Canine Pyoderma

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Types of pyoderma

- Superficial Pyoderma
- Deep Pyoderma
- Chin Pyoderma
- Skin Fold Pyoderma
- Muco-Cutaneous Pyoderma
- Interdigital Pyoderma

Causative organism

- Staphylococcus pseudintermedius
- Staphylococcus schleiferi
- Pseudomonas
- E. coli
- Proteus
- Klebsiella
- Streptococcus

Secondary disease

- Parasitic (Demodex, Sarcoptes etc.)
- Hypersensitivity (Atopic, Flea Bite, Food)
- Endocrinopathy (Hypothyroidism, Hyperadrenocorticism)
- Immunosuppressive Therapy (Steroids)
- Autoimmune Disease
- Trauma or Bite Wound

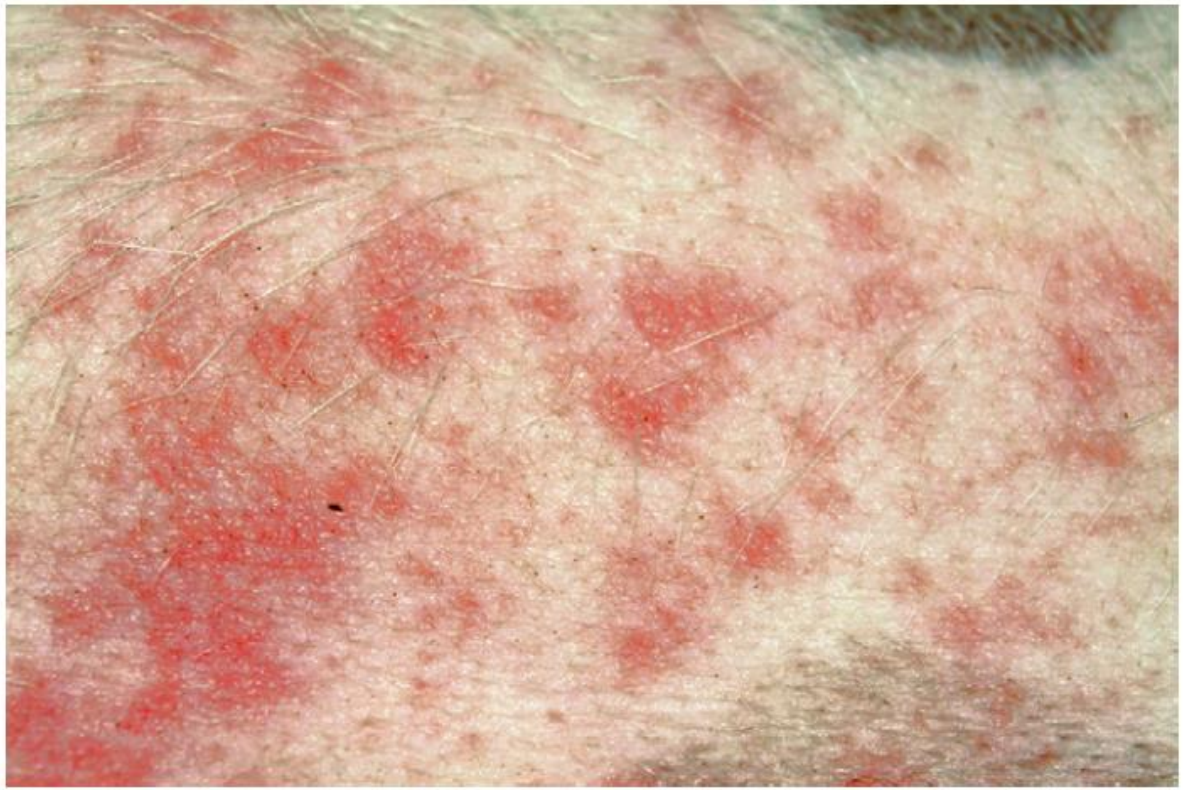

FIGURE 3-11 Superficial Pyoderma. Close-up of the papular rash in Figure 3-10.

