

Osteoarthritis

ABOUT THE DIAGNOSIS

Arthritis (inflammation of a joint) and degenerative joint disease (noninflammatory degenerative damage of the bones that make up joints, which is also known as osteoarthritis and osteoarthrosis) are problems that commonly affect the joints of dogs and cats. Normally, the multiple joints of the body are physically able to withstand stressful impact and wear. However, subtle defects and imperfections in their growth and organization can cause enough irregular wear that over a long period of time these imperfections can lead to deterioration of the joint and subsequent pain.

Healthy joints are finely tuned mechanically. Tiny imperfections in the joints, like sand in a well-oiled machine, can lead to severe breakdowns of the mechanics. Subtle mechanical breakdowns lead to joint inflammation. In general, inflammation can be defined as heat, redness, swelling, and pain. In joints, this can lead to further mechanical alterations and becomes a self-perpetuating spiraling problem, resulting especially in joint pain and decreased joint function (stiffness, limping, etc.). When inflammation occurs in joints, it is called *osteoarthritis*.

Joints respond to inflammation by trying to reduce or stop the mechanical alteration that has occurred. Cartilage unfortunately has no ability to heal. Bones can only change in two ways when trying to heal. They either break down or they grow, depending on the hormones by which they are influenced. Therefore, chronic stress or damage to the bony parts of any joint can lead to the growth of excess bony tissue in the joint, which in turn leads to an even more ill-fitting joint (a process also known as remodeling or osteoarthrosis), thus perpetuating the downward spiral to severe irreversible bony changes of the joints.

The following are typical examples of arthritis in dogs:

Hips: Hip dysplasia (“dys-”: abnormal; “-plasia”: growth of) is arthritis of the hip that occurs mainly as a result of genetic predisposition, inappropriate nutrition (overfeeding or imbalanced feeding during the first year of life), or both. Dogs with hip dysplasia are born with normal bones and normal cartilage. These dogs are not painful and do quite well for at least the first 6 months of life. Hip dysplasia also may only emerge during the adult years, and affected dogs can develop debilitating osteoarthritis later in life. Dogs with arthritis of the hip/hip dysplasia typically show signs of hip pain at some point in life, possibly beginning as early as 8 to 10 months of age. Symptoms include a shifting and inconsistent lameness (limping) of the hind legs. When dogs have symptoms of hip dysplasia at a very young age (<2 years old), hip dysplasia is simply *looseness* of the joint capsule and support structure holding the ball (femoral head) into the socket (the pelvic acetabulum) of the hip joint.

Imagine a smooth ball that fits perfectly into a round socket. With a drop of oil in the socket, the ball can spin freely with little friction. In a healthy dog, the equivalent is that the ball is the head of the femur (the part of the thigh bone that connects to the body), the socket is the acetabulum, or hip joint socket, and the oil is the normal joint fluid. In hip dysplasia, the ball is being violently dropped back into the socket over and over again, with each step a dog takes; this repetitive trauma leads to inflammation and, eventually, alterations in the bone structure of the hip that cause pain and decreased ability to move the hip.

Over a few months, the initial inflammation of the joint and joint capsule lead to tightening of the hip joints, and these dogs seem to improve. Outwardly, they appear to be happy normal dogs with

no signs of lameness/limping. However, the inflammation continues to perpetuate itself leading to worsening bony production in the hip joints. Later in life, these dogs develop such severe bone production and deterioration of the hip joints that the bones of the joint (the ball and cup) can fuse if left untreated. These dogs are visibly painful and lame, with a severe limp often apparent even at a slow walk.

Shoulders: Although shoulders are not true ball and socket joints, shoulder joints undergo similar processes as do hip joints. The most typical defects in shoulders are called osteochondritis dissecans (there are several variant names for this disease/syndrome, all generally called OCD lesions). These defects are thought to be small areas where inappropriate blood flow inside a bone leads to a small bony defect underneath the cartilage of the shoulder “ball” or humeral head. Cartilage receives some of its nutrition and much of its strength from the underlying bone. Therefore, when a small section of bone fails to grow normally, such as occurs when the regional blood supply is inadequate, the overlying cartilage becomes weak and fractures easily with the slightest trauma. Now like the princess and the pea, this small piece of loose cartilage can cause severe inflammation throughout the shoulder joint and, of course, pain. Again, left untreated, this can cause further deterioration of the shoulder joint which leads to ongoing pain and lameness.

Knees: In dogs and cats, the knee is referred to as the stifle, and it is the area of the hindlimb (back leg) that points in the same direction as the toes, about halfway down the leg from the back to the paw. In a dog or cat, the stifle involves three bones: the thigh bone (femur), the shin bone (tibia), and the kneecap (patella) coming together to form a strong hinge-type joint with some flexibility in rotation. There are several possible forms of knee joint problems that can lead to arthritis. For example, if there are irregularities in the bones, growth, or straightness of these bones, even subtle changes can lead to enough alteration that the kneecap does not sit in the groove where it is supposed to be. This syndrome, where a patient’s kneecap will slip out to the side, is called luxating patella, or loose kneecap. In addition to the cartilage and bones, there are several supportive structures and ligaments involved in the stability of the knee. When the cranial cruciate ligament tears or ruptures (a common occurrence), the knee joint has excessive abnormal mobility, leading to inflammation and remodeling. It is an exact equivalent to the rupture of the anterior cruciate ligament (ACL) in humans.

