

# 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 a variety of 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.

The joints are finely tuned mechanically. Tiny imperfections in the joints, like sand in a finely 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 genetics, nutrition (overfeeding 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 to 8 months of life. Hip dysplasia also may only emerge during the adult years, and affected dogs can develop debilitating osteoarthrosis and 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 cup. With a drop of oil in the cup, 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 cup 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 cup over and over again; 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 obviously 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. 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 in the shoulder joint and, of course, pain. Again, left untreated, this can cause 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. The stifle is a complex joint. It involves three bones: the thigh bone (femur), the shin bone (tibia), and the knee cap (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 knee cap does not sit in and form the groove that it is supposed to. 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.

**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 affects 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 and less degenerative joint disease. If you can reduce the work (by removing pounds) of the machine, there will be fewer secondary changes. **The best preventative in management of 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 avoided in patients with degenerative joint disease 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 degenerative joint disease. 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

- **Neutraceuticals,** such as glucosamine and chondroitin, are excellent chemical supports for the joints and are thought to significantly aid in reducing 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.
- **Pharmaceuticals:** There are a variety of anti-inflammatory drugs 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.
- **Surgical intervention:** There are a wide variety of surgical corrections, alterations, replacements, and "salvage" procedures. Please consult your veterinarian to review the appropriate procedure(s) for your pet.

## DOs

- Weight loss if necessary.
- Controlled exercise.
- Neutraceuticals and pharmaceuticals.

## DON'Ts

- **Overexertion:** Pets with orthopedic problems can quickly exercise to exhaustion and pain.
- **Overindulge (weight):** This can be incredibly difficult but is indispensable. Many people link their pets' happiness with how/what they eat. Eating less does not necessarily mean eating poorly.

## 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.
- 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.

## Signs to Watch For

- As above.
- In addition, monitor for any warning signs your veterinarian gives you, particularly regarding medications your pet is receiving.
- Drastic changes, changes in the affected leg, and things that worry you should all be noted and discussed with your veterinarian.

## Routine Follow-Up

- Good puppy exams help catch orthopedic problems such as osteoarthritis early and can allow some surgical procedures that help prevent/minimize long-term degenerative changes in joints. These should be done in conjunction with your puppies' vaccines.
- 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/drugs. Your veterinarian will discuss specifics based on the drugs prescribed.
- As needed for any surgical interventions. Your veterinarian will discuss specifics based on the surgeries that were performed.