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Arthritis

Author and Copyright Holder - Linda Aronson, DVM. Published in the VetSpeak Section of the Shaggy Sentinel, December, 1997. Minuteman Bearded Collie Club.

Arthritis means inflammation of the joint. In real terms though there are two basic types of arthritis - degenerative, in which the articular cartilage is damaged, and inflammatory, where the synovial membrane lining the joint capsule is inflamed. As I will explain, finding the cause of joint pain is imperative if we are going to treat the condition.

About 20% of adult dogs suffer from osteoarthritis. Most beardies over the age of ten show signs of arthritis, although the condition can occur in dogs of any age. Osteoarthritis results from progressive destruction of the cartilage at the ends of the bones forming the joint. The cartilage is replaced by bone, which may grow into different shapes as well. Without the smooth cartilage, the bones grind together, and the result is pain. Another term you'll hear used to describe the condition is degenerative joint disease (DJD). This is a progressive disease, and as it progresses the pain, stiffness and restriction of joint motion increase.

The cause of osteoarthritis is still unclear, probably because there are multiple contributing processes. In general these can be lumped as abnormal stress on normal cartilage, or normal stress on abnormal cartilage. Another way to look at it may be that cartilage is only meant to last so long, and the longer and harder we and our dogs live, the more likely we are to get achy joints. Osteoarthritis may occur acutely, and in this case it can generally be associated with a minor trauma or excessive exercise, or it may creep up insidiously. Usually the first thing you'll notice is that the dog is stiff after rest, generally this passes within a few minutes of the dog getting up. Less often the dog will be acutely lame in one or more limbs. You may also notice the dog is reluctant to jump or climb stairs. Stiffness may be exacerbated by obesity, long periods of exercise or damp and cold conditions. Pain can cause the dog to be nervous, aggressive or depressed, and may result in reduced appetite. This condition is limited to the musculoskeletal system, but your vet should do a thorough work up to rule out some of the other causes of arthritis I am going to discuss, particularly if these signs appear in a younger dog.



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There's no cure for osteoarthritis, so the aim of treatment is to make the dog comfortable. Initially, simple changes in life-style alone may be sufficient to treat the condition. The first of these is weight reduction. Using the joint will exacerbate the destruction, but strengthening the muscles and ligaments around the joint will protect it. While excessive exercise, which leads to pain and discomfort, should be discontinued, moderate exercise, which doesn't lead to pain, stiffness or lameness either during or after the exercise, should be encouraged. Several short exercise periods are better than one or two long walks. Exercise programs should be established and maintained on a daily basis, rather than having binge exercise on weekends. Swimming may be beneficial, as would a program of isometric exercises, although such physical therapy is rarely attempted in the dog. Strict rest is only indicated for acutely painful episodes, when there has been mild trauma or excessive exercise, for example. The exercise and diet of the dog will need to be reviewed as the disease progresses.

Drugs may be needed for such acute episodes initially, although as the disease progresses, they may be necessary for day-to-day pain management. The most common class of drugs used in this connection are the nonsteroidal anti-inflammatory drugs (NSAIDs). Of these, aspirin, usually the buffered form (e.g., Ascriptin), has been the most popular choice. Dogs should not receive ibuprofen (Anvil) or acetaminophen (Tylenol), which are often poorly tolerated in dogs (and a definite no-no for cats). A new drug, carprofen (Rimadyl), seems particularly effective for treating osteoarthritis, and seems to produce fewer side-effects. However, it is also considerably more expensive, and probably represents over-kill for mild cases of osteoarthritis. All NSAIDs can cause gastrointestinal upset and ulceration, and should be used with care. Doses must be carefully adjusted in dogs with heart, liver or kidney disease, and doses should be checked with your vet, rather than extrapolated from human ones.

While corticosteroids can help with acute cases, their side-effects predicate against their long-term use. Hyaluronic acid derivatives, polysulfated glycosaminoglycans (Adequan) and combination precursor products (Cosequin) provide both symptomatic relief and reduce the progression of the disease. In my experience they are most beneficial when used early in the course of the disease, rather than waiting until it is well established.

In some cases, surgery is recommended. This may involve simply flushing and cleaning the joint, or be invasive, resulting in fusion of the joint, removal of the joint, or joint replacement.



