

ABSTRACT

Keywords: lameness, cruciate ligaments rupture, treatment,

In the actual context where large urban areas are in a rapid and strong expansion, when modern man is more acutely exposed to daily stress, it becomes increasingly isolated from nature and at the same time feels more urgent need for communion with it. The dog is accepted not only because of its virtues and his devotion as a good pet companion, but also thanks to its special utility that help police, to detect drug trafficking, as a companion for rescuers and lifeguards, but also in many other many roles.

The human interest to this friend has gradually increased. The close relationship between man and dog, taught us to love the canine species, and to care about their representatives. Canine pathology begins to represent the largest segment of general veterinary pathology, which is because, we seeks more effecient treatment for quadrupeds. Thus, diseases such as orthopedics are given importance, because, most often an orthopedic condition untreated can lead to loss the mobility of the affected limb. Since, at the knee joint may appear a multitude of problems, in this research we focused our attention to cruciate ligaments. These ligaments, two in number, one cranial and other one caudal, in this research, we demonstrated that different pathological changes may suffer and they are dependent on the individual, and that can lead to loss of joint mobility.

PhD thesis entitled „ **Surgical diseases of femoral-tibio-patellar joint dog** " is structured in accordance with the Doctoral school in two parts: „ **The present stage of knowledge** ", the first part, comprised of 48 pages, representing 27.6% and part II „ **Personal contributions** ", spread over 126 pages, 72.4% form volume of the thesis.

In the first part, divided into two chapters, are presented summary the information from the literature regarding the anatomy and physiology of the knee region and data of surgical pathology of the knee joint, which were considered useful for comparing the data from the second part. This part is illustrated by 19 images, were selected as suggestive for detailing the informations.

Part II is divided in four chapters (Chap. III - VI) and includes the purpose and objectives of research, study material and used methods, results and their interpretation. Final conclusions conclude this part.

The work was carried out over a period of seven years, respectively October 2007 - 2014 on casuistry provided by patients from Los Gatos Dog and Cat Hospital, California and those patients from the private veterinary practices of SC Twovet farm SRL, Vaslui County.

The main objectives of the thesis, set out in Chapter III were:

- analysis of the mobility and support function provided by the cruciate ligaments of the knee joint;
- description of the clinical aspects and their correlation with various etiologic factors and results of diagnostic, approached using laboratory investigations;
- establish the incidence of ruptured cruciate ligaments in dogs and its correlation with different intrinsic factors (race, age, sex, body weight, reproductive status) and extrinsic factors (animal service);
- describe the clinical aspects and orientation towards a type of treatment;
- establish diagnosis protocol to diagnose by correlating the clinical aspects with the imaging;
- comparative assessment of the treatment methods - invasive and non-invasive therapy for establishing a therapeutic behavior in relation with the evolving shape and size of the patient;
- apply the effective methods of physiotherapy for full recovery of the damaged knee joint.

Chapter IV presents the materials and methods used in research work.

Chapter V contains the results obtained during the years of research, and the data are detailed in 43 images and 15 tables.

To make a more complex epidemiological study, was designed a Clinical Observation sheet for all patients which were brought to the veterinarian with an orthopedic condition at the hindlimb.

Epidemiological study permitted us to establish a relative frequency of the studied disease and it was correlated with various intrinsic factors (species, breed, age, weight, work, animal sex) and extrinsic factors (maintenance and behavior conditions), which were relevant for our study.

Epidemiological investigations results showed that from all patients examined (456 dogs with lameness in the stifle) were included in the study 200 dogs, most of them, were medium-sized and large size, of which 149 dogs in Los Gatos California Clinic and 51 dogs in

Twovet cabinets from Vaslui County, dogs who have been diagnosed with cruciate ligament rupture. We tried to explain the orthopedic predisposing condition in studied subjects, at dogs, which before cruciate rupture they were proved with other conditions (trauma, hyperextension of the tibia, excessive internal rotation of the leg, obesity, degenerative articular malformation processes, intraarticular structures, etc.).

The centralization and processing of data concerning cruciate ligaments rupture in dogs provided by the casuistry of the three locations, respectively Los Gatos Dog and Cat Hospital, California, located in urban area, SC Twovet Farm SRL branches in urban areas (cities Vaslui and Bârlad) and rural (the villages Dodești and Viișoara in Vaslui County), allowed us to gather a range of useful information on the etiopathogenesis of this disease.

