Stem Cell Therapy: A novel treatment for osteoarthritis in dogs

Three Comparative Studies

Carprofen

Carprofen is a non-steroidal inflammatory drug (NSAID), which has been a common treatment for the symptoms of osteoarthritis for many years. NSAIDs are known to work via blockade of cyclooxygenase pathways (COX), thereby preventing certain production of certain prostaglandins, and hence pain. Carprofen is often used in comparison studies given its popularity in the marketplace\(^1\). In 2013, Brown et al (2013)\(^2\), used carprofen as a positive control to assess the canine Brief Pain Inventory (cBPI) in dogs suffering from osteoarthritis.

CryoShot\(^\circledR\) Canine

Recent developments in autologous and allogeneic cell therapies have provided a new and promising solution to treating osteoarthritis in dogs. CryoShot\(^\circledR\) Canine is an allogeneic stem cell based product, produced by Regeneus, and is used to treat osteoarthritis as well as other musculoskeletal conditions in dogs. Mesenchymal stem cells are isolated from adipose tissue to create a cell-based therapy for intra-articular or intra-tendinous injection. It is thought that the majority of effect of stem cell therapy is via a paracrine effect (local production of growth factors and cytokines). CryoShot Canine is currently under trial, using the Canine Brief Pain Inventory (cBPI), in the Australian market for the treatment of osteoarthritis.

Autologous Platelet Therapy (PRP)

Growth factors in platelets are also known to have paracrine effects. Fahie et al. (2013)\(^3\) conducted a randomized placebo trial using autologous platelet therapy to treat osteoarthritis in dogs via intra-articular injection. Clinical assessments were carried out using the cBPI questionnaire, to evaluate the efficacy of autologous platelet therapy (sometimes also known as PRP – protein rich plasma).

Assessing Treatment Results

The Canine Brief Pain Inventory (cBPI)\(^4\) is a questionnaire completed by a pet’s owner, which quantifies the pain severity and interference of pain in the pet’s daily life. Ten questions ranging in score from 0 to 10 are designed to assess the pet’s condition of pain. An overall Pain Severity Score (PSS) and Pain Interference Score (PIS) are then calculated based on these questions. The cBPI has been validated against force-plate analysis\(^5\).

The efficacy of CryoShot Canine, platelet therapy and carprofen, have all been assessed in this way, albeit at slightly different time-points.
Using the CBPI to compare the efficacy of different studies

CryoShot Canine vs Carprofen

Using the CBPI to compare pain in 2 separate studies on therapies used to treat osteoarthritis, Carprofen (Brown et al. 2013) and CryoShot Canine are shown (Figure 1).

Changes in median Pain Severity Score (PSS) and Pain Interference Score (PIS) from day 0 were both greater using the CryoShot Canine treatment (day 10) vs carprofen (day 14).

CryoShot Canine vs Platelet therapy

Again using the CBPI to compare 2 separate studies on therapies to treat osteoarthritis, platelet therapy (Fahie et al. 2013) and Cryoshot Canine is shown (Figure 2).

Changes in median Pain Severity Score (PSS) and Pain Interference Score (PIS) from day 0 were both greater using the CryoShot Canine vs platelet therapy (week 12)

Based on these results, it may be concluded that CryoShot Canine is a highly useful therapy compared to Carprofen and platelet therapy.

REFERENCES


