Orthopedic injury in small animal patients is an increasingly common problem for presentation to both general practitioners and specialty referral centers. The increase in patient numbers over time is likely a reflection of the activity level of patients- from mountain hiking to Frisbee to dock diving- but also a reflection of pets’ increasingly important place as a member of the family. For these reasons and more, owners are seeking better, faster and a more complete return to function after an orthopedic injury or congenital condition. By expanding the approach we as veterinarians provide to these patients, we'll be better able to meet and exceed client expectations as we return their animals to the happy, comfortable and active pet they hope for.

When evaluating a pet with an orthopedic condition, a thorough evaluation of the entire pet, including a thorough history is ESSENTIAL to be able to take an effective whole-patient approach. A thorough history should include questions about medical conditions, changes in behavior, changes in coat, altered eating habits, previous episodes of pain or limping, dislike of specific activities or touch, and normal activity for that pet. Full palpation of the entire pet by members of the veterinary team is also very important. It is impossible to evaluate systemic comfort without palpating soft tissues and getting an understanding of regions of muscle.
tension, pain and guarding. This evaluation will help lead to specific regions of problem, where a more specific orthopedic evaluation can be applied. Finally, a discussion about nutrition and weight management with every single orthopedic patient is vital. Overweight pets are more painful and more likely to go on to be more severely affected by osteoarthritis (OA). Obesity can be difficult to discuss, and challenging for owners to achieve, but is one of the most rewarding and inexpensive ways to improve the comfort and longevity of a pet with an orthopedic condition.

An additional and very important point regarding the management of these patients is that a multi-modal approach will achieve the greatest immediate benefit and best long-term outcome for a patient affected by orthopedic disease. It is very easy for owners and veterinary professionals to try a treatment approach, not see a benefit, so discontinue it and try something else. In the case of a painful or orthopedically affected patient, a layered approach to pharmaceuticals, physical medicine, nutrition and supplements is the greatest way to achieve lasting success.

**Hip Dysplasia**

Hip dysplasia is a common condition diagnosed either with or without symptomatic discomfort, and at any age. Certain breed predilections have been identified, but any individual can be affected. Radiographic findings don’t always correlate with clinical signs of discomfort, and radiographic interpretation can be challenging. Some patients will go on to develop severe clinical signs, while others will enjoy a relatively asymptomatic life style. Surgical approaches to early or late hip disease may be complicated and painful (Guillaumot *et al.* 2012, Tong & Hayashi
2012, Hayes et al. 2011), so decisions for or against major surgical procedures to address hip function should not be taken lightly.

Patients with hip dysplasia should be treated early with chondroprotective and anti-inflammatory supplements to protect joint health as long as possible. In addition, soft tissue discomfort and compensatory pain (Miqueleto et al. 2012) should be addressed regularly to prevent development of joint disease in other regions of the body. Weight management is of paramount importance in this disease process, from puppyhood forward (Marshall 2010). Avoiding high impact activities (Krontveit et al. 2012), while maintaining mobility and strength is important for comfort, avoiding progression of disease and maintaining quality of life.

Stifle Pathology: Cranial Cruciate Ligament (CCL) Disease

Stifle pathology has become an enormous focus in veterinary medicine because of the ever-increasing incidence, morbidity for the affected patients, and cost of surgical options for pet owners. It is also important to note that no single approach to cranial cruciate disease has proven a panacea. Both surgical and medical options for the disease are fraught with difficult hurdles and intermittent painful episodes for the patient. Because of the relative frequency, morbidity and high exposure of stifle joint pathology; CCL disease is too frequently diagnosed without appropriate evaluation and treatment of the rest of the patient.

Most cranial cruciate disease in canine patients, unlike humans, is considered degenerative in nature. Cruciate disease in cats is less well-studied, and its underlying pathophysiology is not well known. Since the cause is unknown, it is
difficult to know how to prevent the disease or stop its progression once it has
begun. That said, we know with certainty there are some important factors that can
help a patient overcome a CCL injury with greater ease and comfort.