During the study, it was observed that the increasing the value of the angle of the tibial plateau is a predisposing factor in rupture of the cruciates, especially in large dogs. Thus, we determined a standard tibial plateau angle in dogs with an average weight of 40.9 kg and 11.8 kg +/- variation of; consider the dogs taken into account weighing 7.7 - 81.8 kg. A value of tibial plateau angle measured in all dogs was 25.3 degrees, +/- 4.4 degrees of variation.

Regarding canine breeds that have undergone to the research and which represented total cruciate casuistry, it appears that only five breeds of dogs make up about 59% of animals diagnosed with rupture, and the remaining percentage being completed by crossbreeds of different races and the common breeds (41.1%). The obtained data does not allow us to compare with the percentages mentioned in the literature because, the structure of the canine population of that area was predominated by crossbreeds and common breeds.

In terms of the age at affected category, researches have shown that the incidence of ruptured cruciates was most increased in the group 1-4 years (53%) followed by the group 4-9 years (36%). In the case of the dogs who performs physically demanding activity (hunting, sporting events) they can run only to a certain age, after that, their physical activity is much lower in intensity and intensivity, but also in terms of volume of work (4.5% in the group > 9 years).

Another intrinsic evaluated factor, was the sex of animals, and the results showed: it not exist a sex linked predisposition in the occurrence of the cruciate rupture at males (53% of cases) or female (47% of cases).

Correlation between reproductive status and cruciate rupture prevalence in dogs, in the research, revealed a prevalence slightly increased in the group of non neutered dogs (60.5%) who have kept intact reproductive function compared to animals that have undergone previous sterilization before diagnosis of cruciate rupture (39.5%). This led us to conclude that perhaps sterilization attenuates the behavior and these animals do not overburden the knee excessively and uncontrolled rapid movements due the behavior changes.

Another intrinsic factor in the study of the occurrence of ruptured cruciates was the size of the dog (body weight) and we noted a higher prevalence of rupture at small dogs < 10 kg (22%) or 10 to 20 kg (21%), compared with the larger animals, which incriminates the body weight as a risk factor in the development of cruciate ligaments rupture.

The service, extrinsic factor, determinant factor of the cruciates rupture have a high prevalence and was recorded on dogs which perform security and defense work on the owner propriety (37.5%), sport animals (29%) but surprisingly a high prevalence was found in large pet dogs (23%).

Another extrinsic factor considered in the epidemiological investigation of cruciate ruptures, was the area where the animal lives. Such information encountered in the field, shows that the prevalence of cruciate ligaments rupture is higher in animals coming from urban areas (86.5%) reported to the prevalence recorded in casuistry in rural areas (13.5%).

In the study, it was observed, at dogs with cruciate ligament ruptured, that the hindlimb pain is less visible than other pathological conditions, the dog protects his limb with the affected joint and split his body weight to the forelimbs by changing position of support; but when pain becomes apparent to the owner, the disease is already advanced.

Researches has shown that the two diagnostic tests, cranial tibial drawer test and tibial compression test, have a high specificity and have confirmed that a percentage of 30-50 of dogs with cranial ligaments ruptured will have also the broken, compressed, compacted and eroded menisci, being present the arthritis.

To express the differential diagnosis in our study, were helpful, para clinical examinations, which, in conjunction with the data from observation sheet oriented the treatment method. Treatment methods were grouped into surgical and conservative.

Conservative treatment is well accepted with good results in patients who's weigh is less than 10 kg, but in the large dogs is not efficient, and our research have found that the best

results were obtained at patients whose owners have complied 100% recommendation and applied the appropriate treatment protocol.

Recovery techniques of ruptured cruciates, intracapsular or extracapsular, are known well by the veterinary orthopedists. Intracapsular technique consists in placing autogenous tissue along the joint, using the technique of fascia lata graft and extracapsular reconstruction involves placing sutures outside the joint. Osteotomy method, which consists in tibial plateau leveling is a relatively new method for surgical treatments of ruptured cruciate ligaments reconstruction and is more difficult and involve higher costs.

Postoperative treatment protocol recommendation after surgery was different and varied depending on the method of intervention. Medication used in all cases consisted of postoperative analgesics and products with chondroitin witch improve bone tissue repair.

Physical therapy / physiotherapy, after surgery, can guarantee the success by accurately observing the recommended steps. Thus, in research, we recommended immediately after surgery, cryotherapy to reduce the swelling. Subsequently, were recommended flexion and extension exercises of the limb, so that after 5 - 6 days may start exercises with the medical ball, during the research we applied this recovery method to stimulate proprioceptive sensitivity.

We found during the research that all physiotherapy exercises, which require the operated limb to move, after surgery, help to increase joint mobility significantly. We also found that the owners education on compliance with drugs administration and performing postoperative exercises according to the instructions can positively influence patient recovery.