

# **FELINE DEGENERATIVE JOINT DISEASE**

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## **Introduction**

Degenerative joint disease (DJD) is a very common but often unrecognized painful condition in cats. In addition to debilitation from pain, the inability of the cat to perform its normal behaviors (e.g., jumping and climbing) impacts quality of life. Fortunately there are numerous journal articles that have been published relatively recently that address feline DJD, overcoming barriers to diagnosis and treatment, the latter addressing both analgesia and environment management of this condition.

## **Incidence of DJD**

Degenerative joint disease is a common cause of chronic pain in cats.<sup>1,2,3,4</sup> In one random study of cats in different age groups, 91% of 100 cats had radiographic evidence of DJD, occurring as early as 6 months of age, and with equal frequency in all age groups.<sup>4</sup> Despite radiographic evidence even in young cats, these cats may not demonstrate any signs, with signs of disease worsening with age.<sup>4,5</sup>

Although concurrent disease is common in older cats, one study indicated a significant concurrence between chronic kidney disease (CKD) and DJD in cats of all age groups (between 6 months and 20 years), with 68.8% of cats in the DJD group having concurrent CKD (in the randomly selected group, 50% of cats had CKD).<sup>6</sup>

## **Is it DJD or arthritis in cats?**

The following terms - arthritis, osteoarthritis, or DJD – are often used interchangeably. Arthritis or osteoarthritis is defined as a non-inflammatory disease of moveable (appendicular) joints, with deterioration of articular cartilage and bone formation over the joint surfaces and margins.<sup>7</sup> On radiographs, this is seen as osteophytes.

Degenerative joint disease is an over-arching term, that includes osteoarthritis as well as trauma, inflammation, and other types of degeneration of cartilaginous joints, including spondylosis of the intervertebral joints.<sup>2,7</sup>

Axial disease can occur without appendicular disease.<sup>2</sup> Spondylosis commonly coexisting with osteoarthritis in older cats.<sup>7</sup>

## **Etiology**

In 60-75% of cases, DJD is idiopathic and in more than one joint.<sup>2</sup> Genetic causes include hip dysplasia, patellar luxation, and osteochondrodysplasia. Trauma is another cause, such as in cranial cruciate rupture. Acromegaly has also been known to impact DJD.<sup>7</sup>

Obesity is known to cause joint problems in other species, but there is no evidence yet in cats. The excess weight increases burden on the joints, and increased adipokines can lead to breakdown of articular cartilage.<sup>8</sup>

## **Where does DJD occur?**

Feline DJ occurs in both the spine and the appendages. Spinal or axial DJD is more frequently found between thoracic vertebrae T7-T10, but the lumbar vertebrae are affected more severely. Axial DJD increases with age.<sup>9</sup>

The more commonly affected appendicular joints are the hips, elbows, knees, and hocks. As opposed to axial DJD, appendicular occurs equally through the ages.<sup>9</sup>

### **The challenge to diagnose**

Feline DJD is difficult to detect because of the cat's tendency to hide pain as a protective mechanism. Cat owners think their cats are slowing down or "just getting old". As opposed to the dog, most cats with DJD don't limp because the disease usually impacts the same joints bilaterally.<sup>10</sup>

Changes in behavior are the most common signs of DJD, but these also occur with other physical pain, either acute or chronic, non-painful illness, as well as with emotional pain, such as stress. Also complicating recognition is the waxing and waning of clinical signs of DJD.<sup>11</sup>

Veterinarians have more experience diagnosing arthritis in dogs, but cats with DJD rarely demonstrate the more obvious signs recognized in dogs, such as limping. One study indicated that joint palpation failed to differentiate between cats with DJD and those without, and that gait was most reliable to diagnose, but more studies are needed.<sup>12</sup> Gait analysis in the practice is especially challenging in feline patients.

Although many cats have radiographic evidence of DJD, radiographic signs do not equate with pain. Additionally, painful DJD can occur prior to obvious radiographic changes.

### **Diagnosing DJD**

#### **The history: Owner input is critical**

Studies indicate that clients often recognize the pain of DJD in their own pets more accurately than veterinarians because they are familiar with their cat's normal behaviors and therefore can recognize changes to those behaviors more readily.<sup>1,2,9,13,14</sup> However, clients frequently think the changes are associated with "old age" rather than pain, making owner education to understand that even subtle changes are significant and to contact the veterinary practice if they notice deviations from their cat's normal behavior(s).

