

Canine Deep Pyoderma:

Harnessing the power of
FLUORESCENT LIGHT ENERGY
to accelerate clinical resolution



Poster presented at the ECVD-ESVD Congress 2017

[Marchegiani A, Cerquetella M, Tambella AM et al. The Klox Biophotonic System, an innovative and integrated approach for the treatment of deep pyoderma in dogs: a preliminary report. Vet Dermatol 2017; 28: 545 (abstract)]

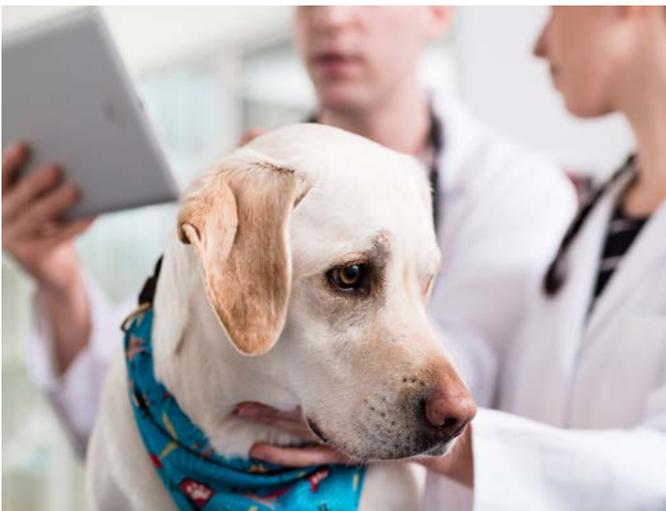
INTRODUCTION

Canine pyoderma is one of the most common diseases presenting complaints in small animal practices; deep pyodermas are less commonly encountered but they are also more severe than superficial ones. Since bacteria are often located in the centre of fibrotic or inflammatory foci associated with chronic disease and scarring, these lesions typically require long-term oral antibiotic therapy. In light of emerging multidrug resistance and the associated potential restriction of veterinary antimicrobial drug use, it is critical to explore alternative treatments that can increase efficacy and reduce reliance on antibiotics.

AIM OF THE STUDY

The aims of the study were:

- **To evaluate the effectiveness** of Fluorescent Light Energy (FLE) in managing deep pyoderma.
- **To evaluate and compare the effect** of Fluorescent Light Energy associated with systemic antibiotics in comparison to only systemic antibiotics on clinical manifestations of deep pyoderma.



MATERIAL AND METHODS

A total of 27 dogs with deep pyoderma lesions were randomly assigned to four groups:

- **Group A:** systemic antibiotic alone*
- **Group B:** FLE twice a week + systemic antibiotic*
- **Group C:** FLE one a week + systemic antibiotic*
- **Group D:** FLE twice a week

Response to therapy was assessed by reduction in lesion scores and improvement in lesion site cytological findings. Skin biopsies for biomolecular analysis were obtained at baseline and after clinical resolution.

*All dogs underwent culture and sensitivity swab sampling at the time at enrollment.

RESULTS

At enrolment, no significant difference was present between the clinical scores for the four groups.

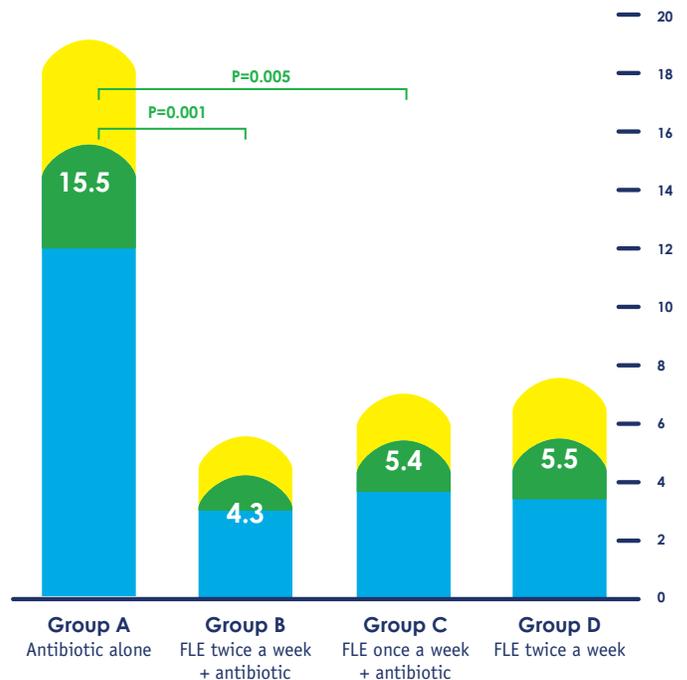
Time to clinical resolution

- A statistical significant difference in favour of combination of FLE + systemic antibiotic vs antibiotic alone was observed (Figure 1).
- Dogs treated with only systemic antibiotic achieved clinical resolution in 15.5 ± 3.5 weeks.
- Dogs treated with combination of systemic antibiotic + FLE twice a week or once a week achieved clinical resolution in 4.3 ± 1.3 weeks and 5.4 ± 1.7 weeks, respectively.

Biomolecular analysis

- At clinical resolution, skin biopsies from dogs treated with FLE revealed a significant up-regulation of mRNA of different factors among which: EGF, NGF, PDGF and MMP 9 ($p \leq 0.01$) compared to the expression in dogs treated solely with antibiotic.

FIGURE 1. Time (weeks) to clinical resolution



CONCLUSION

The rapid emergence of antimicrobial resistance makes the prolonged use of antibiotics difficult to justify; the choice of agents should be based on bacterial culture and antimicrobial sensitivity testing and prescribed only if there are no other options.

In this study, the use of Fluorescent Light Energy adjunctive to systemic antibiotics was able to accelerate the clinical resolution and to reduce the duration of exposure to systemic antibiotics compared to dogs treated with only antibiotics. Similarly, results were obtained in previous studies in dogs with superficial and interdigital pyoderma. The ability of FLE to accelerate healing in both infectious and non-infectious inflammatory skin conditions has also been described in human, as well as its ability to down-regulate inflammatory mediators and to promote growth factors involved in the healing process.

REFERENCES

- Marchegiani, A., Spaterna, A., Cerquetella, M., Tambella, A.M., Fruganti, A. and Paterson, S. (2019), Fluorescence biomodulation in the management of canine interdigital pyoderma cases: a prospective, single-blinded, randomized and controlled clinical study. *Vet Dermatol*, 30: 371-e109.
- Noli C. Staphylococcal pyoderma. In: Foster A, Foil C, eds. *BSAVA Manual of Small Animal Dermatology*. Gloucester: BSAVA Publications, 2003: 159–168.
- Romanelli M, Piaggese A, Scapagnini G et al. Evaluation of fluorescence biomodulation in the real-life management of chronic wounds: the EUREKA trial. *J Wound Care* 2018; 27: 744–753.
- Marchegiani A. Klox Fluorescence Biomodulation System (KFBS), an alternative approach for the treatment of superficial pyoderma in dogs: preliminary results. In: *Proceedings of 61st BSAVA Congress*; Birmingham, England: 2018; 442.
- Edge D, Mellegaard M, Dam-Hansen C et al. Fluorescent light energy: the future for treating inflammatory skin conditions? *J Clin Aesthet Dermatol* 2019; 12: E61–E68.