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Dog Tips

An Innovative New Way to Repair Joints

Up to four out of five dogs of certain breeds will develop degenerative joint disease in their lifetimes. And while you can follow a more natural proactive approach for your pet starting at an early age, this may be a godsend for many of those already affected.

Reviewed by Dr. Becker

STORY AT-A-GLANCE

- Stem cell therapy to treat canine osteoarthritis and other joint disorders is becoming more common in veterinary medicine
- Studies of stem cell therapy in companion animals are underway. Advocates believe the scientific research will support anecdotal evidence that the treatment can be extremely beneficial for certain canine disorders
- Stem cell therapy, which includes the surgery to harvest stem cells, processing the cells, and the initial injection, costs between $2,000 and $3,000
- Stem cell therapy is considered safe, and since the substance being injected is derived from the dog's own body, immune reactions are rare, but can occur
- Taking a proactive approach to preserving the integrity and function of a dog's ligaments, tendons and joints throughout life can often prevent the need for invasive procedures

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If you're a dog guardian, you may be aware that arthritis becomes a problem for many of our canine companions as they mature. In fact, one in five dogs over a year of age will develop degenerative joint disease (DJD). And the number jumps to four out of five for certain large breeds.

The gradual, persistent degeneration of cartilage characteristic of osteoarthritis (OA) can affect one or multiple joints and causes decreased mobility, and often, debilitating pain.

Geriatric dogs typically develop arthritis in the hip, knee, or elbow. In dogs with hip or elbow dysplasia, joint degeneration can occur as early as one to two years of age.

Traditional veterinary treatment of canine arthritis and degenerative joint disease has typically included supplements, anti-inflammatory drugs, surgery, or a combination of these. But more, stem cell therapy, which is a type of regenerative medicine, has become more common.

Stem Cells — 'Mother' or 'Master' Cells with the Potential to Become Any Type of Cell in the Body

Stem cell therapy uses stem cells to treat or prevent disease. Stem cells are a type of master cell. They have the capacity to develop into one of many different types of cells, including skin cells, muscle, nerve, bone, tendon or ligament cells, or the cells of virtually any organ in the body.

Stem cells maintain the ability to divide throughout their life, producing cells that can become highly specialized and replace cells that die or are lost. Stem cells contribute to the body's ability to renew and repair tissues. **Bone marrow transplant** is one of the most common types of stem cell therapy.

Interest in stem cell therapy for dogs with OA, DJD, hip and elbow dysplasia, and cranial cruciate ligament (CCL) injuries[1] is high, and several studies are underway. However, at this time there isn't much scientific research available for review, so results of stem cell therapy treatments are anecdotal and come primarily from veterinarians and owners of dogs that have undergone the procedure.

Cowboy and Mr. Jones

Brad Perry of Alexandria, Kentucky has two dogs, a Golden Retriever named Cowboy, and Mr. Jones, a mixed breed. Cowboy was suffering from terrible arthritis, and Mr. Jones had somehow managed to tear the ligaments in both knees.

Both dogs were seriously disabled and in pain, and Perry had tried all sorts of medications. None of them really worked, and he was worried about side effects. Cowboy and Mr. Jones continued to deteriorate, and Perry had reached the point of considering euthanasia when he heard about a local veterinarian who performed stem cell therapy on dogs to repair joints. Perry figured he had nothing to lose.

Cowboy the Golden received the treatment first, and a few months later Mr. Jones underwent the procedure. According to Perry, within 10 days of receiving stem cell therapy, both dogs were running around like puppies, chasing his kids, and swimming in the lake.

Dr. John Sector of the Shelby Street Veterinary Hospital in Florence, Kentucky performed the surgery on Cowboy and Mr. Jones. He has high praise for the therapy:

> *"This is potentially a game changer. We're seeing incredible results in the joints. We also see some unexpected improvements in other things, like skin conditions," he said.*[2]

Snoop Dog and Ben

Snoop Dog, a 10-year-old Poodle mix with knee problems, and Ben, a 9-year-old Akita with hip issues and a limp, received stem cell therapy at the Mercersburg Veterinary Clinic in Mercersburg, Pennsylvania.

Dr. Roger Horst performed the procedures. His partner, Dr. John Ludwig, said the injected stem cells communicate with cartilage and other cells, stimulating them to rebuild.[3]

> *"This is improving his life and maybe prolonging his life," Ludwig said of Ben. "They won't go back to being a 2-year-old dog, but if it's a 10-year-old and goes back to being a 7-year-old, I'm excited about that," he said.*

Dr. Horst is also hopeful the therapy will decrease the need for painkillers for Ben and Snoop Dog.