FIGURE 3-12 Superficial Pyoderma. This papular dermatitis forms coalescing lesions as demonstrated by the erythematous plaque. Note the early epidermal collarettes associated with some papules.

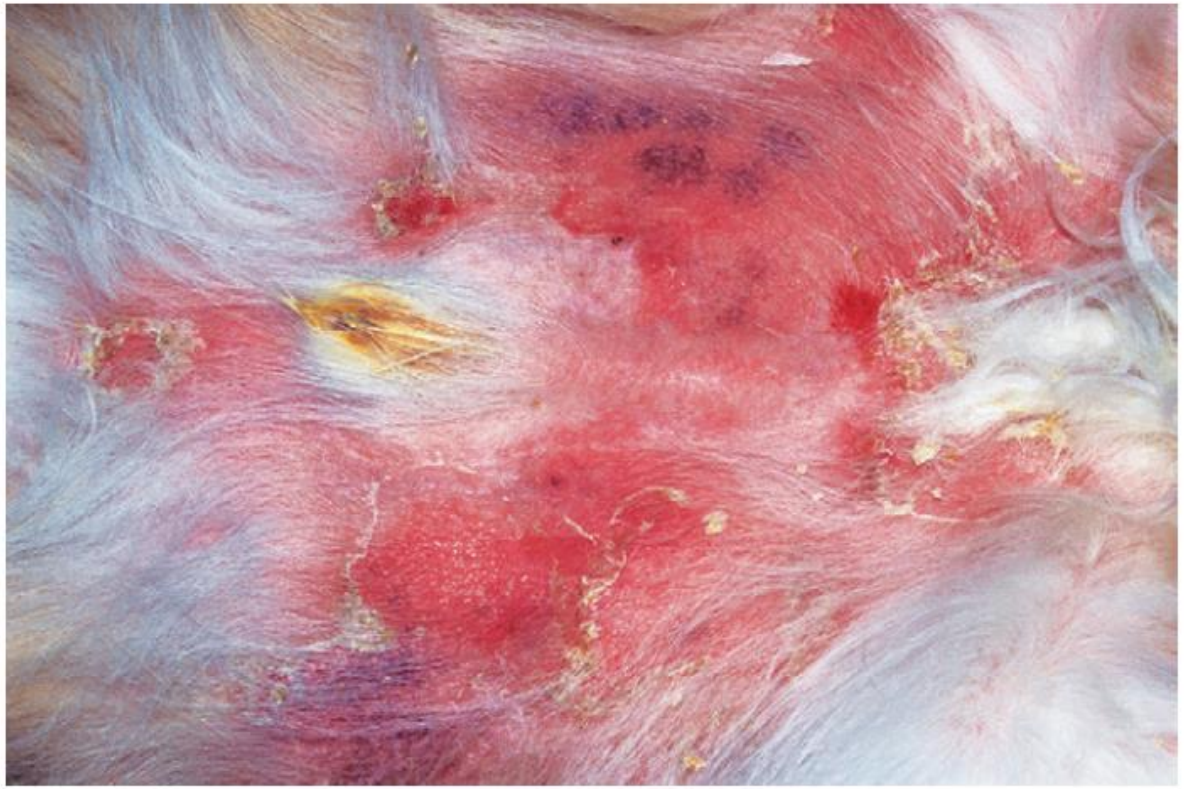

FIGURE 3-13 Superficial Pyoderma. Severe erythematous dermatitis with large epidermal collarettes caused by a multidrug-resistant infection.