Signs can be either changes in normal behavior(s) or the start of a new, but abnormal behavior for an individual cat. House soiling may occur either due to difficulty getting to or into the litter box. Aggression towards a person, cat or other pet as a means of protecting oneself from pain may occur (see Table 1).<sup>1,2,3,9,13,15</sup> A cat may present with one or multiple changes in behaviors.

Common signs are changes in jumping, going up and down stairs, and hesitation to jump or climb. Educate owners to watch for these signs in addition to other behavior changes noted in Table 1. Let owners know that cats purr also to comfort themselves, and can occur if painful.

Interestingly, a study demonstrated that cat owners placed more importance on non-physical outcomes (60%) for quality of life (e.g., grooming and comfort during resting), in contrast to the hypothesis that physical activity (mobility) would be more significant to owners.<sup>16</sup>

History should include open-ended questions about changes in behavior.<sup>17</sup> For example: “What changes have you noted in “Fluffy’s” behavior since the last visit?” A good follow-up question is: “What else?” If the owner has not mentioned changes in the cat’s gait, jumping or step climbing, follow with specific questions about changes in the height of the jump, hesitation to jump up or down, and changes in climbing up or down steps. The Feline Musculoskeletal Pain Index is a good questionnaire to use.<sup>13</sup> Often videos of jumping on and off beds and climbing up and down stairs are helpful to identify how the cat is doing at home.

### **Examination from a distance**

Prior to handling, observe the cat from a distance, assessing for stiffness and muscle atrophy over back and limbs. If the cat chooses to stay in the carrier, it is best to assess the gait at the end of the appointment. Cats should not be walked in a hallway as one would walk a dog due to fear, probable freezing or fleeing, and possible fear-associated aggression if the fleeing cat is chased. The easiest method to detect gait in the practice is to place the cat on the floor on the opposite end of the room from the carrier because most cats will immediately head towards the carrier, providing the veterinarian the opportunity to assess the gait. Video clips taken by owners at home with smart phones are usually most effective to evaluate the cat, and can be submitted electronically to link to electronic records. Specifically request short videos of a cat jumping up and down from the bed or other favored piece of furniture, climbing up and down stairs, and walking upon awakening.

Comparison with previous examinations can be very helpful. In addition to medical records, many hospitals have the capability to add patient pictures to the veterinary software. Use of this technology provides the opportunity to monitor changes such as the previously well-fleshed cat that has become muscle wasted either due to lack of usage with DJD or other problem.

### **Hands-on examination**

Patient handling should be done to prevent pain. Scruffing and stretching cats can exacerbate the pain of DJD.<sup>18</sup> Let the cat remain in its preferred location and position, and tailor the order of examination, postponing the potentially painful areas until the end. More information on handling the cat is provided in the AAEP/ISFM Feline-Friendly Handling Guidelines.<sup>18</sup>

Palpation of back and limbs should be performed to identify painful axial and appendicular DJD respectively. Spinal pain is most commonly located over the lumbar and lumbosacral regions. Palpation of thickening of the elbow or knee joints is not uncommon with DJD. Other signs are crepitus, effusion within the joint capsule, and discomfort with or decreased range of motion. Watching the gait following palpation is also helpful and can be done as the cat goes back to the carrier.

A painful cat may be tense and resist examination in an attempt to protect self. Some cats that become aggressive with handling are painful cats. Gentle handling and providing analgesia will facilitate the exam and keep the patient as comfortable as possible.

## **Treatment of feline DJD**

Even when diagnosed, cats often receive inadequate treatment due to veterinary concerns about adverse drug effects in this species and owner difficulty to administer medication. DJD impacts the cat's quality of life and the relationship that owners have with their cats, and requires adequate treatment with both owner input and follow-up appointments.

