

Studies of Bone and Joint Diseases of Cats and Dogs

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Introduction

Background: Bone and joint diseases in cats and dogs are commonly presented for treatment at the University Veterinary Hospital (UVH) UPM. Most of them involved traumatic causes, although a few were non-traumatic. We have the expertise and experience to diagnose and treat these cases, presented both by the public as well as the government bodies (Police, Customs, and the Armed Forces). The marked increase of pet-caring Malaysian society, as well as the large expenditure incurred by the government to purchase and train the working dogs, gave importance to the studies in bone and joint diseases, which otherwise would render the working animals useless.

The objectives of the work included:

To analyse the type of cases presented as well as the diagnoses,

To determine the dynamics of using various types of fixation hardware in the treatment of bone and joint diseases, and the follow-up assessment of the techniques used, and

To identify the factors affecting the course of bone and joint diseases.

Materials and Methods

Cases: *Orthopedic* (bone and joint) disease cases of cats and dogs admitted to UVH-UPM were used as part of the study material.

Radiographic Films: These form the tools for diagnoses as well as record of treatment and follow-up study. Data prior to 1966 had been recorded in a computer database for analysis, and data for 1996-1999 will be subsequently recorded and analyses as radiographic examination of bone and joint diseases of dogs and cats presented.

Assessment of the surgical techniques: The techniques and the internal

fixation devices used as well as the follow-up studied (Denny et al., 1993; Ibrahim et al., 1993). A review of small animal orthopedic surgeries performed at UVH-UPM over three years (1994-1996) had been completed (Loqman et al., 1997).

Determination of optimum levels of minerals for bones: A preliminary study on the analysis of blood and the enzyme levels in the joints of dogs had been carried out. A preliminary study on the characteristics of lactate dehydrogenase (LDH) enzyme levels in serum and synovial fluid of dogs was carried out. Work on the analysis of minerals (zinc and copper, calcium and phosphorus) and their optimal levels in cats and dogs bones and joints were carried out in the next phase of research (Robertson et al. and Burns (1963). Animal models for the mineral study had been identified while in consultation with the Zoo.

Results and Discussion

The presented cases were examined, radio graphed and treated accordingly. The radiographic analyses of all the cases examined have not been completed yet.

Assessment of the surgical techniques used: Nearly 40% of surgical cases were orthopedic cases, of which more than 90% were due to traumatic causes. Cats made up 47% of the orthopedic cases and 53% were dogs. A higher percentage involved was adult animals (>12 months old, 60%) and intact males (56%). The most common problems involved the hind limbs (54%), followed by the pelvis (17%), forelimbs (10%), spine (6%) and head (6%). The treatments used were external fixation (2%), internal fixation (45%), re-constructive surgery (39%) and spinal decompress surgery (4%). The co-existing problems involved organs or tissues adjacent to the site of

orthopedic injury. The follow-up study had identified complications in the use of fixation devices and post-operative procedure inadequacies.

Increased LDH is a good indicator of tissue damage. Many studies were carried out in large animals such as horses, cattle, and pigs, as well as humans, while little work has been done in cats and dogs synovial fluids. The normal trend of LDH in serum of clinically healthy dogs (n=40) had been determined. The result of synovial fluid from the dogs' stifle joints had not been satisfactory and more work is needed. The synovial fluid analysis for LDH levels in normal and affected dogs would be completed as well as the analysis of minerals and their optimal levels in cats and dog's bones and joints.

Conclusions

The trend in the study of bone and joint diseases in cats and dogs tend to focus not only on the physical nature of the injury and their management, but gave importance to the other related factors such as hard wares used in the repair, the synovial fluid characteristics in the joints, and the mineral related to the composition and function of bones and joints.

Benefits from the study

This study benefits the pet, the pet owner as well as the surgeon. It also provides students with skills in orthopedic management and laboratory analysis.

Further, the study increased competence in clinical and radiographic diagnoses of bone and joint diseases in cats and dogs in the training of post-graduates students.

A cheaper and easier bone fixation technique using plumber's paste as a modified Kirschner-Ehmer fixation device had been successfully tested and

it proved to be useful and efficient in fracture repair. A modified Denny's et al. technique of elbow repair had been successfully tried in dogs.

The characteristics of LDH in serum and synovial fluid had been successfully carried out in the laboratory.

Orthopedic skills of the surgeon had been greatly enhanced by completing An Advanced Orthopedic Workshop (Synthesis) in Sydney Australia, for future training of post-graduates students.

Literature cited in the text

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Project Publication in Refereed Journals

None.

Project Publications in Conference Proceedings

None.

Graduate Research

None.