Elbows: Elbows are also a complex of three bones coming together to form a complex joint. The radius and ulna (the lower bones of the forelimb), need to grow in synchrony. If they are off by as little as millimeters, the hinge of the elbow is rough, causing abnormal wear of the cartilage, bone “micro” fractures, and severe signs of elbow dysplasia.

LIVING WITH THE DIAGNOSIS

There are several key factors to help reduce the detrimental effects of osteoarthritis and prevent the slow but continuous spiral of pain and further damage:

- **Weight loss:** This is the most important factor. Most pets with osteoarthritis are overweight. Pets that are considered “too lean” or underweight typically live longer than overweight pets and have fewer health problems, including less osteoarthritis. If you can reduce the work (by removing pounds/kilograms) of

the machine, there will be fewer secondary changes. *The best treatment for degenerative joint disease is to reduce the body weight of overweight pets.*

- Reduction/removal of jarring, traumatic, and damaging activities will help prevent the inflammation process. Activities to be reduced or avoided in patients with osteoarthritis include running, chasing, ball play, Frisbee play, and so forth.
- Controlled exercise and strength can be very beneficial to reduce inflammation. Good muscle strength helps stabilize joints, reducing inflammation. On-leash walks, swimming, and other types of controlled low-impact exercises should be investigated if your pet has various stages osteoarthritis. This is also an important part of quality of life for dogs and cats who are active participants in their surroundings. Many people feel that their normally active pet becomes depressed when their mobility is excessively restricted.

TREATMENT

- Certain nutraceuticals, such as glucosamine and chondroitin, are excellent chemical supports for the joints and those that have been investigated in dogs and cats can be recommended by your veterinarian. They can aid significantly in reducing joint inflammation and some of the secondary effects of the inflammation process. There are other products that are sold as joint “supports” or building blocks. These may provide some benefit although few if any have been proven to provide benefit and some may be hazardous; be sure to check with your veterinarian before starting to give your pet any product that claims to be good for joint health.
- Pharmaceuticals: There is a variety of prescription antiinflammatory drugs made for dogs and cats that can block and reduce inflammation. These should be used in cooperation with your veterinarian. They are not risk free and should be monitored closely. Inappropriate use of human antiinflammatories must be avoided. Giving human over-the-counter (nonprescription) antiinflammatories is one of the most devastating and common reasons for inadvertent medication-related complications in pets, and ibuprofen (such as Advil or Motrin), acetaminophen (such as Tylenol), and naproxen (such as Aleve) have all been fatal to pets even when given with the best intentions.
- Surgical intervention: There is a wide variety of surgical corrections, alterations, replacements, and “salvage” procedures. Please consult your veterinarian to review the appropriate procedure(s) for your pet. You might also want to ask your veterinarian to help you connect with a veterinary surgical specialist; these can be found in North America at www.ACVS.org or in Europe at www.ECVS.org.
- Other options. While strong scientific evidence is lacking, some owners perceive a benefit to treatment with acupuncture in their pet with osteoarthritis. Other therapies are also available but with limited scientific support. You might want to discuss the options with your veterinarian and give these a try if standard treatment is insufficient to help your pet.

DOs

- Implement weight loss if necessary.
- Allow controlled degrees of low-impact exercise.
- Administer nutraceuticals and medications as directed by your veterinarian.

DON'Ts

- Overexertion: Pets with orthopedic problems can inadvertently exercise to the point of exhaustion and pain.
- Overindulge (weight): Avoiding overindulgence, and instituting weight loss, can be difficult but is indispensable. Many people link their pets' happiness with how/what they eat. Eating well (not eating more) leads to a pet's better well-being, and less bone and joint pain, in the future.

WHEN TO CALL YOUR VETERINARIAN

- When there are obvious signs of pain (e.g., whimpering, whining, yelping)
- Lameness (limping): This means your pet has a mechanical change in the limb, or it is painful, or both.

SIGNS TO WATCH FOR

- Obvious lameness or pain
- Changes in appetite, avoiding interactions with other more exuberant family members (puppies, children, etc.), aggression, and behavior changes can all be subtle signs of pain.
- In addition, monitor for any warning signs your veterinarian gives you, particularly regarding medications your pet is receiving.
 - Bleeding in the gastrointestinal tract is an important complication of many pain medications, so notify your veterinarian if you notice that your pet's stool is dark and tarry.
- Drastic changes, changes in the affected leg, and other behaviors or symptoms that worry you should all be noted and discussed with your veterinarian.

ROUTINE FOLLOW-UP

- One of the reasons for bringing a new puppy to the veterinarian is so he/she can examine the pup and screen for orthopedic problems such as osteoarthritis early on. In some cases, this can lead to surgical procedures performed at a young age that help prevent/minimize long-term degenerative changes in joints during the rest of your companion's life.
- Annual or biannual exams will help monitor slowly progressing lameness. This will help catch early signs of degenerative joint disease. This will allow your veterinarian to treat with preventative medicine, delay progression of arthritis, and hopefully eliminate the need for costly and painful surgical procedures.
- As needed for pharmaceuticals/medications. Your veterinarian will discuss specifics based on the medications prescribed.
- As needed for any surgical interventions. Your veterinarian will discuss specifics based on the surgeries that were performed.

Other information that may be useful: “How-To” Client Education Sheet:

- How to Effectively Induce Weight Loss in a Dog or Cat



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