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Degenerative Joint Disease: In Geriatric Dogs

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SUMMARY

Degenerative joint disease, also known as osteoarthritis, is caused by joint development problems and is very common among small and large dogs of various breeds between 8 and 13 years of age. It is a degenerative condition with no cure, only palliative treatments to control pain and improve the condition.
It typically affects one or more joints in dogs. The joint inflammation that occurs in both situations leads to increased sensitivity in the affected joint area, increased volume and temperature, loss of range of motion, and difficulty moving, primarily related to pain. Both osteoarthritis and degenerative joint disease cause great suffering to the animal, even being grounds for euthanasia in some cases when the bone marrow is compromised and surgical intervention is ineffective, and when the animals are debilitated and unable to move. In this research paper, we will discuss the causes of this disease, the treatment options available on the market, and palliative treatments combined with integrative medicine, which are crucial for pain control and patient stabilization.

Keywords: Osteoarthritis. Degenerative. Geriatrics. Pain. Stabilization.

ABSTRACT

Degenerative joint disease, also known as osteoarthritis, is caused by joint development problems and is very common among small and large dogs of various breeds between 8 and 13 years of age. It is a degenerative condition with no cure, only palliative treatments for pain control and progression. It typically affects one or more joints. The joint inflammation that occurs in both cases leads to increased sensitivity in the affected joint area, increased volume and temperature, loss of range of motion, and difficulty moving, primarily related to pain.
Both osteoarthritis and degenerative joint disease cause great suffering to the animal, even being grounds for euthanasia in some cases when the bone marrow is compromised and surgical intervention is ineffective, and when the animals are debilitated and unable to move.
In this research paper, we will discuss the causes of this disease, the treatment options available on the market, and palliative treatments combined with integrative medicine, which are crucial for pain control and patient stabilization.

Keywords: Osteoarthritis. Degenerative. Geriatrics. Pain. Stabilization.

1. INTRODUCTION

Degenerative joint disease also known as osteoarthritis is caused by of joint development problems and is very common among dogs aged 8 to 13 years old age of small and large breeds of various breeds. It is a pathology of a degenerative nature that there is no cure, only palliative treatments to control pain and the progression of the disease.

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condition. It usually affects one or more joints in dogs.

Degenerative joint disease is a condition that exclusively affects the synovial joints and is characterized by fibrillation, cartilage cracking, microfractures, cysts and sclerosis in the subchondral bone with formation of osteophytes at the joint edges. This process is the deterioration of the joint structures that occurs secondarily to instabilities, incongruities or injuries of the articular cartilage. Inflammation of the joints that occurs in both situations leads to increased sensitivity in the region of the affected joints, increased volume and temperature, loss of amplitude of the movement, and difficulty in moving related mainly to pain.

The factors that increase the cause of these diseases in dogs are the presence of lesions joints such as hip dysplasia, ligament rupture, dislocation of patella, overweight, slippery floor favoring micro traumas in the cartilage, genetics and age.

Both osteoarthritis and degenerative joint disease cause great suffering to the animal, becoming sufficient reason for euthanasia in some cases when the bone marrow bone is compromised and surgical intervention has no solution and when the animals are weakened without movement.

This work aimed to discuss degenerative joint disease in geriatric dogs. Likewise, it sought to gain knowledge for pain control and alternative treatments so that the disease would not evolve drastically so as not to be surgical intervention was necessary. This allowed us to present therapeutic alternatives less invasive for the treatment of degenerative joint disease, such as sessions of acupuncture, physiotherapy and ozone therapy. These therapeutic options have proven to be satisfactory and effective.

2 THEORETICAL FRAMEWORK

2.1 METHODOLOGY

To prepare this research work, we followed the review methodology bibliographical, using the available literature. We searched academic sources

covering the last five years, that is, articles published from 2018 onwards, in addition to consult books and online resources, including research sites, dissertations and articles scientific data related to degenerative joint disease. We use the following Keywords to direct our research: Pain control, osteoarthritis, medicine integrative, geriatric dogs.

3. RESULTS AND DISCUSSION

The muscles, along with their innervation, are constituents of the locomotor system. tendons, ligaments, and bones. The association between these structures is characterized by joints, limited by a joint capsule and bathed by synovial fluid. All these components perform the functions of supporting and moving the body. Some muscle groups and their movements are different in some animal species (FEITOSA, 2014).

Bone can be primary (immature, fibrous) or secondary (mature lamellar); both presentations can be organized as spongy (trabecular) bone and bone compact, and are visible anatomically, radiographically and microscopically (FEITOSA, 2014).

This visualization method is used to diagnose bone changes in animals. that present clinical changes and serve to identify osteoarticular diseases early. Being one of the most common degenerative joint diseases (DJD) in geriatric animals with hip dysplasia (CHD) (FEITOSA, 2014).

FCD is the abnormal development or growth of the hip joint, in general bilaterally. It affects the femoral head, femoral neck and acetabulum. Its transmission is hereditary, recessive, intermittent and polygenic. Nutritional, biomechanical and environment, associated with heredity, worsen the condition of dysplasia (SOMMER, 1998).

Clinical signs are associated with sudden onset, pain, deformity, crepitus, and abnormal or limited movement of the pelvic limb. Specific signs vary greatly, depending on the location of the femoral head in relation to the acetabulum (PIERMATTEI; FLO, 1999).

Other possible presentations would be unilateral or bilateral lameness, arched back, body weight shifted towards the thoracic limbs, with lateral rotation of the

pelvic limbs and waddling gait (WALLACE, 1987). These changes in FCD affect medium and large dog breeds more. Clinical findings in FCD vary with the age of the animal and very often, there are no signs noticed by the owners (PIERMATTEI; FLO, 1999).

