STUDY 03

Canine deep pyoderma: Harnessing the power of *fluorescent light energy* to help 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 presented to veterinarians in small animal practice; deep pyodermas are less commonly encountered, but require a longer duration of treatment than superficial pyodermas when they do occur. Since bacteria are often located in the centre of a fibrotic or inflammatory focus 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 FLE associated with systemic antibiotics in comparison to systemic antibiotics alone 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 antibiotics alone*
- **Group B:** FLE twice a week + systemic antibiotics*
- **Group C:** FLE once a week + systemic antibiotics*
- **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.

* Antibiotics determined by culture and sensitivity testing performed at the time of enrollment (cefadroxil at 20 mg/kg BID).

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RESULTS

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

Time to clinical resolution

- A statistically significant difference in favour of combination of FLE + systemic antibiotics vs antibiotics alone was observed (Figure 1).

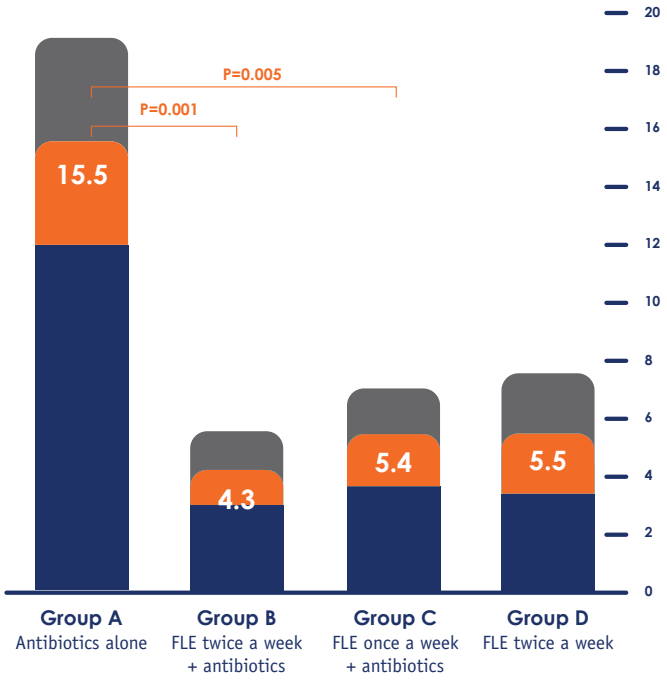
- **Dogs treated with systemic antibiotics alone** achieved clinical resolution in 15.5 ± 3.5 weeks.

- **Dogs treated with a combination of systemic antibiotics + 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≤0.01) compared to the expression in dogs treated solely with antibiotics.

FIGURE 1 Time (weeks) to clinical resolution



CONCLUSION

The rapid emergence of antimicrobial resistance makes the prolonged use of antibiotics difficult to justify in certain clinical situations. The choice in agents should be based on bacterial culture and should be prescribed for the appropriate duration only when there are no other options.

In this study, the use of Fluorescent Light Energy (FLE) 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. Similar results were obtained in previous studies in dogs with superficial and interdigital pyoderma. The ability of FLE to support skin regeneration in both infectious and non-infectious inflammatory skin conditions has also been described in human patients, as well as its ability to down-regulate inflammatory mediators and to promote growth factors involved in the healing process.

references

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