



Antimicrobial Resistance in Canine Pyoderma: Clinical Isolates from a Veterinary Dermatology Clinic

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Abstract: Canine pyoderma represents one of the most frequently encountered bacterial skin diseases in veterinary dermatology and is increasingly complicated by the emergence of antimicrobial-resistant pathogens, particularly *Staphylococcus pseudintermedius*. The present study aimed to characterize bacterial isolates associated with superficial and deep pyoderma in dogs and to evaluate their antimicrobial susceptibility profiles in a clinical population presented to a university dermatology service. Samples were collected from 13 dogs with clinical signs consistent with superficial or deep pyoderma examined at the Dermatology Clinic of the Faculty of Veterinary Medicine in Timisoara between October 2024 and May 2025. Cytological examination confirmed bacterial infection in all cases prior to microbiological analysis. Bacterial culture and identification were performed using standard microbiological methods, and antimicrobial susceptibility testing was conducted using the Kirby-Bauer disk diffusion technique in accordance with Clinical and Laboratory Standards Institute guidelines. All samples yielded growth of *Staphylococcus* spp., confirming its primary etiological role in canine pyoderma within this cohort. Additional bacterial species were isolated in several cases, including *Pseudomonas* spp. and *Corynebacterium* spp., indicating the presence of polymicrobial infections in selected patients. High resistance rates were observed for several commonly prescribed antimicrobials, notably clindamycin, lincomycin, tetracycline, spectinomycin, and amoxicillin-clavulanic acid, which demonstrated complete resistance among tested isolates. In contrast, marbofloxacin, enrofloxacin, rifampicin, cefaclor, cefalexin, and florfenicol showed high levels of in vitro susceptibility. Statistical analysis using Fisher's exact test demonstrated a significant difference in resistance patterns between amoxicillin-clavulanic acid and marbofloxacin ($p = 0.00058$). These findings highlight the growing challenge of antimicrobial resistance in canine pyoderma and support current antimicrobial stewardship recommendations advocating routine culture and susceptibility testing, particularly in recurrent, deep, or treatment-refractory infections, in order to optimize therapeutic outcomes and reduce the risk of further resistance development.