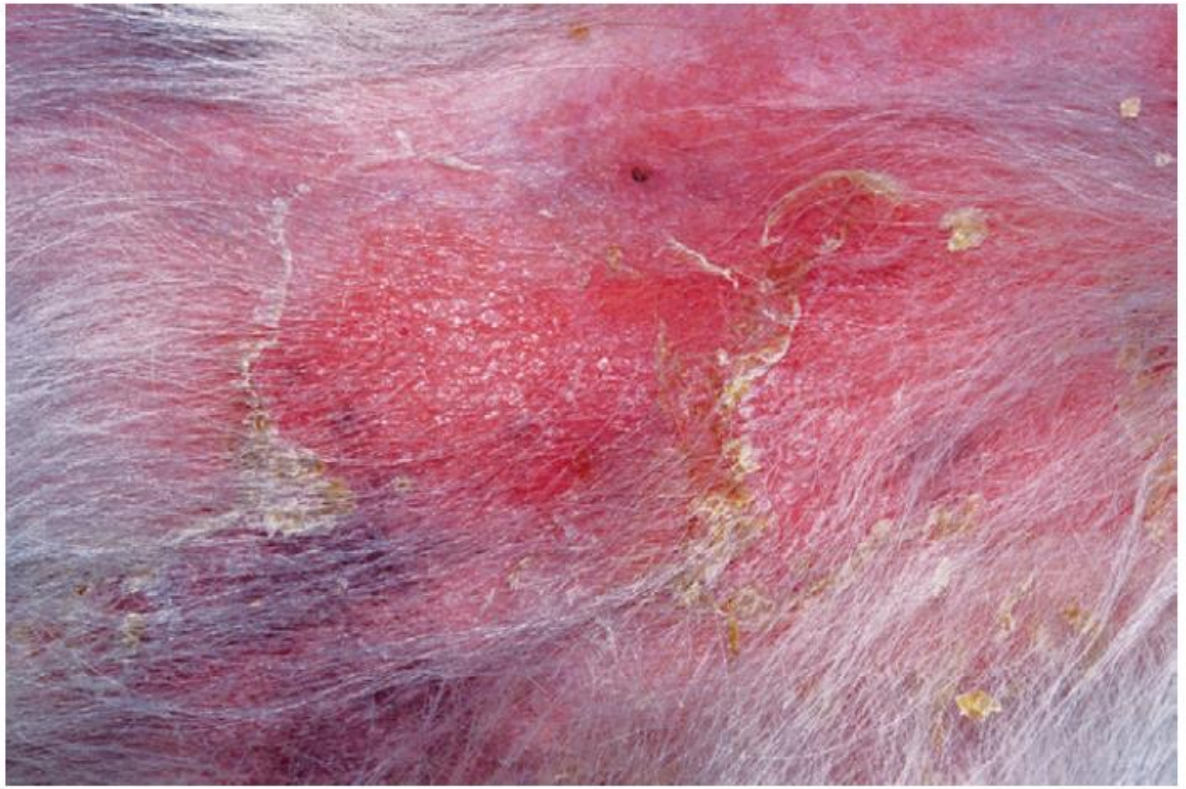

FIGURE 3-14 Superficial Pyoderma. Close-up of the dog in Figure 3-13. Erythematous dermatitis with epidermal collarettes formation is apparent.

