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## Inside This Issue

Medial Coronoid Process Disease in the Canine Michael K. Larkin, DVM

A Note From the Editor B Leonard J. Marino, MD, FAAP, LVT

New Therapies for Osteoarthritis Catherine Loughin, DVM, Dip. ACCT Staff Surgeon, LIVS,

9 Department of Surgery



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## Medial Coronoid Process Disease in the Canine

**Localization of thoracic** 

limb lameness can be

extremely difficult and often

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veterinarians.

Michael K. Larkin, DVM

ENTRANCE

horacic limb lameness is a frequent presentation commonly seen in our canine patients. Localization of thoracic limb lameness can be extremely difficult and often a frustrating work-up for veterinarians. Of concern especially in younger dogs, is developmental elbow disease, which has historically been called "elbow dysplasia". Developmental elbow disease is a syndrome that includes several developmental abnormalities of the elbow joint that commonly lead to osteoarthritis, pain, and disability. These abnormalities include; fragmented medial coronoid process (FCP), osteochondrosis of the humeral trochlea (OCD), ununited anconeal process (UAP), articular cartilage damage, and joint incongruity. Developmental elbow disease is a common inherited condition with an incidence as high as 55% depending on breed and population. The most frequently reported entity is medial

coronoid process disease, accounting for >96% of developmental elbow disease cases.

The term medial coronoid process disease is used to summarize various

pathologies of the medial coronoid process (see **figure 1**), including medial coronoid sclerosis, coronoid microfracture, coronoid fragmentation or fissuring, and cartilage damage to the coronoid process. Joint incongruity is frequently seen in combination with medial coronoid process disease.

Medial coronoid process disease is most commonly diagnosed in young, large to giant breed dogs. At-risk breeds include; Labrador Retriever, German Shepherd Dog, Rottweiler, Golden Retriever, Chow Chow, Bernese Mountain Dog, Saint Bernard, and Mastiff. Males are approximately twice as frequently affected as female dogs. Elbow joint incongruity can also

> be seen in smaller dogs, especially chondrodystrophic breeds. The incidence of bilateral disease has been reported as anywhere from 25% to 80% of dogs, prompting the

evaluation of all contralateral elbows in dogs. The mean age at diagnosis of medial coronoid process disease is 13 months, with clinical signs occurring as early as 4 months of age, however, there is also a distinct biphasic pat-

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## A Note from the **Editor**



On September 11, 2001, 19 militants associated with the Islamic extremist group al Qaeda hijacked four airplanes and carried out suicide attacks against targets in the United States. Two of the planes were flown into the twin towers of the World Trade Center in New York City. Almost 3,000 people were killed during the 9/11 terrorist attacks

At 8:45 a.m. on a clear Tuesday morning, an American Airlines Boeing 767 loaded with 20,000 gallons of jet fuel crashed into the north tower of the World Trade Center in New York City.

Then, 18 minutes after the first plane hit, a second Boeing 767—United Airlines Flight 175—appeared out of the sky, turned sharply toward the World Trade Center and sliced into the south tower near the 60th floor. The collision caused a massive explosion that showered burning debris over surrounding buildings and onto



the streets below.

Reportedly financed by the al Qaeda terrorist organization of Saudi fugitive Osama bin Laden, they were allegedly acting in retaliation for America's support of Israel, its involvement in the Persian Gulf War and its continued military presence in the Middle East. The horror in New York took a catastrophic turn when the south tower of the World Trade Center collapsed in a massive cloud of dust and smoke.

We are all aware of the enormity of the events of 9/11

and on its 19th anniversary, we honor the memory of those lost and remember with pride the involvement of many of the veterinarians from our area especially the members of the LIVS team that answered the call that day. We thank all who volunteered and recognize that which was sacrificed and most of all, we remember those who did not come home.

Fall is full of color, and as the seasons change, college students in 2020 are either at home attending classes online or at school basically quarantined in the dorms also taking classes online or alternating with half classes on alternate days. Thanksgiving holiday break is not the fun filled event of years ago as mask wearing and social distancing is practiced. This is a unique experience for all of us from those who passed through the limitations on civilians during WW II, Korea and Vietnam...even the "Cold War" wasn't so restrictive.

