OSTEOARTHRITIS UPDATES: THINKING OUTSIDE THE BOX FOR MANAGMENT

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Key Points:
- Osteoarthritis (OA) is a condition that affects the entire joint, and thus management should be multimodal
- The natural flow of OA is characterized by an ebb and flow scenario with periods of calmness followed by periods of flare-ups
- In patients with OA during remission emphasis should be placed on maintenance joint range of motion through joint supplements, pROM/stretching, daily exercise/weight reduction, and at home therapeutic exercises
-In patients with OA during a flare-up emphasis should be placed on pain control, intra-articular injections, and formal rehabilitation therapy to maintain ROM and muscular strength and a return to baseline

Osteoarthritis (OA) is a chronic, progressive disease that affects both dogs and cats. It has been noted that up to 20% of adult dogs and 60% of adult cats have radiographic evidence of OA. However, recent data would suggest that close to 40% of dogs in age from 8 months to 4 years have radiographic evidence of OA and of the population studied almost 24% had clinical evidence of OA. Interestingly, of the dogs with radiographic OA, about 60% had clinical OA. The overall outcome of osteoarthritis is centered on destruction of the articular cartilage and breakdown of the joint. The joint must be thought of as an organ with multiple tissues playing a role in the overall pathogenesis of OA. There is extensive “cross-talk” among the tissues of the joint. Because of this OA must be thought of as a global disease process within the joint rather than an isolated disease entity with the final pathway of OA being failure of the joint.

The impact of OA has many negative implications, and it has been noted as being the number one source of chronic pain in the dog. With pain comes a decreased activity level, which over time leads to joint stiffness, increased periarticular fibrosis, loss of joint range of motion, exacerbation of cartilage breakdown, and weight gain. All of these implications create a vicious cycle that has an overall negative impact on patients’ quality of life, and can interfere with the human-animal bond.

Given that the pathogenesis of OA is still not fully understood complete resolution of clinical signs and the disease condition is not considered possible. OA tends to follow a course of exacerbation (“flare-up”) and remission. For example, the tide has an ebb and flow characterization of coming and going. OA is similar in that a patient can have OA and not have clinical signs or a patient can have OA and have clinical signs. From an OA standpoint during periods of calmness or “remission” we know they have OA but are not clinically affected now. This is where we need to establish a baseline. This consists of joint supplements, omega three fatty acids, focus on weight reduction, strength, fitness, and daily exercise. From an OA standpoint during periods of exacerbation or a flare-up we know they have OA but are clinically affected now. The focus here is getting the flare up under control through multimodal management with an emphasis on pain control.

Regarding management there must be a multimodal approach. There is no "cookbook" or one size fits all treatment plan. Treatment must be patient centered and patient specific. What works for one dog may not work for another dog. Furthermore, patients may respond initially to a treatment plan then become less responsive. In these cases, the treatment plan has to be changed. In some cases, it can really be trial and error. To devise a management strategy it is important to define goals for the management of OA such as improving quality of life, decreasing pain, decreasing flare-ups, improving daily activity, decreasing body weight, and improving the human/animal bond.

When I approach OA patients I break it into 1 of 2 categories:
1) Am I seeing a patient that has a primary problem and has or will develop OA (such as cranial cruciate ligament rupture or the "incidental" OA, or the "preclinical" OA)
2) Am I seeing a patient that had a primary problem and now suffers from OA (the typical "OA consult" or consult for "slowing down", "unwilling to rise", or "trouble with stairs")

For those patients that have a primary problem and either have OA or will develop OA I give owners clear expectations for the future. If I can correct the primary problem such as fixing an articular fracture or addressing a ruptured cruciate ligament then that is recommended. Following surgery, I have owners develop a **"baseline of OA management"**: Joint supplements, Omega-3 fatty acids (150-175 mg/kg of DHA/EPA), daily exercise and weight management. From a weight management standpoint, the goal should be to lose 10% of body weight at 1-2% weekly. While diet is helpful for weight control, daily exercise is a MUST. This is completed by daily leash-controlled walks. Most all dogs should be able to at least achieve two 20-minute walks on daily flat ground without problem. From there owners can increase time, and terrain (uneven, incline/decline, stairs). If dog can't achieve this it could indicate a flare-up and this needs to be investigated.