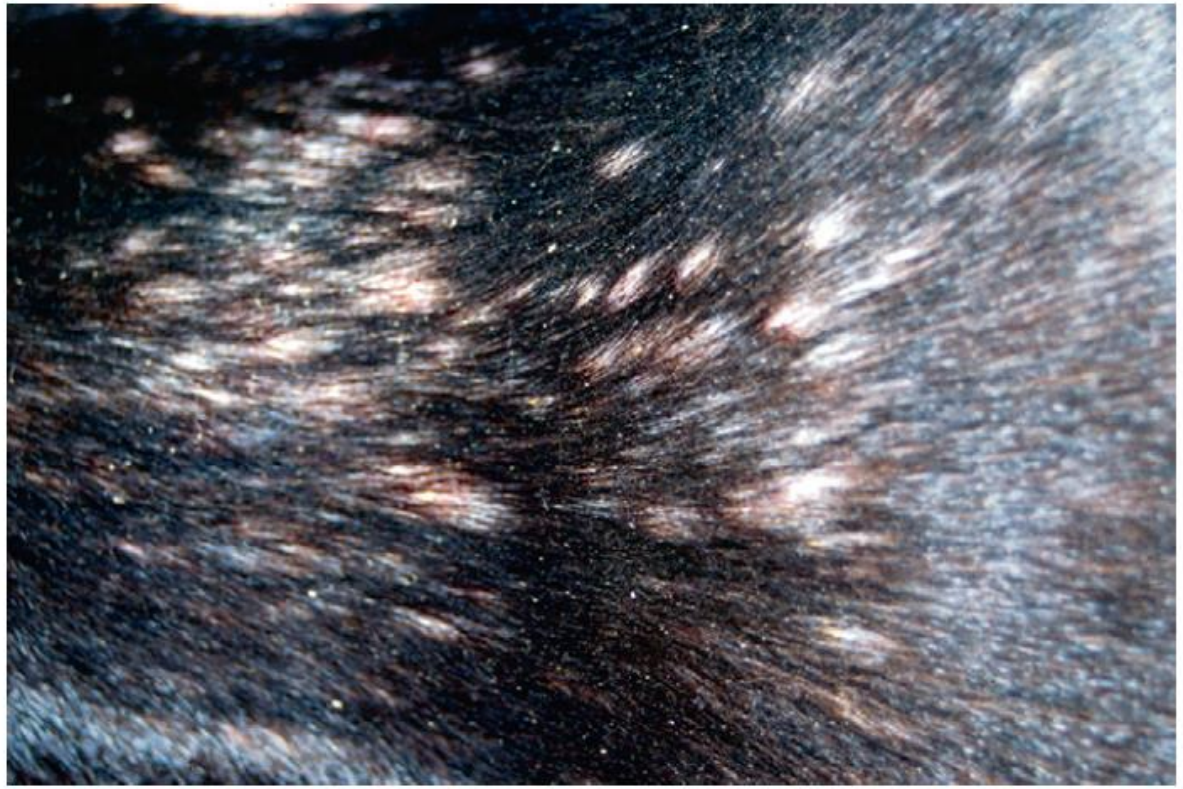

FIGURE 3-17 Superficial Pyoderma. The moth-eaten alopecia is typical of pyoderma in short-coated breeds.

FIGURE 3-18 Superficial Pyoderma. Focal papules and crusts caused by pyoderma can be hidden by a dense fur coat. A window was clipped within the fur coat to reveal these lesions.

FIGURE 3-15 Superficial Pyoderma. More typical epidermal collarettes in a dog with resolving pyoderma.

FIGURE 3-16 Superficial Pyoderma. This moth-eaten texture of the hair coat is a characteristic finding in short-coated breeds with pyoderma.