Our newspapers and TV channels are replete with opposing commentary on all subjects relating to the White House occupant and Supreme Court nominees; somehow, the US will survive as long as civil discourse is not

Continued on Page 6 ►

#### Medial Coronoid Process Disease in the Canine

► Continued from Page 1



Figure 1: The green line outlines the medial coronoid process.

tern and some dogs will not present until later in life, usually >7 years of age (when advanced or end-stage disease is present).

The etiopathogenesis of medial coronoid process disease has been well studied, but final conclusions are still lacking. The most recent studies have indicated that mechanical overload plays a crucial role, leading to fatigue microdamage of underlying subchondral bone. These biomechanical forces cause delay in endochondral ossification during maturation. Glycosaminoglycan content depletion has been noted as early as 15 weeks of age. The combined damage initiates cleft formation, fracture, bone remodeling, and ultimately results in medial coronoid process disease.

Diagnosis is based on history, clinical signs, physical exam findings and imaging. Dogs with medial coronoid process disease have varying degrees of lameness, varying degrees of pain with manipulation of the elbow joint, and frequently stand with the elbow slightly abducted and the antebrachium and manus slightly externally rotated. Flexion of the elbow joint and supination of the limb distal to the elbow joint, resulting in compression of the medial joint compartment, frequently elicits a pain response. Joint effusion along with periarticular fibrosis and osteophyte formation may lead to enlargement of the joint, especially the caudolateral aspect. Decreased range of motion and crepitus are found with chronic disease and osteoarthritis. Generalized muscle atrophy and exacerbation of clinical signs with exercise are common.

Developmental elbow disease has historically been diagnosed via radiographs. Signs of osteoarthritis are indicative of an articular pathology but are not specific. Trochlea notch sclerosis and blurring cranial margin of the medial coronoid process are strongly suggestive of medial coronoid process disease. Recently, a study revealed an unexpectedly high incidence of false-negative radiographic diagnoses (specificity 10% to 69%) of medial coronoid process disease. Radiographs continue to serve as an initial diagnostic investigation (to exclude other lesions), but advanced imaging (CT Scan, arthroscopy) is highly recommended in dogs with lameness localized to the elbow joint. CT has traditionally been considered the gold standard for identifying medial coronoid process disease (sensitivity 71%). One advantage of CT over arthroscopy is the ability to assess the subchondral bone, including the presence of sclerosis, necrosis, cysts, fissure, and frag-

mentation. The main disadvantage of CT is the inability to image cartilage lesions. Although CT and MRI may be comparable in diagnostic accuracy, the more limited availability, cost, and extended time needed to acquire an MRI study render it inferior to CT for clinical use. Arthroscopic evaluation provides excellent joint surface visibility and allows simultaneous minimally invasive treatment.

Treatment options can be broadly classified as symptom-oriented treatments (which include surgical and nonsurgical treatment modalities), and disease-modifying treatments (which are directed at correcting the suspect-

Surgical treatment is performed via arthroscopy or arthrotomy. Traditional treatment of fragmented medial coronoid process includes removal of the fragment combined with varying degrees of abrasion or excision of surrounding structures (see figure 2). Newer surgical procedures include the biceps ulnar release procedure (BURP), and osteotomy or ostectomy of radial/ulnar or even humerus bones (to correct incongruity). Nonsurgical options include conservative management, including nonsteroidal anti-inflammatory medication and a regulated exercise regime. Recurrence of lameness was reported by owners in 78% of conservatively managed dogs. Palliative treatment of elbow-related pain secondary to osteoarthritis, using intraarticular injections of corticosteroids, hyaluronic acid, stem cells or blood-derived products such as autologous conditioned plasma or platelet-rich plasma, has been reported to improve limb function for up to 6 months. Results are encouraging, but further studies are needed. Acupuncture is one of the most common complementary and alternative medical treatment options and has also shown some promising results. Although the effects of rehabilitation after elbow surgery have not been specifically investigated, the breadth of knowledge accumulated regarding the positive impact of early motion on joint homeostasis, preservation of range of motion, and muscle mass justifies the routine use of it in post-operative dogs.

