



Diagnosis and Treatment of Equine Joint Disease

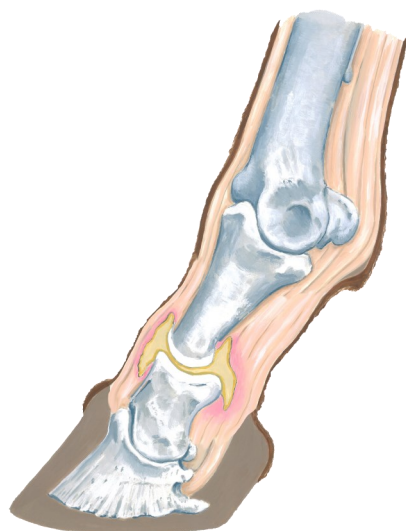
Introduction

It is estimated that a staggering 60 % of all equine lameness is due to arthritis and joint disease! Often joint diseases are diagnosed after the onset of the disease. One of the biggest challenges is that some arthritic horses might not show signs of lameness when there is damage and inflammation in the joint. Proper prevention and early diagnosis is key in managing the progression of joint disease.

A) Prevention:

What can you do? Look for PAIN, SWELLING, HEAT & LOSS of FUNCTION

- *Signs of pain* such as lameness or soreness upon palpation of the joint may indicate inflammation in a joint.
- *Swelling*: Acute swelling (sudden onset) occurs as a result of blood vessel dilation and the movement of fluid into the joint to help repair damaged tissues. This type of swelling is often soft to touch and your horse may be sore upon palpation. Chronic swelling, or long term swelling, of an inflamed joint may feel harder due to the production of new bone as a result of the chronic inflammatory process.
- *Heat*: When a joint becomes inflamed, the temperature might rise as much as 1°C above resting body temperature which can be useful as a diagnostic tool given the appropriate equipment (our hands are likely not sensitive enough to notice this small change in temperature).
- *Visual Exam*: Inflammation in the joint might be visible from the outside due to swelling. Noticing and identifying any swelling at an early stage might help in the early diagnosis of joint disease.
- *Palpation*: Palpating, or feeling, your horse's joint is an easy method to identify potential inflammation. Familiarize yourself with basic joint anatomy and know what is normal, which lumps should and shouldn't be there. You may also use the opposite leg of your horse for comparison. When you are feeling your horse's leg, check for any signs of heat, swelling, pain and reduced range of motion.



An inflamed joint.

If you suspect any signs of inflammation, speak to your vet. Veterinarians have a wide range of diagnostic tools at their disposal.

B) Diagnosis:

It is important to work closely with your vet to properly diagnose and design an appropriate treatment program for your horse. Here are a few diagnostic tools that vets use to help in the diagnosis of joint disease.

What can your Vet do?

During a clinical examination, your vet might perform any number of tests including flexion test, nerve "block" (anesthetic "blocks") to help pinpoint any joint related lameness. Other tools described below are used alone or in conjunction to help in the diagnosis of the joint disease.

1) Joint Imaging Techniques:

X-Rays (Bone)

X-Ray is the most commonly used diagnostic tool in joint disease. It is often used as the first stage of diagnosis given its practicality and ease of use. X-Rays are able to identify the presence of bone chips as well as assessing the growth of new bone that is associated with certain cases of osteoarthritis. Narrowing of the space between the bones in a joint, which is associated with the breakdown of articular cartilage, can also be seen in an X-ray, however this is only seen in later stage of joint disease. Unfortunately, X-rays are not able to see changes in articular cartilage since it is mostly made up water and doesn't show up on an X-ray.

Computed Tomography – CT (Bone)

A CT scan takes multiple X-ray images at different angles across the limb of a horse while it is anesthetized. A computer then produces a series of "sliced" images. This allows for very detailed pictures of the structure and shape of the bone as well its bone density which can be very helpful in the diagnosis of joint disease.