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Inflammatory Arthritis. While less common than DJD, inflammatory arthritides tend to be more severe in their presentation, and proper treatment can cause remission or cure. They may be caused by infectious agents or by an immune-mediated process. Achieving the correct diagnosis is essential, as the use of immuno-suppressive drugs would make an infectious arthritis much worse.

Infectious arthritis may be caused by bacteria, mycoplasma, rickettsia, fungi or viruses. In certain parts of the country they can be very common, although Lyme disease is almost certainly overdiagnosed in this neck of the woods. They have also been implicated for a role in initiating chronic, immune-mediated joint disease (e.g. rheumatoid arthritis). The dog with infectious arthritis usually has swelling of the tissues around the joint, the area feels warm, and edema may be evident down the leg. The joint may be painful when it is manipulated. The most useful test samples joint fluid from affected joints. X-rays can locate which joints are involved, and show whether the joint surfaces have eroded. Blood samples and urinalysis can help identify the cause of the infection. While waiting for blood and synovial fluid cultures, your vet may put your dog on antibiotics. The earlier treatment is initiated the better the chance of full remission. Antibiotics won't hurt, although they won't treat, an immune-mediated arthritis.

Septic arthritis can either be caused by bacteria getting into the joint directly (bite wounds, surgery or accidents) or through the blood. In the former case, only one joint is usually affected, whereas in the latter several joints may be involved, although there will usually have been some trauma to the area. Large breed, male dogs are most likely to be affected, but on the whole septic arthritis is relatively uncommon in dogs. A wide variety of bacteria may be involved. Symptoms may progress slowly, or appear suddenly with loss of limb function. The affected joints are usually, warm, tender and swollen. Animals may have a fever, lose their appetite and/or be lethargic. If the condition is not treated, the disease will progress from primarily soft tissue involvement to bone erosion. Response to antibiotic therapy is usually good, although some lameness may remain.

The rickettsial organism *Ehrlichia ewingii* produces a polyarthritis (one affecting several joints), characterized by a sudden onset of fever. If left untreated the arthritis will recur. All the joints may be affected, and the dog will be unwilling to move. The joints will be very painful on manipulation. The joint surfaces do not become eroded however. Treatment with tetracycline produces rapid response.



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There is still some debate as to whether or not dogs actually develop polyarthritis from naturally occurring infection with the spirochete *Borrelia burgdorferi*. Most veterinarians now agree that Lyme disease does occur in dogs, but that it is probably over-diagnosed. In some endemic areas, 80% of the dogs may test positive for Lyme disease, but most of these will be asymptomatic. The commonly used ELISA test cannot distinguish between dogs which have been vaccinated and those which have been exposed to the disease naturally, although the Western blot test can. (I do not recommend the vaccine, and there is some evidence that it can actually induce the disease in dogs.) The spirochetes are only very rarely found in tissue specimens. They are transmitted by the *Ixodes*, and possibly other, ticks. The tick has to have been feeding for at least 24-36 hours before the organism will be passed to the host. Younger dogs seem to be at greater risk for developing clinical signs of disease. Lyme disease can be acute or chronic in onset. In acute cases, the dog has a fever, is lethargic and anorectic. One or more joints will be swollen, the knees (carpi) and hocks being the most frequently involved. In the chronic condition, lameness occurs intermittently. There may also be heart block, kidney failure or neurological signs. Lyme disease is very similar in appearance to Ehrlichiosis and mycoplasma infection. Fortunately, all three respond to the same antibiotic therapy with tetracyclines, amoxicillin, ampicillin or the cephalosporins. Treatment should be continued for at least three to four weeks. NSAIDs may be necessary to minimize pain, but may render it difficult to decide whether the disease is responding to the antibiotics, or the dog is simply feeling less pain.

Systemic fungal infection is rare in New England, but can cause polyarthritis. In general, other signs are more obvious than the arthritis.

Noninfectious, nonerosive arthritis can have a number of causes. All result in variable degrees of lameness, lethargy, anorexia, and episodic fever. The hocks and knees (carpi) are most often involved.

Systemic lupus erythematosus (SLE) is an autoimmune disease. It can present as a polyarthritis alone or a glomerulonephritis (inflammation of the kidney), as a skin disease, as a blood disorder or any combination of the above. The heart, lungs and central nervous system may also be involved. Because of the wide array of presentations, SLE is known as the great imitator. When polyarthritis occurs multiple joints are usually involved in a bilaterally symmetrical pattern. The intensity of signs varies over days and month. Muscles may lose mass, especially those on top of the head. It is difficult to get a clear diagnosis of SLE. A positive anti-nuclear antibody (ANA) titer in



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conjunction with at least two of the major signs of the disease is considered to be diagnostic. However, low titers are common in normal dogs or those with arthritis of other causes, and even high titers have been found in symptomatically normal dogs.

