinary Medicine), TVCC, College of Veterinary Science, Proddatur, Andhra Pradesh, India

²Department of Veterinary Medicine, College of Veterinary Science, Tirupati, Andhra Pradesh, India

³Department of Veterinary Parasitology, College of Veterinary Science, Proddatur, Andhra Pradesh, India

ABSTRACT

Gram negative bacteria were isolated from the dogs with recurrent pyoderma along with staphylococci and subjected to antibiotic sensitivity test. Four isolates of *Pseudomonas* were sensitive only to enrofloxacin, ciprofloxacin, amikacin and gentamicin. Similarly, the eight isolates of *Klebsiella* were susceptible to cefpodoxime, cefpodoxime with clavulanic acid, enrofloxacin, ciprofloxacin and amoxicillin with sulbactam, gentamicin and chloramphenicol. Hundred per cent sensitivity was exhibited by cefpodoxime, cefpodoxime with clavulanic acid, enrofloxacin, ciprofloxacin and amoxicillin with sulbactam, gentamicin and amikacin against *E.coli*. All the isolates were sensitive to enrofloxacin, ciprofloxacin, gentamicin and resistant to cephalixin, amoxicillin with clavulanic acid, lincomycin.

Key words: Gram negative bacteria, ABST, Recurrent Pyoderma, Dogs

INTRODUCTION

Ninety per cent of canine pyoderma is associated with *Staphylococcus* family of bacteria. In certain situations, there may be secondary invaders like *Pseudomonas aeruginosa*, *Proteus spp.* and *E.coli*. Anaerobic bacteria are less common, but may occur in deep infections as opportunistic pathogens [1]. Literature on antibiotic sensitivity of gram negative bacteria from recurrent pyoderma dogs was very little. In the present communication, the gram negative bacteria isolated in dogs with recurrent pyoderma and their sensitivity for different antibiotics are reported.

MATERIALS AND METHODS

Forty six dogs of both sexes belongs to different breeds, aged between 1 year and 8 years with a history of recurrent skin problems that were referred to College Hospital, Tirupati during three years period were included in the present study. Infected material was collected by means of sterile swabs from all the dogs and processed for isolation of bacteria. Based on the biochemical tests and growth on selective media, differentiation of bacteria was done. Pure isolates of different gram negative bacteria was isolated by serial streaking and antibiotic sensitivity was carried out. The antibiotic sensitivity of the individual isolates was done *in-vitro* by disc diffusion method on Muller Hinton Agar plates with different antibiotic discs i.e., Cephalexin (30 mcg), Cephadroxil (30 mcg), Cefpodoxime (10 mcg), Cefpodoxime and Clavulanic acid (10/5 mcg), Enrofloxacin (10 mcg), Ciprofloxacin (10 mcg), Amoxicillin and Clavulanic acid (10 mcg), Amoxicillin and sulbactam (30/15 mcg), Lincomycin (15 mcg), Co – Trimoxazole (25 mcg), Amikacin (10 mcg), Gentamicin (30 mcg), Erythromycin (10 mcg), Azithromycin (30 mcg), Chloramphenicol (10 mcg) and Tylosine (15 mcg). The sensitivity patterns of isolates to different antibiotic discs were read by measuring the diameter of zone of inhibition in millimeter as per the chart provided by manufacturer. All the isolates were classified as resistant, intermediate and susceptible to antimicrobial tested in accordance with the guidelines provided by performance standards for antimicrobial disc susceptibility tests.

RESULTS AND DISCUSSION

Cultural examination revealed *Staphylococci* in all the dogs, twenty six cases had other bacteria like *Streptococci* (17.3%), *Klebsiella* (17.3%), *Escherichia coli* (13%) and *Pseudomonas* (8.7%) along with *Staphylococci*. Antibiotic sensitivity pattern of gram negative bacteria is summarized in the table-1.

Table 1: Pattern of antibiotic sensitivity of Gram negative bacteria in recurrent pyoderma