Early CCL disease can be managed effectively for patients with mild or
intermittent lameness, but for these patients owner education regarding the disease
process is very valuable. These patients should be taught to alter their lifestyle and
activity as necessary to protect them progression of pain and stifle degenerative
joint disease (DJD). Specific strengthening measures can also be added to help
protect the remaining CCL (Kanno et al. 2012), while teaching the patient balance
and improving proprioception to help protect from further traumatic injury
(Bonsfills et al. 2007). Appropriate weight management, dietary supplements, and
chondroprotective agents are all important at this step in disease progression.

In patients with more severely affect CCL disease, a more aggressive
approach may be needed more immediately. A complete multi-modal approach for
these patients will help achieve the best outcome, and should include
pharmaceuticals, nutrition and physical medicine. These patients are usually more
painful, so appropriate use of pharmaceuticals is important. NSAIDs can be used,
along with other medications to modify the pain signaling that reaches the spinal
cord and brain. Gabapentin, amantadine, tramadol, amitriptyline and others may
play a role in achieving adequate pain management. Patients with unmanaged pain
and inflammation while waiting for a surgical intervention or biding their time until
the injury improves will be at risk for chronic, sometimes debilitating, neuropathic
pain (Christianson et al. 2010).
The addition of physical medicine for these patients is very helpful, and can consist on a variety of approaches. Laser therapy has shown promising benefits in reducing pain and inflammation associated with an acute or chronic injury. Acupuncture can help neuromodulate an injured pelvic limb, while improving comfort in overused or atrophied muscles. Extracorporeal shockwave therapy is a newer physical medicine modality, but has shown great potential in protecting and repairing damaged cartilage and reversing degenerative changes in CCL-injured animals (Wang et al. 2011a, Wang et al. 2011b). Finally, the use of rehabilitation, including work on range of motion, strength, proprioception and flexibility is very beneficial for patients recovering from surgery or those undergoing medical management of CCL disease.

**Stifle Disease: Patellar Luxation**

Both medial and lateral patellar luxation can vary in severity how extensively they affect patients clinically. Like other orthopedic conditions, any breed, age and size can be affected so it is important to critically, though gently, evaluate patellar stability within the trochlear groove. Patellar luxation is uncomfortable for affected patients, and creates an ongoing inflammation with cartilage wear and tear in the trochlear groove that can lead to significant stifle DJD later in life. Progression to CCL disease is not uncommon as these patients age (Campbell 2010), and they are frequently plagued with other pain issues, most notable of which is back pain and quadriceps dysfunction.

**Shoulder Pathology**
Forelimb lameness can be challenging to localize and even more challenging to treat. Because these patients may have multiple sources of discomfort, it is especially important to perform a thorough evaluation of soft tissues, along with a full orthopedic evaluation. It is also important to consider the frequency with which a caudal cervical issue is mistaken for a primary shoulder injury, so it is best to rule out a cervical problem in all patients with shoulder pain.

Chronic conditions, such as tendinopathies, can appear acutely and be unrelenting, or hang around for long periods with smolder, low-grade discomfort. In either case, this condition can be very challenging to treat, and a single approach such as NSAID therapy or tenotomy is seldom successful at returning an active patient back to former function. With a more board-based approach however, and a strong emphasis on physical modalities, a successful outcome can be achieved. Laser therapy (Otadi et al. 2012), extracorporeal shockwave therapy (Galasso et al. 2012, Lee et al. 2011), therapeutic ultrasound (Philadelphia Panel 2001), massage and acupuncture to treat the local, low-grade inflammation and muscle tension are the most important features in treatment of this condition, combined with a balanced strength program to ensure these patients will have the strength they need to protect this region from further injury and encourage appropriate muscle use in the future. For these patients, lifestyle must also be addressed, as many have habits or activities that predispose to this type of repetitive use injury. Specific strength programs can help them maintain their active lifestyle while reducing the risk of shoulder tendinopathy.

Elbow Pain: Incongruity, Dysplasia and Trauma
The elbow is a notoriously unforgiving joint, with its tight hinge mechanism and high weight-bearing load in quadruped patients, it can be the source of a large amount of discomfort. As with the other orthopedic conditions, the value of a multi-modal approach using physical medicine interventions can greatly improve patient comfort and quality of life.

References