The prognosis for dogs with medial coronoid process disease, as well as the efficacy



Figure 2: Arthroscopic subtotal coronoid ostectomy

ed underlying cause of the disease with the aim to positively alter the disease process). Several factors should be considered in the decision-making process, particularly the severity of preexisting osteoarthritis, the age of the patient, and the expected level of activity. It has been proven that the best prognosis is associated with early surgical treatment in young dogs with minimal to mild osteoarthritis, combined with postoperative rehabilitation and preventative measures against osteoarthritis. of current treatment options, remains poorly defined. Most studies report improvement in lameness in 50% to 100% of cases, with functional improvement noted in an average of 85% of cases. Most long-term (>6 months) studies report a progression of osteoarthritis in most dogs evaluated, regardless of the treatment performed.

When thoracic limb lameness is localized to the elbow joint, especially in younger dogs, referral to an orthopedic specialist is warranted for further diagnostic evaluation.



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#### A Note from the Editor

► Continued from Page 3

completely abridged by those who label any opposing viewpoints "hate speech." We have never, in our lives, experienced the partisanship now present but with all its faults, more people still want to get into the US than want to leave.

On August 31st, approximately 20 dogs were confiscated from a warehouse within Chicago's O'Hare Airport. These dogs arrived from Jordan many days prior. An unrelated good Samaritan alerted a Chicago Police Officer that there were numerous dogs in a warehouse living in dire circumstances and urged investigation. The police discovered that these dogs were without food and water, dehydrated and in abhorrent sanitary conditions. It is unclear what would have happened to these

dogs or how long they would have languished had the unrelated third party not taken this heroic step.

Chicago French Bulldog Rescue was asked if they would take custody of 15 French Bulldogs who were in the warehouse. They responded on a moment's notice and arranged to have

several veterinary clinics prepped and on stand-by to provide treatment and quarantine for all 15 dogs that same evening. They were treated, quarantined, tested for parvo and even socialized. The cruelty associated with the international trade of puppies is too common and it should be stopped.

Here on Long Island, a company plans to begin a clinical trial on a COVID-19 vaccine for cats, which have been found to be susceptible to the virus.

A vaccine potentially could safeguard pet owners by reducing the chance that their cats harbor the virus. By vaccinating a cat, you not only improve the health of the cat, you lower the proximal reservoir of virus available to humans, however, there have been no documented cases of cat-to-human transmission, so far.

In a few cases, however, cats and dogs worldwide have been reported to be infected with the COVID-19 virus, mostly after close contact with humans, according to the U.S. Centers for Disease Control and Prevention.

Evidence suggests the risks of animals spreading the virus to people is low, but humans can infect animals "in some situations," said the CDC, which advises isolating pets from people who become ill.

Cats "are almost always being infected by humans" rather than other cats, said Dr. Colin Parrish, a professor of virology at Cornell University's College of Veterinary Medicine

A report from Johns Hopkins Hospital revealed that children who were in extended periods of contact with therapy dogs, had a sixfold increase in superbug infections compared with those

> who spent shorter periods interacting with them. The "cure" was to wash the dogs before bringing them to the hospital and using special wipes after contact. Samples from 40% of healthy dogs showed that they carried MRSA and 10% of the hospitalized children in contact with them exhibited

the superbug. Now during the COVID phase, wiping down of pets and those who come in contact with them is of paramount importance.

LIVS wishes to offer a "Thank you" to the employees and clients involved, for continued patience and teamwork during the construction project. It's moving along on the projected timeline.

We are pleased to continue the extended hours for consultation in all our departments to serve our clients more efficiently. Appointments can be made through our telephone receptionists at 516 501-1700

We hope a peaceful fall holiday season will allow us to share with our loved ones the joys of life and a brighter future in the coming months.

Again, we always welcome your observations e-mailed to: lmarino@livs.org

Leonard J. Marino, MD, FAAP, LVT



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#### Michel Selmer, DVM, MS, CTCVMP (Integrative Medicine)

Dr. Michel Selmer is an Integrative Veterinarian and one of a handful of Traditional Chinese Veterinary Medicine Practitioners in the world that holds a Masters Degree.

