Degenerative Joint Disease and Osteoarthritis

Degenerative joint disease (DJD) or osteoarthritis (OA) is the chronic and progressive degeneration and deterioration of the cartilage between the joints resulting in permanent loss of cartilage. Cartilage is formed by chondrocytes and chondroblasts cells. The cartilage between joints or articular cartilage has no blood supply and therefore has minimal capacity of healing after damage has occurred. The role of articular cartilage is to provide a lubricated, smooth surface for joints to bend and transfer loads. This is why the preservation of cartilage is so important in management and control of degenerative joint disease.

How does DJD occur?

- **After a joint injury:** Instability of joint after an injury will hasten damage to cartilage. This is a common finding after a stifle injury like a cranial cruciate ligament injury.
- **Chronic joint instability:** Conditions such as a luxating patella (kneecap), hip dysplasia or elbow dysplasia can lead to DJD.
- **Chronic trauma or wear and tear:** Small amounts of damage to cartilage occurs with time and chronic use of a joint.
- Other types of arthritis occur such as immune mediated or infectious. These are diagnosed and treated very differently than degenerative joint disease

Why is DJD painful?

Damage to cartilage causes inflammation and swelling which is painful. The pain results in decreased desire to move the joint and therefore stiffness, decreased range of motion and overall decreased mobility.

How is DJD diagnosed?

Physical exam findings of decreased range of motion and a consistent history are key factors in supporting a diagnosis of DJD. Radiographs (x-rays) are helpful in confirming a diagnosis of OA. Proliferative changes and abnormal wearing to the bone at the joint surface can be seen on radiographs.

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How is DJD treated?

Management of DJD has the goal of slowing the progression of degenerative changes but will not reverse changes or completely prevent further occurrence. Treatments will either focus on supporting joint tissues and promoting their regeneration or will focus on decreasing inflammation. Other methods will focus on pain control when the arthritis has become severe. Often a multimodal approach to treatment has the most favorable outcome.

- **Anti-inflammatories:** Prescription non-steroidal anti-inflammatories (NSAID) can be some of the most effective medications to help improve mobility by decreasing pain associated with inflammation. These medications are given to the lowest effective dose but tend to be most effective when used on a daily basis prior to activity

- **Cartrophen (pentosan polysulfate sodium):** This is a nutraceutical injectable medication that stimulate regeneration of cartilage by the chondrocytes, improves synovial fluid (joint fluid) quality and quantity and increases blood supply to the cartilage and subchondral bone. The initial course is a dose once every 7 days for 4 treatments. If subsequent doses or chronic dosing is recommended, they can be continued every 30 days or as needed ongoing.
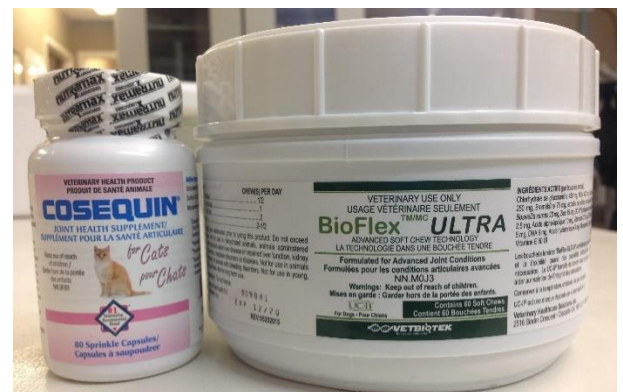
- **Supplements**
  - **Anti-inflammatory supplements**
    - Omega fatty acids: omega-3 fatty acids are among the most effective supplements when used with controlled amounts of omega-6 fatty acids. A ratio of 2:1 of omega-6 to omega-3 fatty acids is desired for joint health. Fish oil may contain the correct fatty acid, but often requires high volumes to meet the desired ratio.
    - Green lipped mussel: contains sources of both omega-3 fatty acids and glucosamine and chondroitin
  - **Restorative or protective supplements**
    - Glucosamine and chondroitin sulfate: may support and promote joint tissue regeneration. Glucosamine may be better used as a preventative supplement than when active DJD is present as studies are not supportive of its benefit in active disease
    - Undenatured collagen type 2: may contribute to joint tissue repair and initiate anti-inflammatory and cartilage protective pathways by the immune system.

Figure: x-ray of a knee joint with degenerative joint disease

- o **A note about supplements:** There are many other supplements that may have positive effects but have limited research on safety and efficacy. The quality and sourcing of the supplement is very important in order to have a positive effect. Not all joint health supplements are created equal.

- **Pain control methods:** When DJD has become quite severe, nerve pain medications or even opioid medications can be used.

- **Diets:** Joint health and support diets can be effective as they contain supplements such as omega-3 fatty acids or glucosamine and chondroitin. Diets with scientific research to support them will have the proper omega-6 to omega-3 ratio. The majority of commercial diets contain a ratio of 3:1 to 30:1 omega-6 to omega-3. Joint diets are preferred in cats over additional supplementation of fatty acids as it may be safer. Platelet changes and increased vitamin E requirement have been associated with over-supplementation of omega-3 fatty acids in cats. Recommended diets include Purina's JM, Hill's JD, Royal Canin's Mobility and Rayne's Healthy Reduction-MCS

- **Weight loss:** This is a very important and often overlooked treatment for over-weight patients. The extra weight will mean extra load on the joints and rapidly hasten damage to cartilage.

- **Rehab and exercise**: Rehabilitation, daily moderate activity and low impact activities have been shown to be helpful

Prognosis

Although we cannot stop the progression of DJD, we can slow it down and try to promote some regeneration of the joint tissue. We can start by using preventatives and add in supplements and medications as the disease progresses or clinical signs worsen. We understand that it can be difficult to see your pet in discomfort which is why Nanaimo Veterinary hospital is here to support along the way. Please contact us if you have any questions or concerns at 250-758-3985.

Associated reading

Brown, Jackie. The Skinny on Pet Supplements. Veterinary Practice News. August 2018. Volume 30. Number 8