Arthroscopy (Cartilage)

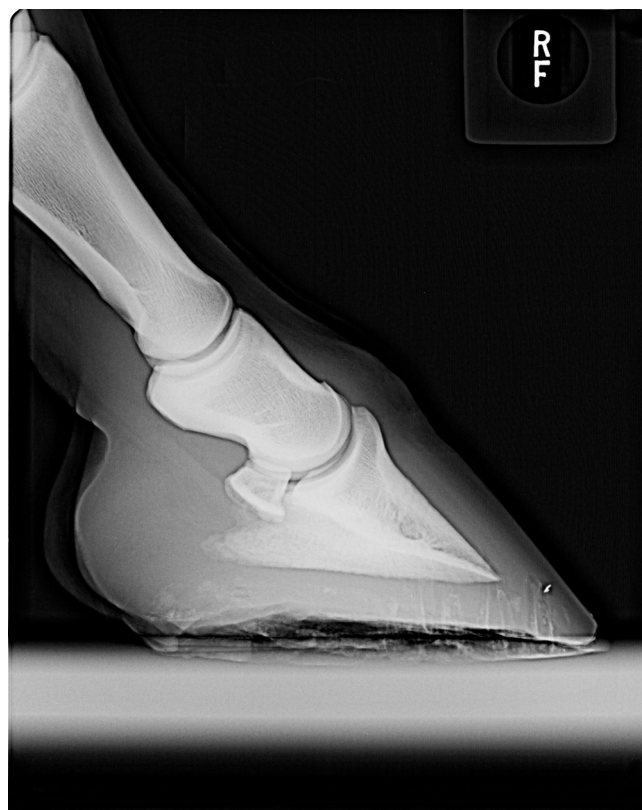
Diagnostic arthroscopy is a new technique that is currently being researched. It is more invasive than traditional techniques as it involves the insertion of a small endoscope into the joint and distending the joint with fluid - this allows for a clear view of the inside of the joint. Unlike the X-ray, this technique is more sensitive and allows seeing defects in joint cartilage.

Nuclear Scintigraphy – Bone Scan (Inflammation)

A bone scan is able to detect inflammation in the joint. During inflammation, there is an increase in the dilation of blood vessels in the joint – this can be detected using a bone scan. In this test, a radioactive dye is injected into the bloodstream of the horse and the dye diffuses out of the blood vessels and concentrates in an area of inflammation which can be seen with a special camera. Although this technique is very sensitive, it is not specific to the problem causing the inflammation.

Ultrasound (Soft Tissue)

An ultrasound is useful to evaluate any damage to soft tissue in and around the joints including ligaments, tendons. It does not indicate problems associated with bone disorder and/or inflammation in the joint.



2) Biological Techniques

Serum biomarkers: (Early detection of changes in bone and cartilage)

Serum biomarkers have been shown to be very useful in early diagnosis of joint disease. A biomarker is a substance/element that is measured and is used to indicate the status of a metabolic process inside the horse's body. Biomarkers inside the synovial fluid and blood serum can be measured to detect changes in the joint. For example, when articular cartilage is degraded, there is a breakdown of collagen and the subsequent release of molecules and enzymes (such as proteoglycans) can be detected in blood or synovial samples. An increase in these enzymes measured in the blood might indicate joint disease.

C) Treatments

The primary goal in the treatment of joint disease is to reduce inflammation in the joint. It is critical to prevent the products of inflammation, such as interleukin (IL-1), to further damage the joint - specifically the articular cartilage. Pain relief is also an important factor when looking at the treatment of joint inflammation and arthritis as this is a very debilitating and painful disease.

Nonsteroidal Anti-inflammatory Drugs (NSAIDs)

NSAID's are anti-inflammatory agents that inhibit some of the enzymes involved in the inflammatory process that cause damage to the synovial fluid, collagen matrix and articular cartilage. Although NSAID's have been shown to help manage joint inflammation, care needs to be taken when using NSAID's since negative side effects might occur.

Intra-Articular Injection

Joint injections allow veterinarians to administer medications directly into the joint. The most common medications administered are corticosteroids, hyaluronic agents and polysulfated glycosaminoglycans (PSGAG). All these medications are used to control the process of inflammation through different metabolic pathways. Other products derived from the horse's own body can also be injected into the joint - these include IRAP, stem cells and PRP (platelet rich plasma). Research on these techniques is ongoing.



Image courtesy of Dr. Judith Koenig

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