Dr. Michel Selmer attended Long Island University and graduated Cum Laude with a Bachelor of Arts Degree in Psychology. Following his undergraduate studies, he was admitted to Michigan State University School of Veterinary Medicine and earned his Doctorate of Veterinary Medicine in 1995. Following his Traditional Veterinary studies, he was admitted to the Chi Institute where he graduated with the top honor of being a Certified Traditional Chinese Veterinary Medicine Practitioner (CTCVMP).

Dr. Selmer is a published author and consults with other veterinarians as well as pet parents around the globe. In 2018, he made the exciting decision to join the Long Island Veterinary Specialists team as the Lead Veterinarian in their Integrative Medicine Department.

The passion Dr. Selmer has for his profession - and his love for all animals - has contributed to the high quality medicine that he practices.

To schedule a consultation with Dr. Selmer today, call 516-501-1700 or email IntegrativeMed@livs.org

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#### **New Therapies for Osteoarthritis**

Catherine Loughin, DVM, Dip. ACCT, Staff Surgeon, LIVS, Department of Surgery

n recent years, more and more products have been introduced to the market to treat osteoarthritis (OA), all claiming to be the "magic drug" to make your patients more comfortable. Prescription non-steroidal anti-inflammatories (NSAIDs) and other pain medic ations have been very popular for the treatment of OA, but in recent years, owners have been requesting non-prescription drugs and more natural options for their pets.

Diets are the first of the steps employed to control OA. The growth stage is the best time during which to start treating for OA. Hip dysplasia is a great example of OA that can be controlled during that early life stage. The early phase of hip dysplasia is manifested by hip laxity in young dogs that develops into traditional OA in a couple of years. Most puppy foods contain calcium for bone growth, L-carnitine to build lean muscle, and omega-3 fatty acids with glucosamine and chondroitin sulfate to build healthy joints. For adult animals, foods now contain lean protein sources to help maintain a healthy weight as well as balanced calcium, omega-3s, L-carnitine, and glucosamine for healthy bones and joints.

Obesity is an etiologic factor for OA because it increases the load on the joint and causes malalignment. Obesity can also cause worsening of clinical signs of OA from other causes and also make exercise difficult. Diets junction with a weight management program.

Exercise is important not only for the obese patients, but all animals with OA or the potential to have OA. Studies have proven that regular, moderate, controlled exercise such as walking, swimming, and other limited concussive activities may be beneficial in patients with OA. Our rehabilitation center offers an obesity clinic that proposes not only a month of diet modification, but a tailored exercise program for pets. These exercises include underwater treadmill walking, range of motion exercises and limb-strengthening exercises. Other rehabilitation modalities that could be utilized for animals with OA are electrical stimulation, therapeutic ultrasound, and Class IV/cold laser therapy. Acupuncture may also help OA by providing analgesia,



ent for both humans and dogs, and contains beneficial nutrients such as omega-3 fatty acids, glycosaminoglycans, and antioxidants. GLM is a powerful anti-inflammatory that can help decrease pain and preserve joint function. Methyl sulfonyl methane (MSM) is in most plant and animal tissues, and is

### Exercise is important not only for the obese patients, but all animals with OA or the potential to have OA.

decreasing inflammation and increasing the circulation to affected areas.

Adequan has been utilized in veterinary patients for several years. This is an injectable cartilage component called polysulfated glycosaminoglycan. It has numerous beneficial effects for the arthritis patient including the inhibition of harmful enzymes involving joint



Neutraceuticals are very common, and provide a more natural treatment for OA.

Glucosamine and chondroitin sulfate are cartilage components taken orally providing animals with many of the necessary building blocks needed to repair damaged cartilage. These products may also have some antiinflammatory proper-



a natural source of sulfur, however, for commercial sale MSM is derived from DMSO (dimethyl sulfoxide), a solvent that comes in both medical grade and industrial grade. The glycosaminoglycans that enable cartilage to soak up water and thus act as a cushion for articulating bones, are all sulfates. The idea is to provide nutritional building blocks for cartilage repair. Beyond this, MSM seems to have anti-inflammatory properties and may act as an anti-oxidant.