Idiopathic immune-mediated polyarthritis is virtually indistinguishable from SLE, except that the ANA titer is negative.

Drug Induced Arthritis. 8-21 days after receiving sulfonamide containing drugs, such as the antibiotic trimethoprim sulfa, or 1 hour to 10 days after a second exposure, dogs may develop polyarthritis and fever. Clinical signs usually resolve within 1-5 days after withdrawal of the drug. The condition resembles SLE, and is thought to result from the failure of the liver to metabolize a potentially toxic by-product of the drug. Sulfonamide containing drugs can cause blood disorders and precipitate autoimmune diseases. Beardies seem to be particularly sensitive to this class of drug, and they should be avoided if possible.

Localized plasmacytic-lymphocytic synovitis usually affects the stifle (true knee), and is often mistaken for rupture of the anterior cruciate ligament, and indeed it may accompany the condition. There is marked rear limb lameness. While aspirin may be effective, usually immunosuppressive drugs are necessary (see below). If the ACL is ruptured or partially torn it will need to be stabilized.

Chronic infection or inflammatory disease can result in antibody-antigen complexes being deposited from the blood into the joints. The resulting polyarthritis is similar to that seen with SLE. Bacterial endocarditis (inflammation of the heart valves), discospondylitis (infection of the vertebrae), mastitis, periodontitis (see next month's column on tooth care), deep pyoderma (deep skin lesions), heart worm disease and fungal infection are some conditions which can produce arthritis in this way. Treatment of the infectious agent is imperative in these cases. Treating with immunosuppressive agents, as you would with other conditions causing this type of arthritis would be harmful (survival rate for bacterial endocarditis was reduced from 20 to 12% when steroids were given to the dogs in one study for example).

Rheumatoid arthritis (RA) is the only noninfectious erosive arthritis which may affect Beardies, and is a relatively rare disorder (Note from E. Sell; we had 4 cases of RA in 1300 Bearded Collies in the 1996 survey). It involves autoimmune and immune mediated processes and results in progressive



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deformation and destruction of affected joints. Diagnosis relies upon detection of anti-immunoglobulins called rheumatoid factor. Positive titers have been reported in both healthy dogs, and those with other illnesses, however. Both distemper and Lyme disease have been reported as possible inciting factors for the onset of RA. The disease starts with inflammation of the synovial membrane, but as it progresses first cartilage and then bone is destroyed, as are the tendons and ligaments around the joint. The stifle, carpus, hip, elbow and hock are most likely to be involved. Rheumatoid factor titers fluctuate and repeat testing may be necessary. Positive titers have been detected in 27-73% of dogs with RA.

Once infectious causes of arthritis have been conclusively excluded, and immune-mediated arthritis (SLE, RA, idiopathic immune-mediated polyarthritis or plasmacytic-lymphocytic synovitis) confirmed, treatment with immunosuppressive agents is initiated. Prednisone is usually the drug of first choice. Treatment usually consists of high doses for three weeks or until synovial fluid samples show no evidence of inflammation. The dose is then reduced gradually, and may be discontinued if the disease goes into remission. Some dogs require low levels of prednisone for life, while others may remain disease free after a few months of treatment. If the dog does not respond to prednisone, or to minimize the side-effects of high doses of prednisone, this drug may be given in combination with a more powerful immunosuppressive drug, such as azathioprine, cyclophosphamide or clorambucil. Such combinations may produce more rapid improvement in severely affected dogs. These are powerful drugs, and their use should be closely monitored. It should also be remembered that the patient will be more susceptible to disease as its immune system is being suppressed. Vaccination is contraindicated for dogs undergoing this treatment. Gold salts may be used for dogs who either do not tolerate or respond to these drugs. They are not recommended for dogs with SLE. NSAIDs may be useful for reducing pain in dogs undergoing treatment.

There are many causes of arthritis, and although most beardies have plain old osteoarthritis, just as we do, it is important to realize there may be something other than old age at the root of our beardies' stiffness. Even with DJD, early intervention can slow the process down, and give our beardies a better quality of life.