1. INTRODUCTION

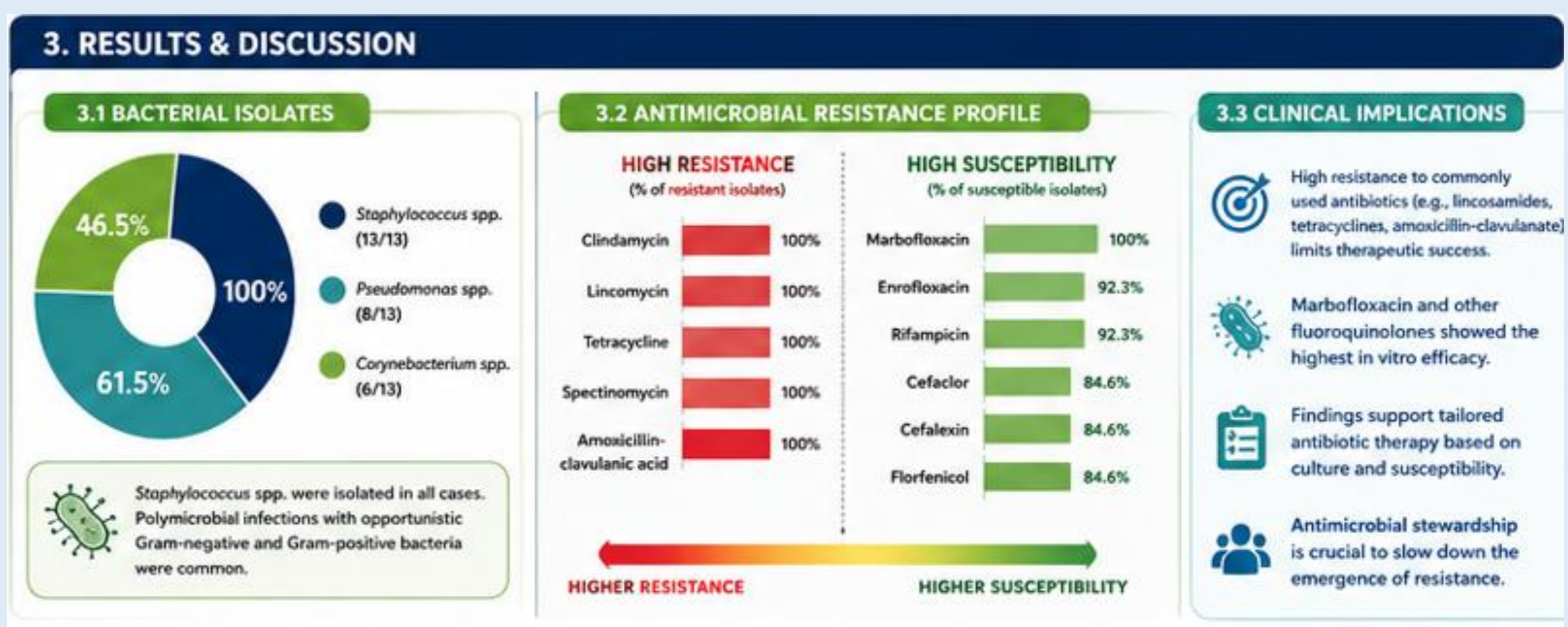
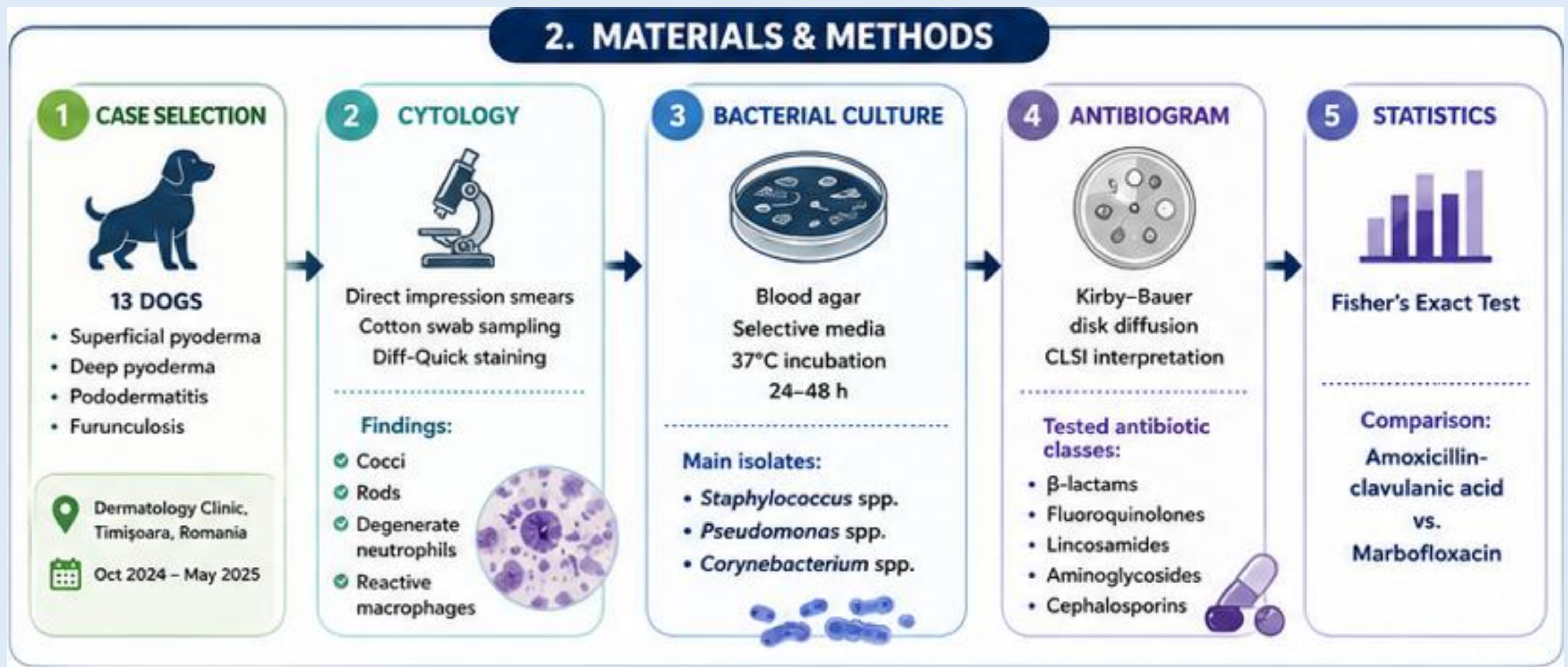
Canine pyoderma is one of the most common bacterial skin diseases and is increasingly complicated by antimicrobial resistance, especially involving *Staphylococcus pseudintermedius* and methicillin-resistant strains (MRSP).

Empirical systemic antibiotic use contributes to multidrug resistance and therapeutic failure.

Antimicrobial stewardship recommends routine culture and susceptibility testing, particularly in recurrent or deep infections.

KEY OBJECTIVES


- Characterize bacterial isolates from canine pyoderma
- Evaluate antimicrobial susceptibility patterns
- Assess resistance trends relevant to clinical dermatology practice

5. CONCLUSIONS & TAKE-HOME MESSAGES

- Increasing **multidrug resistance** observed in canine pyoderma.
- Resistance patterns compatible with **MRSP** emergence.
- Empirical antibiotic therapy may be ineffective.
- Culture + susceptibility testing strongly recommended in recurrent, deep or non-responsive cases.
- Topical therapy should be prioritized whenever possible. Antimicrobial stewardship is essential.

OVERALL MESSAGE: Appropriate diagnostics, targeted therapy and responsible antibiotic use are key to **improving outcomes** and **reducing antimicrobial resistance** in dogs.



KEYWORDS
 Canine pyoderma, *Staphylococcus pseudintermedius*, MRSP, antimicrobial resistance, antibiogram, stewardship.

STATISTICAL ANALYSIS
 Fisher's Exact Test
 Amoxicillin-clavulanic acid vs. Marbofloxacin
p = 0.00058
 Significant difference in resistance profiles