Antimicrobial susceptibility of clinical isolates of *Pseudomonas aeruginosa* from dogs in Grenada

Harry Hariharan*, Erica Brathwaite Sylvester and Vanessa Matthew
Pathobiology Academic Program, School of Veterinary Medicine, St. George’s University, P.O.Box 7, St. Georges, Grenada, W.I.

*Corresponding author: E-mail: hhariharan@sgu.edu

Abstract

A total of 44 isolates of *Pseudomonas aeruginosa* were recovered from various clinical conditions during the last 5 years from dogs in Grenada. The majority of isolates originated from otitis, and skin conditions including dermatitis, wounds, and abscesses. The isolates were tested for their susceptibility to 6 antibiotics using a standard disk diffusion test. Resistance was least to gentamicin (9.8%), followed by enrofloxacin (15.8%), and neomycin (41.8%). Resistance to tetracycline was 85.3%, and all isolates showed inherent resistance to amoxicillin-clavulanic acid and cephalothin.

Key words: *Pseudomonas aeruginosa*, dogs, clinical, drug resistance, Grenada

Introduction

Unlike other Gram-negative bacterial pathogens, *Pseudomonas aeruginosa* is intrinsically insensitive to many antimicrobial drugs due to the low rate of passage of antibiotics across its outer membrane1. Though antipseudomonal drugs, such as amikacin, gentamicin, and carbenicillin, are used against infections caused by ibis organism, comparatively less expensive drugs, such as tetracycline, do have application in veterinary medicine2. Monitoring of drug susceptibility trends may help to determine the possible use of a drug or a group of drugs in a specific animal species3. Though individual antibiograms are necessary for successful therapy, knowledge of general susceptibility patterns may be helpful in certain situations. Lack, of response of a Gram-negative bacterial infection to drugs such as amoxicillin clavulanic acid and trimethoprim-sulfa may sometimes indicate possible *Pseudomonas* infection. Empirical therapy may be required when culture and sensitivity tests are not done or not feasible.

There have been no published surveys on antibiotic susceptibilities of *P. aeruginosa* strains associated with clinical diseases in dogs in Grenada. For this reason, we conducted a retrospective study of all consecutive isolates of *P. aeruginosa* from clinical cases in dogs during the last 5 years by reviewing the reports of the Bacteriology Diagnostic Laboratory of the School of Veterinary Medicine, St. George’s University (SGU), Grenada, which receives specimens for routine culture and sensitivity testing from the clinics in Grenada, including the SGU Small Animal Hospital.

Materials and Methods

Clinical specimens were cultured aerobically on blood agar (Columbia agar with 5% sheep blood, Remel, Lenexa, KS, USA) and MacConkey agar (Remel) at 37°C. Isolates of *Pseudomas aeruginosa* were identified by the methods described by Quinn *et al*4. Antimicrobial susceptibility testing was performed on Mueller-Hinton agar (Remel) by the Kirby-Bauer disk diffusion method as outlined by Quinn *et al*4. The disks used were: amoxicillin-clavulanic acid, cephalothin, enrofloxacin, gentamicin, neomycin, and tetracycline. The zone-sizes were interpreted according to the criteria set by the National Committee for Clinical Standards (NCCLS) for bacteria isolated from animals5. An *E. coli* strain ATCC 25922 (American Type Culture Collection), susceptible to all drugs was used as a control. For the purpose of analysis, intermediate susceptibility was also regarded as susceptible.

Results

Of a total of 44 clinical samples from dogs, 21 (47.7%) were from cases of otitis externa, 10 (22.7%) from cases of dermatitis, wounds and abscesses, 8 (18.2%) from urine samples, 3 (6.8%) from uterine or vaginal swabs,