According to Dr. Ludwig, some improvement in the dogs could be seen within two weeks, but it can take 30 days to see the full effect of the therapy. He expects the treatment to last 12 to 18 months, at which time another injection might be needed.

How Stem Cell Treatments Are Performed

Stem cells are either embryonic or somatic (adult). Adult stem cells can be harvested from bone marrow or fatty tissue. Because the cells are easy to retrieve from fatty tissue, it is typically the source for stem cells used in therapies for companion animals.

In addition, stem cells harvested from fat don't need to be cultured and can be processed and returned to the veterinary clinic in about 48 hours. The fat is usually taken from the dog's shoulder, lumbar region, or a fatty ligament (called the falciform ligament) that attaches the liver to the body wall.

The harvesting procedure takes less than a half-hour and is performed under general anesthesia. The fat is then sent to a laboratory, where it is used to produce a substance called stromal vascular fraction (SVF). Once the SVF is received back at the veterinary clinic, the dog is again sedated and the SVF is injected into the affected joint or joints. Any remaining product can be stored for future treatments.

Stem cell therapy is considered a safe procedure (although any procedure requiring anesthesia carries some risk), and since the substance being injected is derived from the dog's own body, immune reactions are rare, but can occur. Additionally, the long-term immunologic effects of stem cell therapy have not been researched in pets.

Treatment costs, which include the surgery to retrieve stem cells, processing of the cells, and the initial injection, average $2,000 to $3,000. And it's important to remember there are no guarantees the treatment will work (and sometimes it doesn't), or for how long.

Treating Joint Problems Proactively

Proactive practitioners should help clients help their canine companions avoid the need for invasive procedures to alleviate the symptoms of osteoarthritis and degenerative joint disease. That's why certain joint-protecting supplements and treatments are recommended starting at an early age, especially for large-breed canine patients.

Chondroprotective agents (CPAs) can be classified into different categories according to their intensity of action. There are preventive protocols for young healthy pets and canine athletes. There are also more aggressive protocols for pets with moderate degenerative joint disease and very comprehensive protocols for pets with severe musculoskeletal degeneration or trauma. This approach allows us to not only match our patients with the correct protocol, but also accounts for a dog's dynamically changing body.

One of the most important steps in managing arthritis and degenerative joint disease in dogs is building and maintaining excellent muscle, tendon and ligament health, so exercise is a necessity. The type of exercise, intensity, frequency and duration can all be tailored to the dog's specific musculoskeletal issue. Therapeutic exercises can also be added to target and strengthen specific muscles or limbs.

A balanced, species appropriate diet, supplemented with joint supportive agents such as eggshell membrane, glucosamine sulfate with MSM, and cetyl myristoleate is also recommended. Carbohydrates are discouraged in the diet because they promote inflammation. Animals with musculoskeletal issues should eat a naturally anti-inflammatory diet to help reduce and control inflammation. Fresh, unprocessed foods provide unadulterated enzymes that are also beneficial for reducing inflammation.

In addition, consider physical therapies like regular at-home strengthening exercises, stretching, massage, routine chiropractic care, water therapy on an underwater treadmill or in a pool, laser therapy to control inflammation and pain, and acupuncture.

You can also consider ubiquinol and other antioxidants; super green foods like spirulina and astaxanthin; vitamin C; natural anti-inflammatory herbs such as turmeric, proteolytic enzymes and nutraceuticals; homeopathic remedies (Rhus Tox, Bryonia, and Arnica can be particularly helpful depending on your pet's specific symptoms); and Acetyl-D-glucosamine injections. Cytokine therapy and prolotherapy may also dramatically improve quality of life and assist in slowing degeneration.

By taking a proactive approach to preserving the integrity and function of your dog's ligaments, tendons and joints throughout life, you may be able to avoid the need for invasive procedures. Supporting those all-important hip and knee joints should be a primary focus for every owner of a large breed dog. The physical therapies mentioned, combined with the right nutrition, supplementation, and exercise, can go a long way toward keeping your dog active, agile and pain-free for a lifetime.

Sources and References

Kinship, June 6, 2014

[1] Colorado State University, Veterinary Teaching Hospital, Sports Medicine and Rehabilitation Stem Cell Therapy for Dogs Undergoing Surgery for Canine Cruciate Ligament Disease (Archived)

[2] ABC News, April 8, 2013

[3] Penn Live, September 18, 2014