



UP AND AT 'EM Cat trees or towers encourage movement and exercise, which can reduce pain and promote mobility and optimal function as part of a therapy plan for cats with degenerative joint disease.

INTEGRATIVE MEDICINE

Managing the Pain of Feline Degenerative Joint Disease

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According to the International Association for the Study of Pain, the new (2018) definition of pain is “an aversive sensory and emotional experience typically caused by, or resembling that caused by, actual or potential tissue injury.”¹ Pain causes anxiety, stress, and fear; induces behavior changes; and negatively affects the quality of life for all of our feline patients.² Pain management guidelines to help practitioners recognize and manage feline pain have been developed through a collaborative effort between the American Animal Hospital Association and the American Association of Feline Practitioners,³ as well as a separate initiative by the World Small Animal Veterinary Association Global Pain Council ([wsava.org/global-guidelines/global-pain-council-guidelines](https://www.wsava.org/global-guidelines/global-pain-council-guidelines)).

One common cause of long-term pain in cats, as well as poor quality of life, is unrecognized or undermanaged degenerative joint disease (DJD). This disease affects approximately 60% of adult cats and 90% of cats that are more than 10 years old.⁴

The pathophysiology of DJD in cats seems to be unique. Most cases are primary or idiopathic; secondary DJD is associated mostly with trauma or inherited conditions such as hip dysplasia or acromegaly. Management of cats with DJD is a lifelong process and aimed at improving their quality of life.⁴

EVALUATION AND PAIN ASSESSMENT

The first step in managing chronic pain in cats is to recognize that it exists. Cats display very subtle signs of pain, which may be difficult for veterinarians and clients to identify.

Behaviors affected by pain include litterbox use, grooming, fluidity of gait, temperament, appetite, allowing petting, and general activity.⁵ The Feline Musculoskeletal Pain Index, a validated clinical metrology instrument for cats, has improved the ability of both the veterinarian and client to detect chronic pain. This instrument assesses mobility as well as pain-associated behavior.⁶

For evaluation of the patient and assessment of underlying problems, a thorough history, orthopedic and neurologic examinations, blood pressure measurement, blood work, and urinalysis are indicated. The veterinarian should take into account the client's goals for treatment of the cat and discuss the cost and the client's involvement in treatment up front. There are many options for management of chronic pain, and the plan should be individualized for each patient. Monitoring quality of life and trying different approaches for treatment are the key to managing DJD-related chronic pain.⁷



INTEGRATIVE TREATMENT OF CHRONIC DJD PAIN

The best outcome for the DJD patient is often provided by multimodal treatment, combining both pharmaceutical and nonpharmaceutical therapies.⁷

PHARMACEUTICAL THERAPIES

Although nonsteroidal anti-inflammatory drugs (NSAIDs) have been used for acute and chronic DJD pain in dogs, their long-term use in cats has been controversial. In the United States, there are no NSAIDs currently licensed for long-term use in the cat; however, evidence has shown that these drugs can be safe and effective for cats when used carefully.⁷⁻¹⁰ Two NSAIDs can be considered for treatment of chronic DJD pain in cats—meloxicam and robenacoxib. Meloxicam is licensed in Canada, Australia, and Europe for long-term use in cats. It has been shown to be effective for chronic pain and safe even in cats with stable chronic kidney disease (CKD). The dosage used in the study was 0.02 to 0.03 mg/kg q24h, which is far lower than the labeled dose in the product approved for use in cats.^{8,10} Similarly, another study showed that robenacoxib, although currently approved in the United States for 3-day use only, was safe and well-tolerated by cats with osteoarthritis for up to 1 month; no adverse effects were noted, even in those with concurrent stable CKD. Nevertheless, if dehydration causes the cat to become hypovolemic or hypotensive, either medication carries the risk for acute or chronic kidney injury. Clients must be educated to encourage their cat to drink more water and instructed to discontinue therapy and inform their veterinarian if the cat starts to eat less, gradually loses weight, becomes anorexic, or exhibits vomiting or diarrhea.^{7,8}

