The effectiveness of a marine-based fatty acid compound (PCS0-524) alone and combined with firocoxib in the treatment of canine osteoarthritis

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INTRODUCTION

Osteoarthritis is a common problem in dogs associated with low grade synovitis leading to clinical signs of pain, lameness and stiffness. Nonsteroidal anti-inflammatory drugs (NSAIDs) are commonly used to treat osteoarthritis, but side effects prevent use in some dogs. Marine based fatty acids have been found to possess anti-inflammatory properties by leading to production of a less bioactive form of the inflammatory mediators associated with osteoarthritis. Marine based fatty acids have also been found to improve vertical ground reaction forces in a similar fashion to NSAIDs. The purpose of this study is to assess the effectiveness of a marine-based fatty acid compound alone and in combination with firocoxib for treatment of osteoarthritis in dogs by evaluating peak vertical force and the canine brief pain inventory.

MATERIALS AND METHODS

STUDY DESIGN: Double-blind randomized prospective clinical trial

INCLUSION CRITERIA: Mature dogs over 1 year of age of either gender, between 18-50 kg with a Purina BCS of 5-9. Dogs had radiographic OA of stifles (mild or moderate) and were clinically lame and able to trot across force plate.

EXCLUSION CRITERIA: abnormal hematologic or blood chemistry values, any other systemic or concurrent disease, dogs having any joint surgery within 6 months, pregnant or lactating bitches.

ORAL PRODUCTS: PCSO-524 (Antinol, Boehringer Ingelheim) Firocoxib (Previcox, Antinol, Boehringer Ingelheim)

TREATMENT GROUPS:

- PCSO-524 (PCS0) 200 mg (active ingredient) q24h for 4 weeks
- Firocoxib + PCSO-524 (FCX-PCS0) 200 mg (active ingredient) q24h for 4 weeks (PCS0) 5 mg/kg q24h for 4 weeks (FCX)

OUTCOME MEASURES:

- Computer-assisted force plate gait analysis was performed (OR6-7, AMTI, Watertown, MA). Dogs were trotted across the dual force plate at 0, 2 and 4 weeks. For each dog, the same velocity range of 1.3-2.0 m/sec and acceleration range within 0.5 m/s2 was maintained. A valid trial was defined as the ipsilateral fore and hind limb strike on the force plate when trotting and was verified by video. Owners completed the CBPI at times 0, 2 and 4 weeks.

STATISTICAL ANALYSIS:

Peak vertical force from the first valid trials were averaged and evaluated by the repeated measurement analysis using a general linear model with significant level set at 5% (α = 0.05). For within group comparison, the Turkey’s Studentized Range was used for multiple comparisons (α = 0.05). Patients were also evaluated using the University of Pennsylvania’s CBPI tool. Data was analyzed using the repeated measurement analysis using a general linear model with significant level set at 5% (α = 0.05).

RESULTS

The repeated measurement analysis (comparison between treatment groups) demonstrated a non-significant effect of the treatment on the adjusted PVF values (p= 0.4447) within the two treatment groups. The interaction effect was insignificant. The comparison within group revealed significant increases in the PVF values at week 2 and week 4 treatments compared to their pre-treatment values in both groups (p<0.05) (Figure 1). Changes in mean PVF of 7.6±1.7 and 6.1±1.5 %BW (mean±SE) were detected in the PCSO-524 and FCX-PCS0 groups, respectively. (Figure 1)

The repeated measurement analysis (comparison between treatment groups) demonstrated a non-significant effect of the treatment on the CBPI values (p = 0.4359) among the two treatment groups. The interaction effect was insignificant. The comparison within the PCSO group revealed a significant decrease in the CBPI values at week 2 and 4 compared with the pre-treatment values (p<0.05). The comparison within the FCX-PCS0 group revealed a significant decrease in the CBPI values at week 4 compared with the pre-treatment values (p<0.05). (Figure 2)

DISCUSSION/CONCLUSION

This pilot study showed improvement in peak vertical ground reaction forces and CBPI compared to baseline in dogs having osteoarthritis at 2 and 4 weeks after treatment in the PCSO and FRX-PCS0 groups. No significant difference was seen between groups. These data suggest that marine-based PCSO-524 alone, and the combination of firocoxib and PCSO-524 are equally beneficial in treating dogs with osteoarthritis. Further investigation is warranted to determine the beneficial effects of PCSO-524 alone.

REFERENCES


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