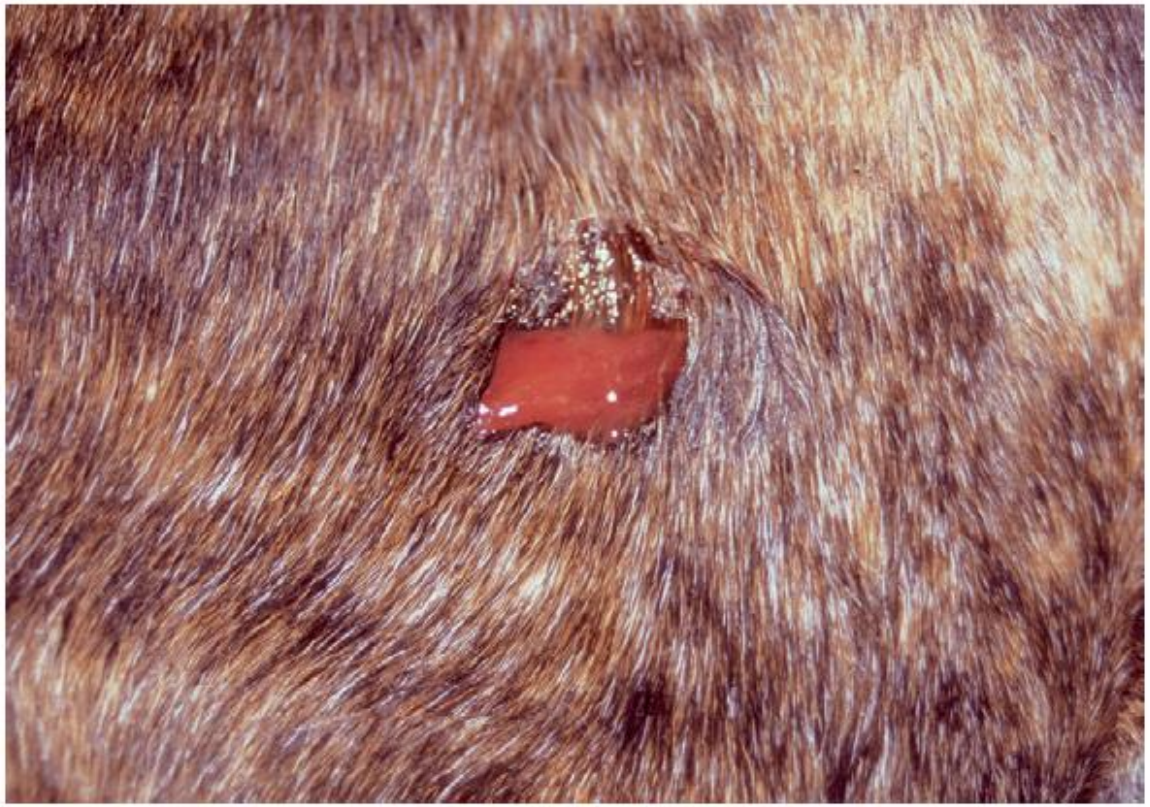

FIGURE 3-43 Deep Pyoderma. Purulent exudate from a deep ulcerative lesion and draining tract.

FIGURE 3-44 Deep Pyoderma. Patchy alopecia with focal crusted lesions covering ulcers and draining tracts. Note that deep pyoderma (cellulitis) affects a large region of skin, rather than discrete papules or pustules typical of superficial pyoderma.

FIGURE 3-47 Deep Pyoderma. Diffuse erythematous dermatitis of the foot. The medial digit is the site of previous surgery; it subsequently became infected with *Pseudomonas*. Note that dermatitis of surrounding tissue is caused by opportunistic infection at the surgical site.

FIGURE 3-48 Deep Pyoderma. Severe interdigital dermatitis (alopecia, erythema, lichenification) with a moist exudate and draining tract typical of deep pyoderma.

FIGURE 3-52 Chin Pyoderma. Severe papular crusting dermatitis with alopecia. Note that the purulent exudate suggests a deep infection.

FIGURE 3-53 Chin Pyoderma. Severe papular dermatitis with alopecia on the chin and upper lip.

FIGURE 3-55 Skin Fold Dermatitis. A mature Boxer with a deep facial skin fold. Dermatitis was not apparent until the skin fold was examined.

FIGURE 3-56 Skin Fold Dermatitis. Close-up of the dog in Figure 3-55. The skin fold was retracted, revealing a moist, erythematous dermatitis.

Diagnosis

- Differential Diagnosis
- Cytology (Pustule/Skin Impression)
- Dermatohistopathology
- Bacterial Culture

Treatment

1. Identify the underlying condition and treat it.
2. Systemic Antibiotics
    a) Superficial – 3-4 weeks + 1 week beyond
    b) Deep – 6-8 weeks + 2 week beyond
3. Concurrent Bathing – every 2-7 days (Chlorhexidine/Benzyl Peroxide)
4. If lesions don't completely resolve – Culture and Sensitivity