Treatment includes the need for both medical and environmental modifications to allow the cat to perform its normal behaviors and maintain comfort. Medical treatment should be multi-modal, to target multiple sites along the pain pathways, and potentially reduce the doses of each drug to reduce the potential for adverse effects.<sup>19</sup>

## **Pharmacologic Treatment**

NSAIDs are the mainstay of pharmacologic treatment for DJD in cats as well as other species.<sup>3,20,21</sup> NSAID's that are prescribed for cats should be used. These include meloxicam (Metacam) and robenacoxib (Onsior), but neither is approved for long-term use within the United States. Both however have been used in long-term studies.<sup>1,11,13,21,22</sup> Although veterinarians are often concerned about NSAID use in cats with concurrent chronic kidney disease (CKD), Meloxicam has also been used effectively in 2 studies and Robenacoxib in 1 study in cats with concurrent DJD and CKD without negative ramifications. Patients in the studies were cats with stable IRIS stage 1, 2, and 3 chronic kidney disease, normovolemic, and without GI signs.<sup>21,22,23</sup> Meloxicam is approved for long-term in Canada, Europe, and several other countries. If meloxicam or robenacoxib are used long-term in the US, it is recommended that owners sign a waiver. Dosing should be by lean body weight. Owners should be warned to stop medication and call the veterinary practice if the cat is not eating, is vomiting, or any other changes. The patient should be reassessed for comfort as well as for diagnostic monitoring. The author does taper meloxicam's dose and frequency, with cats often comfortable with low dose NSAIDs given every other or every third day.

## **Other medications**

### NV-O2, frunevetmab

NV-O2, a feline anti-nerve growth factor antibody, appears to be a safe, long-term analgesic in cats with degenerative joint disease-related pain, but additional studies are indicated.<sup>24</sup>

### Gabapentin

Gabapentin is used for chronic and neuropathic pain, and appears to be effective and without serious side effects.<sup>25,26</sup> It is easy to administer, and is a great drug to use in conjunction with other treatments.<sup>27</sup>

Long-chain omega-3 fatty acid supplementation in prescription diets for cats is helpful.<sup>28,29</sup>

## **Treatment efficacy**

Many cats appear to do well with treatments, but the placebo effect is very high, with owners noting improvement in both placebo and treatment groups.<sup>11,30</sup> Also of note is that the placebo group often had a high rate of adverse events reported.<sup>13,22</sup> In one study, differentiating between

placebo and treated cats was only recognized once treatment was withdrawn.<sup>11</sup> Ideal studies are double blinded or have other monitoring such as activity monitors<sup>15</sup>, treadmills or pressure mats.

### **Non-pharmacological Treatment**

The most important non-pharmacologic approach to treatment of feline DJD is modification of the home environment to allow easy access to favored places. Pet steps or ramps can provide easy access to preferred resting area for cats with DJD. Providing food, water, and litter in easily accessible areas where there is no competition for these resources improves feline welfare.<sup>31</sup>

Relationships and interactions between cats in multi-cat households may change due to the cat with DJD's discomfort and inability to play. An important question to ask all owners is the relationship between cats and if changes have occurred.

Acupuncture and weight optimization are excellent non-pharmacological treatments that can be used as a component of multi-modal therapy.

**Table 1. Behavioral Signs of DJD in cats**

Changes in the normal behavior of that individual cat

- Appetite
  - Decline
- Sleep/rest
  - Increase sleep or restlessness
- Grooming
  - Matting due to decreased grooming or overgrooming of the painful area
- Play
  - Decreased
- Toileting behavior
  - Difficulty getting into litter box
  - Change in position in box or toileting next to box
  - Constipation
- Activity
  - “Slowing down” or “getting old” – most common signs noticed by owners
  - Jumping and height of jump
  - Going up and down stairs
- Mobility
  - Stiff gait, may occur only when rises
  - Lameness – not common
- Disposition or attitude
  - Irritable: “Grouchy” or “grumpy”
  - Clingy

- Interactions with people or other animals
  - Withdrawn or avoid others
  - Attention-seeking
  - Irritable to aggressive with handling
- Body posture
  - Hunched
  - Stiff
  - Not curled up normally when sleeping
  - Neck stretched out and head lowered
- Facial expression – fixed gaze, dilated pupils, squinted eyes if acute pain (flare-up)
- Vocalization
  - More or less vocal
  - Purring can occur even if painful

### Behavior problems

- Inappropriate urination
- Inappropriate defecation
- Cat-to-human aggression
- Inter-cat aggression

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