Older dogs present different clinical pictures because they suffer from a condition chronic degenerative joint disease and its associated pain. The claudication may be unilateral, but is usually bilateral. Signs may become apparent over a long period of time, or they arise suddenly after vigorous activity that results in rupture or other injury to soft tissues of the abnormal joint (PIERMATTEI; FLO, 1999).

Microscopically, after an injury, the degradation of the cartilaginous matrix begins by enzymes and inflammatory mediators cause the breakdown of proteoglycans and the network of collagen, there is an increase in the amount of water in the cartilage and necrosis of chondrocytes superficial (MELO et al., 2008).

Edema and cartilage fibrillation result in surface irregularity joint, cracks begin to appear in the cartilage, becoming erosive, exposing the bone subchondral, which reacts by producing osteophytes and bone sclerosis appears (MELO et al., 2008).

Generally, along with degeneration, a severe inflammatory process occurs. low, this inflammation releases cytokines and prostaglandins that prevent new chondrocytes to repair the damage (PENHA, 2014). As articular cartilage does not have blood vessels, your nutrition is restricted, hindering the healing process that involves the phases of necrosis, inflammation and repair (SILVA, 2012).

Diagnosis of degenerative joint disease includes observation of clinical signs such as lameness, reluctance to move after a period of rest, difficulty in performing physical activities, irritability, loss of appetite, licking or biting the joint affected (PENHA, 2014), in addition to the physical examination of the patient who may present joint pain, decreased range of movement, crepitation and joint edema (PIMENTEL, 2013).

The dog generally prefers to sit rather than remain standing and when standing up it presents slowness and great difficulty. The pelvic and thigh muscles atrophy markedly. When at the same time the shoulder muscles hypertrophy due to the cranial displacement of weight and greater use of the thoracic limbs (PIERMATTEI; FLO, 1999).

Aging itself is not a disease, it is a process that involves a progressive and irreversible loss of functional reserve capacity in the body and

most systems, which alters immune responses and may predispose to disease (SHEARER, 2010). To complement the diagnosis, radiography of the joints suspicions can be performed as a first exam, to rule out other pathologies such as, for example, fractures. In the early stages of DAD there are no radiographic signs visible, as the disease begins by affecting the cartilage, which cannot be evaluated by radiography. (BILCK FILHO, 2020).

As the disease progresses, changes such as increased synovial mass, formation of periarticular osteophytes, osteophytes, bone remodeling and subchondral bone sclerosis which is the increase in radiopacity of the subchondral bone due to increased stiffness in response to the osteoarthritic joint process (CUNHA, 2022).

There is no definitive treatment for DAD, but there are those that seek to control the symptomatology, secondary conditions and prevent the worsening of changes, providing quality of life to the animal. Treatments include analgesic drugs, chondroprotective and anti-inflammatory agents; nutraceutical agents; management; surgery and physiotherapy. Thus, the disease can be treated conservatively or surgically, and should be treated in a multimodal, that is, associating more than one technique according to each patient's case (SPRADA; MINTO, 2018).

Physiotherapy is indicated for the preserved method in animals that do not have surgical indication. According to the literature, there is a histopathological improvement of the matrix cartilage by up to 60% with the use of physical agents such as magnetotherapy, ultrasound therapy and laser therapy (SHARON; EZTALA, 2018).

It can be used in the early or advanced stages of the disease, because it helps in patient recovery, prevents the formation of new joint problems, increases the joint mobility through passive range of motion exercises with stretching improving muscle flexibility and extension, mass gain, pain relief and improvement in the animal's quality of life (SHARON; EZTALA, 2018).

FINAL CONSIDERATIONS

It is concluded that bone is a connective tissue formed by cells such as osteoblasts, osteoclasts and osteocytes, included in a gelatinous substance that becomes mineralized.

The extracellular matrix occupies most of the tissue volume and is formed by collagen, sugars, glycoproteins, proteoglycans, glycosaminoglycans, peptides, lipids, ions organic, inorganic and water.

When there is a change in this bone part it can generate calcification or wear on the tissue, which causes pain and difficulty in moving the animal. It is difficult for the guardian to maintain the quality of life and consequently the well-being of the senile dog.

Nutrition is extremely important in older animals, good nutrition is essential for a healthy life. diet should maintain ideal body condition, avoid reducing lean mass, not allow the immune system to decline, as well as providing nutrients to support functions basic characteristics of the animal.

In general, protein levels should be assessed and blood glucose concentrations regulated. antioxidants, minerals and vitamins, for this reason medical monitoring is required veterinarian is important to regularly perform blood and biochemical tests and images to analyze the progression of the joint disease and follow the correct treatment.

For a satisfactory response to treatment, opioid medications should be used or nonsteroidal anti-inflammatory drugs (NSAIDs), which provide comfort to the animal due to pain relief, especially in early cases. Nutraceuticals, such as glucosamine and chondroitin have been widely used, they are involved in the metabolism of hyaline cartilage, acting on collagen production and long-term use helps prevent and control the disease.

As for management, factors such as obesity aggravate the disease, so a exercise routine and diet to lose weight and develop muscle mass; in addition to management of the environment, in which slippery surfaces should be avoided, for example, by adding non-slip walkways and ramps to prevent jumping.

Palliative treatment must be carried out throughout the animal's life, for this reason reason should be followed up periodically with a specialized veterinarian and carry out physiotherapy and acupuncture sessions to prevent the animal from having seizures and have a positive quality of life.

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