BOX 3-2 Antibiotics for Bacterial Skin Infection*

Antibiotic and Dose

First-Line Drugs

- Cefadroxil 22 mg/kg q 8–12 hours
- **Cefpodoxime** 5–10 mg/kg q 12–24 hours
- **Cefovecin** sodium (Convenia) 8 mg/kg SQ
- Cephalexin 22 mg/kg q 8 hours, or 30 mg/kg q 12 hours
- Cephradine 22 mg/kg q 8 hours
- Clavulanated amoxicillin 12.5 mg/kg q 8 hours or 22 mg/kg q 12 hours
- **Ormetoprim/sulfadimethoxine** (Primor) 55 mg/kg once on day 1, then 27.5 mg/kg q 24 hours
- Oxacillin 22 mg/kg q 8 hours
- Trimethoprim/sulfadiazine 22–30 mg/kg q 12 hours

Second-Line Drugs

- Chloramphenicol 30–50 mg/kg q 8 hours
- Clindamycin hydrochloride 11 mg/kg q 12 hours
- Erythromycin 10–15 mg/kg q 8 hours

*Antibiotics in bold are the author's preferred selections because of improved owner compliance.

Treatment

5. If antibiotic resistance
   a) Frequent Bathing
   b) 2 class of antibiotics
   c) Culture and sensitivity
6. Crusts should be loosened, Exudates should be removed, Warm Water soaks

Outline

Cited By (40)

ELSEVIER
Veterinary Microbiology
Volume 150, Issues 3–4, 2 June 2011, Pages 302-308

Risk factors associated with the antimicrobial resistance of staphylococci in canine pyoderma

Belén Huerta [a], Alfonso Maldonado [a], Pedro J. Ginel [b], Carmen Tarradas [a], Lidia Gómez-Gascón [a], Rafael J. Astorga [a], Inmaculada Luque [a]

Show more

https://doi.org/10.1016/j.vetmic.2011.02.002

Abstract

This study reports the susceptibility to antimicrobial agents of staphylococci

2011 - SPAIN

- Resistance to one antibiotic – 78%
- Multi-resistance – 32%
- Methicillin Resistance – 10.4%

Veterinary Dermatology

Volume 23, Issue 4
August 2012
Pages 305-e61

The effectiveness of systemic antimicrobial treatment in canine superficial and deep pyoderma: a systematic review

Jennifer F. Summers, David C. Brodbelt, Peter J. Forsythe, Anette Loeffler, Anke Hendricks

First published: 27 June 2012 | https://doi.org/10.1111/j.1365-3164.2012.01050.x | Citations: 34

Jennifer F. Summers, Department of Veterinary Clinical Sciences, Royal Veterinary College, Hawkshead Lane, North Mymms, Hatfield, Hertfordshire AL9 7TA, UK. E-mail: jsummers@rvc.ac.uk

Sources of Funding: As part of the doctoral studies of the first author at the Royal Veterinary College this study was funded by a Biotechnology and Biological Sciences Research Council Collaborative Awards in Science and Engineering (BBSRC CASE) studentship, with Pfizer Inc. as industrial partner.
Conflict of Interest: Jennifer Summers is undertaking doctoral studies at the Royal Veterinary College, funded by a Biotechnology and Biological Sciences Research Council Collaborative Awards in Science and Engineering (BBSRC CASE) studentship with Pfizer Inc. as industrial partner. Pfizer Inc. was not, however, directly involved in the conception, protocol design, implementation, analysis or final reporting of this systematic review. Anke Hendricks has received consultancy fees and project funding from Novartis Animal Health Inc. and was involved in clinical trials funded by Phytopharm Plc and Pfizer Animal Health. Anette Loeffler received funding from Defra and from the PetPlan Charitable Trust for her PhD studies and from Leo Animal Health, UK, for her residency. David Brodbelt and Peter Forsythe declared no

2012 - LONDON

- Superficial Pyoderma
  - High Efficacy – Cefovecin
  - Moderate to High Efficacy – AmoxyClav, Cefadroxil, Trimethprim-Silphamethoxazole, Ormetoprim-Sulfadimethoxine, Clindamycin
- Deep Pyoderma
  - High Efficacy – AmoxyClav
  - Moderate to High Efficacy – Pradofloxacin, Cefadroxil, Cefovecin

ORIGINAL ARTICLE

Efficacy of anti-staphylococcal protein P128 for the treatment of canine pyoderma: potential applications

