Diagnosis and Treatment of Immune Mediated Arthritis

Introduction:

Immune mediated arthritis is a common disease seen in young to middle aged dogs. Dogs with this disease are may be of any gender or any breed but there appears to be a breed predisposition in Shelties and some toy breeds. Although the etiology of immune mediated arthritis is generally not known, the pathogenesis involves the production of an antibody against synovial or other periarticular tissues. Once these auto-antibodies bind to their target tissue, inflammatory cells are recruited to the area and the inflammatory cascade is activated causing a moderate to severe inflammatory response that typically involves one or more joints. There are two general categories of immune-mediated joint disease; erosive and non-erosive. The erosive form is associated with destruction to the subchondral and periarticular tissues whereas the non-erosive form is not.

History and Physical examination:

Dogs with immune mediated arthritis may present for a variety of clinical signs and often signs are vague and non-specific. Dogs are often presented for lameness in one or more legs may be reluctant to move around and in may seem painful with nearly any manipulation. Dogs often are anorectic and show a generalized malaise. Dogs in the acute phases may be febrile. Because of the vague clinical signs, it is often difficult to distinguish immune mediated arthritis from numerous other diseases.

On physical examination, dogs are painful and it may be difficult to localize the origin of the pain. The most consistent clinical sign is lameness in one or more leg. Pain will often be localizable to one or more joints and is more common in the smaller distal joints although, any joint may be affected. A consistent feature is palpable joint effusion in affected joints and is often a fluctuant effusion in acute disease that may become a firmer swelling in more chronic cases. The rest of the physical examination if typically normal and it is important to note that the neurologic exam is generally normal.

Diagnostic work-up:

The diagnostic workup begins with a minimum data base including a CBC and biochemical profile and radiographs of the affected joints. The CBC may be normal or often will show an elevation in the white blood cell count associated with the inflammation in the joints. The biochemical profile will often be normal with no specific
changes associate with his disease. Radiographs of the affected joints will show soft tissue swelling associated with the joint effusion in nearly all cases. Dogs with the erosive form of immune mediated arthritis will show subchondral bone destruction, subchondral cyst formation, joint collapse, and in some cases joint luxation or instability in the affected joints.

In all cases of immune mediated arthritis, synoviocentesis and synovial fluid analysis are helpful. This is performed by clipping the hair over the affected joint(s) and aseptically preparing the site for synoviocentesis. A small (22 ga) needle is introduced into the joint and synovial fluid is aspirated. If enough fluid is obtained, it is helpful to submit some fluid for culture and the rest of the sample for fluid analysis (cell count and cytology). When culturing the joint fluid, place ½ -1 ml of synovial fluid in a blood culture bottle and culture as for blood. This greatly increases the chances of an accurate result when compared to submission on a culturette swab. Culture results will take up to a week to obtain results. The fluid analysis should be available in 1-2 days from most labs. Cell counts in normal joints are generally less than 3000 cells/ml whereas dogs with inflammatory joint disease often have cell counts exceeding 10,000 cells/ml. Cytology results in normal joints generally shows low numbers or mononuclear cells whereas joints in dogs with inflammatory disease (immune mediated joint disease, tick borne disease, septic arthritis) generally show large numbers of neutrophils.

Since immune mediated joint disease and tick-borne illnesses (ehrlichiosis and Lyme disease) often present identically, appropriate tests to rule out tick-borne illnesses must be submitted prior to treatment for immune mediated arthritis.

Additional tests that may be useful include ANA, LE and Rheumatoid tests. These tests can be submitted to commercial labs and help confirm the diagnosis in dogs; however, false negatives are common and I do not typically submit these tests since they rarely change my treatment plan.

Treatment:

Once septic arthritis and tick-borne illnesses are ruled out, treatment for the immune mediated disease should be instituted. The first line of treatment is immunosuppressive therapy. There are several drugs that are used and typically work well. I generally will begin with Prednisone at 1-2 mg/kg. This dose is used initially and can be tapered every 2 weeks so that a minimal every other day maintenance dose can eventually be stopped in some dogs.

If dogs are not responding to prednisone or the high dosed cannot be tapered down to a lower dose, other drugs can be introduced to help make the dog more comfortable and to eliminate the undesirable side effects of the higher prednisone doses. Other drugs that are helpful are azothioprine, cyclosporine and leflunomide.
These drugs can be used alone or alternated with prednisone. Of the three drugs listed, leflunomide is my second choice since at doses of 4 mg/kg/day, side effects are minimized and the drug can be very effective. Dogs with immune mediated arthritis should be treated at least 4-6 months after clinical signs have disappeared.

In dogs with severe erosive arthritis and unstable joints, surgical arthrodesis or orthotic braces may be needed to make the joints stable and to allow the patients comfortable mobility.