Other drugs that have been used for pain management include gabapentin, amantadine, amitriptyline, and opioids. Currently, the most popular drug prescribed for cats with chronic musculoskeletal pain is gabapentin.¹¹ The pharmacokinetics of gabapentin have been reported, and some studies have demonstrated its usefulness for cats with DJD.¹²⁻¹⁵ Because roughly 60% of cats experience concurrent DJD and CKD, gabapentin doses should be appropriately adjusted for cats with both conditions.¹⁶ Amantadine, although used often in dogs, is used less in cats; to the author's knowledge, only one study of amantadine pharmacokinetics in cats has been published.¹⁷ The tricyclic antidepressant, amitriptyline, may also have some beneficial effects, but studies are absent. Opioids

are effective for pain management but can cause adverse effects in cats (e.g., behavior changes, mydriasis, inappetence, or constipation).¹⁸⁻²⁰ Buprenorphine, which can be administered transmucosally, should be reserved for short-term use for breakthrough pain.

An emerging product for long-term treatment of DJD pain is a felid-specific anti-nerve growth factor monoclonal antibody. Nerve growth factor is a mediator of hypersensitization associated with chronic inflammation and is upregulated in cases of inflammation. Research shows that in cats, one subcutaneous injection of this product may be effective for up to 6 weeks.²¹ An application has been submitted to the U.S. Food and Drug Administration for approval and is currently under review.

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NONPHARMACEUTICAL OPTIONS

Weight Loss

Many cats, but not all, with chronic pain from DJD are overweight.²² As the DJD worsens and becomes more painful, the cats become less active and gain weight. Excess weight increases the load on abnormal joints, creating more pain. In addition, adipose tissue secretes adipokines, which are pro-inflammatory and increase the overall inflammation in the joint.²³

Achieving weight loss in cats can be challenging; however, success is possible in cats fed the appropriate amount of a higher protein, canned food formulated for weight loss. Calorie restriction can be ensured by feeding the cat at 80% of resting energy requirement.^{24,25} In addition to calorie restriction, increasing exercise for these cats is also very helpful.

Nutraceuticals and Supplements

Polysulfated glycosaminoglycan injections have both chondroprotective and chondrostimulation properties and have been administered to cats with DJD.²⁵ Although a dose has been approved for dogs, use of this product in cats is considered off-label; no long-term efficacy or safety data for either species exist. Anecdotally, however, some practitioners have found the dosage schedule used for dogs to also be effective for cats.

Therapeutic mobility diets for cats contain omega-3 fatty acids, green-lipped mussel (*Perna canaliculus*), and glucosamine/chondroitin. A least one of these diets is balanced for cats with both DJD and CKD. Research has shown that these diets improve mobility; however, they are often high in calories and thus need to be restricted for obese patients.²⁶ Lower calorie joint diets are now available to treat both of these problems.

The effectiveness of joint supplements containing green-lipped mussel or omega-3 fatty acids has been studied in cats; owners perceived both behavior and locomotive improvements in their cats with naturally occurring osteoarthritis.²⁷ These supplements are available in small pill or liquid form. Although evidence of efficacy exists for many other herbal supplements (curcumin, *Boswellia*, devil's claw) in the dog,²⁸⁻³² specific evidence for cats is lacking. There is a lot of interest in using cannabidiol (CBD) for cats with DJD. One preliminary safety study has been conducted, but other information has been extrapolated from work with dogs.³³⁻³⁶ A more thorough discussion of the quality and safety concerns associated with CBD use is out of the scope of this article.



FIGURE 1. Cat receiving acupuncture therapy.



FIGURE 2. Use of a ball for physical therapy.



FIGURE 3. Use of cavaletti poles for physical therapy.