Anti-oxidants and free radical scavengers can also be useful supplements. Antioxidants are molecules that hinder the breakdown or change of other molecules. They are usually found in vitamins and minerals. The oxidation process in some molecules results in formation of free radicals. Free radicals are believed to decrease the effectiveness of the body's immune system, and are also linked to the aging process. Animals obtain antioxidants from the vitamins and minerals in their food. Anti-oxidants that are readily available include Vitamin C, Vitamin E, SAMe, Superoxide Dismutase (S.O.D.) and others.

Another therapy for the treatment of dogs with OA is stem cell transfer. Mesenchymal stem cells have yet to form any kind of tissue. These cells are harvested from the animal's own fatty tissue to accelerate healing time of muscles and damaged joints. Veterinarians can become certified to administer stem cells after a brief course.

Continued on Page 10 ►



Figure 1: Platelet rich plasma kit.

for weight loss contain lysine, carnitine and soluble fiber to modify metabolism from fat storing to fat burning, high natural fiber levels to satisfy pets while losing weight and promote healthy triglyceride and cholesterol levels. Microsomal triglyceride transfer protein inhibitors are weight loss pharmaceuticals now licensed for dogs, and may work in con-

#### New Therapies for Osteoarthritis

#### ► Continued from Page 9

Platelet rich plasma (PRP) is another treatment option for a significantly arthritic joint. PRP is a portion of the blood that has been centrifuged or processed, to contain a higher concentration of platelets than found in whole blood. Platelets contain growth factors and signaling molecules, with the two most important being transforming growth factor beta (TGF- 1) and platelet derived growth factor (PDGF). These growth factors reduce inflammatory cytokines, which decrease the neutrophil response and the production of destructive matrix metalloproteinases (MMPs). PRP enhances the body's natural healing response by delivering a high concentration of growth factors directly to the site of injury.

Platelet rich plasma can be injected into the joint under sedation. Initially the pet may limp from the increase in joint fluid, but this dissipates in a few days.

Lymphocyte T-cell immunomodulatory (LTCI or T-cyte) injections are gaining popularity in the veterinary community. T-cyte injections increase immune response to foreign antigens and decrease immune responses to



Figure 2: T-cyte injection

self-antigens. In animals with OA, which is caused by chronic immune activation against the tissues of the joint, there has been a documented 40% increase in limb improvement.

With the recent legalization of marijuana in some states, cannabis oil has also been utilized for OA relief. Cannabis oil is a liquid

derived from the marijuana flower. Marijuana plants contain 80 different cannabinoids, including THC (tetrahydrocannabinol, the psychoactive component) and CBD (cannabidiol, the medical component). Cannabis oil has no psychoactive effect on dogs when dosed properly. Unfortunately the research needed to determine the correct dosage for CBD oil in dogs has yet to be published, and FDA testing has shown that many CBD products contain little if any CBD. Owners may read overly ambitious claims about CBD oil from unreliable sources, and request that their pets be started on the oil. Owners should be informed of the present lack of information, and that CBD oil may not be a "cure all".

There are so many options to treat OA. A multiple modality approach is typically the best option for most patients. Starting with weight management, exercise and neutraceuticals in the early stages may help prolong the period before prescription drugs and surgery are necessary. Given all the options that are now available, a program can be developed and individualized for each pet and its owner.

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Dr. Michel Selmer is an Integrative Veterinarian and one of only a handful of Traditional Chinese Veterinary Medicine Practitioners that holds a Master's Degree in the United States.

Dr. Selmer is a certified TCVM practitioner and provides the following Integrative Medical Therapies:

- Veterinary Acupuncture
- Herbal Medicine
- Veterinary Food Therapy
- Veterinary Tui-na

To learn more about Dr. Selmer and Traditional Chinese Veterinary Medicine, check out his book: "The Best of Both Worlds, An Advanced Guide to Integrative Veterinary Care for Healthier, Happier Pups"





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