Owner counseling is a major factor in managing OA. They need to understand from the beginning that this is a progressive disease that we can't make go away. It will be progressive, but our goal is to slow down and minimize the progression of it. Flair ups are going to occur and as time goes on, they will become more frequent. Therefore, owners need to understand how to recognize a flare-up. The goal of management occurs in a stepwise fashion. This means that clients are educated, joint supplements are started, lifestyles are changed and exercise begins.

For patients that had a primary problem that either was or was not addressed but now they suffer from OA I will still recommend my baseline management. **If the patient is having a flare-up, then I will recommend pharmaceuticals. It is at this stage we are throwing everything at them including the kitchen sink. PLEASE RECOGNIZE THAT PATIENTS THAT COME IN FOR AN OA CONSULTATION ARE LIKELY IN A FLARE-UP AT THAT TIME AND THUS SHOULD BE TREATED AS SUCH!!** One train of thought is to initially use NSAIDS at the lowest possible dose as infrequently as possible. Unfortunately, many of these patients will progress to a daily need for NSAIDS. During times of flare-ups patients will also benefit from additional analgesics such as codeine (1-2 mg/kg q8-12h). I do not use tramadol as I do not believe that it adequately controls joint pain, in addition this was recently shown scientifically. If I have patients that don't respond initially or have more frequent

flare-ups then NSAID use becomes more frequent. I will consider adding in gabapentin (5-10 mg/kg q8-12h) and/or amantadine (3-5 mg/kg q24h) with an NSAID or other analgesics.

What OA management is not is saying "here is your NSAID and tramadol and that's all we can do." **WE CAN DO BETTER!!** Once management has started, then don't loose them to follow up. Get them in 2-4 weeks later to ensure that pain is under control, then get them in 4-6 weeks later to ensure things are moving in the right direction, and the get them in every 4-6 months thereafter as **OA is a disease of chronic pain management.**

There are newer ways to "think outside the box" when it comes to OA management. In particular **possibly changing our thought process on NSAIDS, and/or formal rehabilitation to control the inflammatory response, improve range of motion and improve comfort, and intra-articular injections.**

Is the theory of using NSAIDs for OA management as infrequently as possible really the best approach? As we understand the pathophysiology and the concept of the maladaptive process, **perhaps there is the argument for daily use of NSAIDs in our OA patients**? While this is not mainstream yet, I do think we will be exploring and hearing more about this option in the future, so stay tuned!!

Rehabilitation therapy should be considered as an additional "tool in the tool-belt" for the multimodal management of OA by managing pain, restoring/maintaining function and restoring/improving range of motion as well as trying to slow down or minimize the progression of OA. When utilizing rehabilitation for OA management there needs to be a focus in weight reduction, and improvement in strength, and fitness. Various aspects of rehabilitation therapy include the use of manual therapies, therapeutic exercises, and physical modalities.[4]

Intra-articular (IA) injections can be of benefit in patients during a flare-up. The goal of IA injections is simply to decrease the inflammatory response locally to improve comfort and aid in making improvements quicker during rehabilitation therapy. Potential IA therapies include hyaluronic acid (HA), steroids, synoviorthesis, or biologics (platelet rich plasma with or without stem cell treatment).

Regarding flare-up avoidance, we need to ensure owners avoid the "weekend warrior syndrome." This is where the dog is lazy during the week and then the owners try to make up for it on the weekends. In this situation the tissues are not conditioned for this sort of rest then prolonged activity. In patients with OA, it is better to be active everyday going under the thought process of more frequent, but less duration.

In summary OA is a chronic disease that requires a multimodal management plan with the goal being to slow and minimize the progression of OA. In addition, there should be an emphasis on improving quality of life and minimizing joint pain so dogs can maintain daily activities to promote a lean body condition. Owners need to be well educated to know that it will progress and there will be flare-ups. The base line management focuses on joint supplements, omega-3 fatty acids, daily exercise, and weight reduction. During periods of flare-ups joint pain is minimized with pharmaceuticals, intra-articular joint injections, and formal rehabilitation

therapy to aggressively get the flare-up under control and allow the patient to return to the “baseline”.