Raghu Patil Junjappa · Srividya Narayanamurthy Desai · Panchali Roy · Nagalakshmi Narasimhaswamy · Juliet Roshini Mohan Raj · Murali Durgaiah · Aradhana Vipra · Udaya Ravi Bhat · Smitha Komarla Satyanarayana · Nandini Shankara · SuneelKumar Muragesh Basingi · Jagadeesh Janardhan Bhat · Sukumar Hariharan · Bharathi Sriram · Sriram Padmanabhan

Accepted: 18 April 2013 / Published online: 10 May 2013

2013 - INDIA

- P128 – Expressed in E. coli
- Lytic activity on S. pseudintermedius
- It can be used in MRS

The Veterinary Journal 235 (2018) 73–82

Contents lists available at ScienceDirect

The Veterinary Journal

journal homepage: www.elsevier.com/locate/tvjl

Invited Review

What has changed in canine pyoderma? A narrative review

A. Loeffler*, D.H. Lloyd

Department of Clinical Science and Services, Royal Veterinary College, University of London, UK

ARTICLE INFO

Article history:
Accepted 3 April 2018

Keywords:
Antimicrobial resistance
Canine

ABSTRACT

Canine pyoderma is a common presentation in small animal practice and frequently leads to prescription of systemic antimicrobial agents. A good foundation of knowledge on pyoderma was established during the 1970s and 1980s, when treatment of infection provided relatively few challenges. However, the ability to treat canine pyoderma effectively is now limited substantially by the emergence of multidrug-resistant methicillin-resistant staphylococci (MRS) and in some countries by restrictions on

2018 - LONDON

- Topical therapy can be effective as the sole antibacterial treatment in superficial pyoderma.
- Systemic Therapy – as little as possible but as much as necessary
- Fluroquinolones should be only used after culture & sensitivity test.
- Glycopeptides, Linezolid & Newer antibiotics should be reserved for human use
- Antimicrobial peptides can be used.

Volume 55, Issue 3
May/June 2019

Next Article >

ORIGINAL STUDIES | MAY 01 2019

Sodium Hypochlorite/Salicylic Acid Shampoo for Treatment of Canine Staphylococcal Pyoderma

Valerie A. Fadok, DVM, PhD, DACVD ; Katherine Irwin, DVM, DACVD

J Am Anim Hosp Assoc (2019) 55 (3): 117–123.

https://doi.org/10.5326/JAAHA-MS-6628 **Article history**

ABSTRACT

The emergence of methicillin-resistant *Staphylococcus pseudintermedius* has increased the interest in topical therapy for treating canine pyoderma. Shampooing with chlorhexidine followed by dilute bleach rinses are often recommended, but household bleach can dry the skin and is unpleasant to use. A shampoo formulated with sodium hypochlorite and salicylic acid was evaluated as sole therapy for dogs with superficial pyoderma associated with *S. pseudintermedius*, including methicillin-resistant strains. Client-owned dogs were recruited based on positive culture for

2019 - USA

- Sodium Hypochlorite/Salicylic Acid
- 3 times a week for 4 weeks
- Evaluated between 2nd and 4th week.
- Significant improvement

Int.J.Curr.Microbiol.App.Sci (2019) *8*(1): 2305-2311

International Journal of Current Microbiology and Applied Sciences
ISSN: 2319-7706 **Volume 8 Number 01 (2019)**
Journal homepage: http://www.ijcmas.com

Original Research Article https://doi.org/10.20546/ijcmas.2019.801.241

Study on Prevalence and Resistance Patterns of Bacterial Pathogens Isolated from Canine Pyoderma

Alok Kumar Chaudhary[1]*, Ashok Kumar[2] and Mukesh Shrivastva[1]

[1]*Department of Veterinary Medicine, DUVASU Mathura, India*
[2]*Division of Animal Health, C.I.R.G., Makhdoom, Farah Mathura, Pandit Deen Dayal Upadhyaya Pashu Chiitsa Vigyan Vishwavidyalaya evam Gau Anusandhan Sansthan, Mathura- 281001 (DUVASU), India*