Acupuncture

Acupuncture is a safe and often enjoyable method of pain relief for cats and should be considered as part of a multimodal pain management plan (**FIGURE 1**).²⁵ Acupuncture is minimally invasive and can be used with other modalities as well as pharmaceutical agents such as analgesics and chemotherapy drugs. The author has used it in cats with back pain, osteoarthritis, stifle pain, postsurgery pain, persistent declaw pain, excess grooming (associated with back pain), interstitial cystitis, and other conditions. The body of evidence for its use in veterinary medicine is growing.^{3,37,38}

Physical Therapy

Physical rehabilitation is now considered a mainstay for postsurgery patients and for geriatric animals.³⁹⁻⁴² Cats can be amenable to all forms of physical therapy.^{25,40,42} Physical therapy should be considered part of a long-term strategy for pain management in the cat. The goals of physical therapy are to restore muscle and joint



strength and function; to restore balance and proprioception; to relieve pain; and to improve mobility, endurance, and flexibility.⁴⁰⁻⁴²

Physical rehabilitation can involve hot and cold therapy, manual therapy, laser therapy, targeted pulsed electromagnetic field (tPEMF) therapy, exercise therapy, and hydrotherapy. Exercise therapies for cats can use balls, treadmills, cavaletti poles, and other devices (FIGURES 2 AND 3).⁴²

Manual Therapy: In general, most cats enjoy manual therapy, whether it is spinal manipulation therapy, massage, passive range of motion (PROM), or joint mobilization. Manual therapy is used to improve circulation, loosen stiff muscles, reduce edema, minimize muscle atrophy, and to relax or stimulate patients with neurologic conditions, particularly paralysis. PROM is a technique that involves the therapist taking joints through their normal range of motion. It can easily be taught to clients to use on cats that are stiff and/or geriatric.⁴⁰⁻⁴²

Laser or Photobiomodulation (PBMT) Therapy: PBMT is a noninvasive pain-relieving modality that is enjoyable for most cats. It involves using laser light on targeted tissue to engage the mitochondria at the cellular level. The result is increased metabolic activity in the cell, causing a cascade of reactions to increase circulation, reduce pain and inflammation, and enhance tissue healing.^{42,43}

tPEMF: This therapy is designed to accelerate the normal anti-inflammatory activity of the body and has been used to reduce pain resulting from bone growth, intervertebral disk disease, surgery, and swelling, as well

as DJD.⁴⁴⁻⁴⁶ tPEMF provides a specific signal carried on a series of magnetic field pulses to the treatment site(s). These uniquely specific energy parameters are transmitted through injured tissue to target the affected area via direct induction. A tiny electrical signal is deposited in the tissue in a way that mimics physiologic stimulus that normally occurs in healthy tissue, thus stimulating cellular repair. Although not feline-specific, several research papers have been published on this modality and the results are promising.⁴⁴⁻⁴⁷ Delivery methods include a loop (FIGURE 4) and a cat carrier that can be used to treat DJD without ever having to handle the patient (sleepypod.com/assisi-loop-lounge) (FIGURE 5).

Environment Modifications

Painful cats often have trouble jumping up, going up or down stairs, and/or getting into the litterbox. Helpful modifications include elevated food and water bowls, indoor ramps or small stairs leading to favorite resting spots, heated areas, and lower-sided litterboxes. These cats also need quiet areas in the home where they can rest, away from any younger, more energetic companions (2 or 4 legged!).²⁵

Exercise Therapy

In addition to being used to reduce pain, exercise therapy is also used to maintain, restore, and promote mobility and optimal function. An enriched environment will encourage movement in any cat. Play therapy can involve navigating an obstacle course, searching for hidden toys and food, playing with a feather, chasing a laser pointer, climbing a tower, or going through a maze of boxes. A “hockey rink” with



FIGURE 4. Loop for delivering tPEMF therapy.



FIGURE 5. Carrier for delivering tPEMF therapy.

cat toys on a smooth surface can encourage mobility and help with weight loss. Other options include moving the food bowl during feeding to make the cat move around, providing food balls, designing a cat tree so that the cat has vertical and horizontal space, and creating a cat gazebo to allow indoor cats to safely go outside. Treadmill exercise, even a hydro treadmill, can also be used for cats. Catnip treats may entice cats to exercise. Increasing client-cat interaction through play and gentle grooming can be beneficial for the cat and human alike.⁴⁸

SUMMARY

Managing pain in cats can be challenging; fortunately, several options exist. Integration of both pharmaceutical and nonpharmaceutical options will provide the best outcome for both the client and the cat. **TVP**

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