S. No	Name of Chemotherapeutic agent	<i>Pseudomonas spp.</i>						<i>Klebsiella spp.</i>						<i>Escherichia coli spp.</i>					
		Sensitive bacteria				Resistant bacteria		Sensitive bacteria				Resistant bacteria		Sensitive bacteria				Resistant bacteria	
		S	I	Total	%	No	%	S	I	Total	%	No	%	S	I	Total	%	No	%
1.	Cephalexin	0	0	0	0	4	100	0	0	0	0	8	100	0	0	0	0	6	100
2	Cephadroxil	0	0	0	0	4	100	0	6	6	75	2	25	0	0	0	0	6	100
3	Cefpodoxime	0	0	0	0	4	100	6	2	8	100	0	0	6	0	6	100	0	0
4	Cefpodoxime and Clavulanic acid	0	0	0	0	4	100	8	0	8	100	0	0	6	0	6	100	0	0
5	Enrofloxacin	2	2	4	100	0	0	8	0	8	100	0	0	6	0	6	100	0	0
6	Ciprofloxacin	4	0	4	100	0	0	8	0	8	100	0	0	6	0	6	100	0	0
7	Amoxicillin and Clavulanic acid	0	0	0	0	4	100	0	0	0	0	8	100	0	0	0	0	6	100
8	Amoxicillin and sulbactam	0	0	0	0	4	100	8	0	8	100	0	0	4	2	3	100	0	0
9	Lincomycin	0	0	0	0	4	100	0	0	0	0	8	100	0	0	0	0	6	100
10	Co - Trimoxazole	0	0	0	0	4	100	0	4	4	50	4	50	0	2	2	33.3	4	66.6
11	Amikacin	4	0	4	100	0	0	4	0	4	50	4	50	4	2	6	100	0	0
12	Gentamicin	4	0	4	100	0	0	8	0	8	100	0	0	6	0	6	100	0	0
13	Erythromycin	0	0	0	0	4	100	0	4	4	50	4	50	0	2	2	33.3	4	66.6
14	Azithromycin	0	0	0	0	4	100	4	2	6	75	2	25	0	2	2	33.3	4	66.6
15	Chloramphenicol	0	0	0	0	4	100	8	0	8	100	0	0	4	0	4	66.6	2	33.3
16	Tylosine	0	0	0	0	4	100	0	0	0	0	8	100	0	2	2	33.3	4	66.6

S: Sensitive
I: Intermediate Sensitive

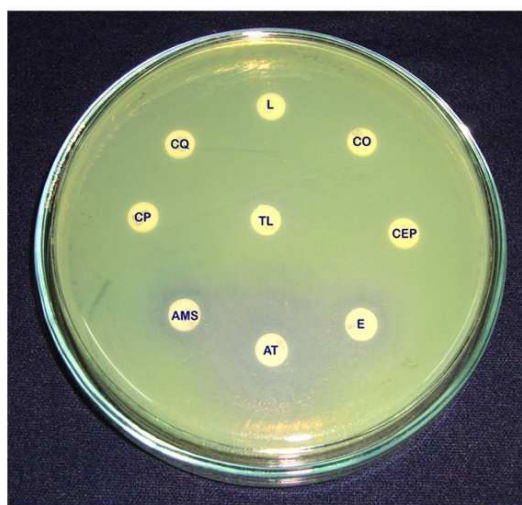


Figure-1: Antibiotic sensitivity pattern by *Pseudomonas* spp.

The four isolates of *Pseudomonas* were sensitive to enrofloxacin, ciprofloxacin, amikacin and gentamicin. Isolates were resistant to cephalexin, cephadroxil, cefpodoxime, cefpodoxime with clavulanic acid, amoxicillin with clavulanic acid, chloramphenicol, lincomycin, co-trimoxazole, erythromycin, azithromycin and tylosin (Figure-1). The present findings are in accordance with Wilkoek *et al.* [2] who stated that *Pseudomonas* isolates were resistant to enrofloxacin and amoxicillin with clavulanic acid. *Klebsiella* isolated in eight cases were susceptible to cefpodoxime, cefpodoxime with clavulanic acid, enrofloxacin, ciprofloxacin and amoxicillin with sulbactam, gentamicin and chloramphenicol (Figure-2). All isolates were resistant to cephalexin, amoxicillin with clavulanic acid, lincomycin and tylosin. Antibiotic sensitivity test done on pure isolates of *Escherichia coli* revealed that all isolates were sensitive to cefpodoxime, cefpodoxime with clavulanic acid, enrofloxacin, ciprofloxacin and

amoxicillin with sulbactam, gentamicin and amikacin. All isolates showed resistance to cephalexin, cephadroxil, amoxicillin with clavulanic acid and lincomycin. Udayasree and Pillai reported that *E.coli*, *Klebsiella* and *P.aeruginosa* of their study were sensitive to ciprofloxacin and enrofloxacin [3]. In vitro resistance exhibited by *Pseudomonas* towards cephalexin and co-trimoxazole was in agreement with Petersen *et al.* [4]. In vitro resistance exhibited by *P.aeruginosa* towards cefpodoxime and cefpodoxime with clavulanic acid was in accordance with Rosenkrantz [5]. However, antibiotic sensitivity of isolates recovered from recurrent pyoderma in dogs varies depending on the use of antibiotics in the region [6].



Figure-2: Antibiotic sensitivity pattern by *Klebsiella* spp.

CONCLUSION

In conclusion, whenever recurrent pyoderma in dogs is associated with gram negative bacteria antibiotics like enrofloxacin, ciprofloxacin and gentamicin had the good antibiotic effect. All the isolates were resistant to cephalexin, amoxicillin with clavulanic acid and lincomycin.

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