**Corresponding author*

ABSTRACT

Keywords

Prevalence and Resistance patterns,

Out of 120 samples, 65 skin swab samples obtained with suspected Pyoderma infection cases were subjected for triple bacterial cultured and isolation. Predominant bacterial isolates culture were *Staphylococcus spp.* (92.30 %), while others reported as *E. coli spp.* (10.76%), *Pseudomonas spp.* (10.76%), *Proteus spp.* (9.23%), *Klebsiella spp* (4.61%),

2019 - INDIA

- Maximum Susceptibility to Amoxicillin + Clavulanic Acid followed by Cephalexin
- 100% resistance to Oxytetracycline

Siân-Marie Frosini qualified from the Royal Veterinary College (RVC), London in 2013. She then completed a PhD in 2018 and is currently a post-doctoral researcher at the RVC, investigating the transmission of multidrug-resistant bacteria between people and pets.

Treating canine pyoderma with topical antibacterial therapy

Background: The historical concept that topical treatments have to 'sting, stain and stink' in order to be effective has long been overhauled. A broad range of topical antibacterial products is now available, some as prescription-only medicines following efficacy and safety studies, others are

2020 - LONDON

- Topical Antimicrobials
- 3-4 weeks treatment
- Solely for superficial pyderma

Veterinary Dermatology

Volume 33, Issue 5
October 2022
Pages 384-391

Original Article

Rifampicin treatment of canine multidrug-resistant meticillin-resistant staphylococcal pyoderma: A retrospective study of 51 cases

Lydia Harbour, Anthea Schick, Rebecca Mount, Amelia White

First published: 09 August 2022 | https://doi.org/10.1111/vde.13105

This study was formally and virtually presented at the 28th North American Veterinary Dermatology Forum, 22 April 2021, New Orleans, LA, USA.

Abstract

Background

2022 - USA

- Rifampin < 6mg/Kg/Day
- Used along with topical antimicrobials

pathogens

MDPI

Article

Fluorescent Light Energy in the Management of Multi Drug Resistant Canine Pyoderma: A Prospective Exploratory Study

Andrea Marchegiani, Alessandro Fruganti, Marilena Bazzano *, Matteo Cerquetella, Fabrizio Dini and Andrea Spaterna

School of Biosciences and Veterinary Medicine, University of Camerino, 62024 Matelica, Italy
* Correspondence: marilena.bazzano@unicam.it; Tel.: +39-0737401709

Abstract: The increase in prevalence of staphylococcal antimicrobial resistance has been also associated with pyoderma in dogs, and prolonged antibiotic treatment, as often needed in severe cases of pyoderma, has been related to influencing possible development of multidrug resistance (MDR). Fluorescent light energy (FLE) has been indicated to improve pyoderma lesions as adjunct therapy to systemic antibiotics. In the present study, we evaluated the effect of FLE on clinical signs of MDR

2022 - ITALY

- Fluorescent Light Energy
- FLE Bulb + Systemic Antibiotic
- Twice a week till total resolve
- Average time taken – 3 weeks

Open Access Article

In Vitro Antimicrobial Activity of *Piper betle* Leaf Extract and Some Topical Agents against Methicillin-Resistant and Methicillin-Susceptible *Staphylococcus* Strains from Canine Pyoderma

by Patcharaporn Phensri [1], Kokaew Thummasema [1], Udomlak Sukatta [2], Serge Morand [3,4] and Chantima Pruksakorn [1,*]

[1] Department of Microbiology and Immunology, Faculty of Veterinary Medicine, Kasetsart University, 50 Ngamwongwan Road, Bangkok 10900, Thailand

[2] Kasetsart Agricultural and Agro-Industrial Product Improvement Institute, Kasetsart University, Bangkok 10900, Thailand

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Animals **2022**, *12*(22), 3203; **https://doi.org/10.3390/ani12223203**

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2022 - THAILAND

- Piper betel Leaf extract

THANK YOU