DIAGNOSIS OF ANTERIOR CRUCIATE LIGAMENT RUPTURE OF THE CANINE STIFLE

Ligita Zorgevica-Pockeviča, Alius Pockevičius, Dalia Juodžentė, Benas Noreikis
Veterinary Faculty of the Lithuanian University of Health Sciences
ligitazorg@gmail.com

INTRODUCTION. Anterior cruciate ligament disease of the canine stifle is a partial or total rupture of the anterior cruciate ligament (ACL), or avulsion, where there is a loss of function of the ligament due to a bone fracture at the ACL point of insertion. Consequences include instability of the stifle joint, inflammation, the patient exhibits lameness, feels pain and discomfort especially after physical load-bearing. This pathology is usually diagnosed in older aged dogs.

MATERIALS AND METHODS. The lameness of dogs diagnosed with anterior cruciate ligament rupture was evaluated via a point grading scale from 0 to 4. Instabilities of the stifle joint were evaluated using the Cranial Drawer and Tibial Compression tests. Radiological evaluations included mediolateral (ML) and craniocaudal projections. Osteoarthritic symptoms were evaluated using ML projections according to the Brünnberg classification index from 0 to 3. Effusion of the joint capsules were rated using a 0 to 3 point scale. A macroscopic arthrotomy evaluated the condition of the joint capsule; signs of osteoarthritis – osteophytes (0–none, 1–few, 2–many) as well as the condition of the meniscus and anterior cruciate ligament. During the arthrotomy, samples were obtained from the joint capsule's sub-patellar bursa for histopathological evaluation which were fixed in buffered 10% formalin solution, embedded in paraffin and stained with hematoxylin and eosin.

RESULTS. Dogs (n=21) diagnosed with anterior cruciate ligament rupture were from 5 months to 13 years of age. 59% of the examined dogs were of large breeds. Lameness in 28.5 % of the examined dogs scored 4 points, 47.6% - 3 points and 23.9 % - 2 points respectively. Cranial Drawer and Tibial Compression test results were positive in 66.6 % of examined dogs, 14.3 % were negative, and 19.1% were inconclusive. Joint capsule effusion grading resulted as follows: 3 points - 33.3%, 2 points – 33.3%, 1 point – 14.3 % and 0 points in 19.1% of the examined dogs. Radiological examinations indicated that osteoarthritis grades were valued at 3 points in 9.5%, 2 points in 9.5%, 1 point in 42.9% and 0 points in 38.1% of cases. Joint capsule polyps were identified in 23.8% of examined dogs. During arthrotomy, osteophyte grades were valued at 2 points in 19.1% and 1 point in 52.4% of examined dogs. The remainder - 28.5%, were undetermined. A ruptured meniscus was identified in 61.9% of examined dogs, 38.1% were undamaged. In 71.4% of examined dogs, the anterior cruciate ligament was completely ruptured and partial ruptures comprised 28.6%. During arthrotomy, redness and thickening of the joint capsules were observed in all patients. Histological examinations of joint capsules confirmed inflammation, lubricant layer villous hyperplasia and 23.8% of examined dogs were diagnosed with polyps.

CONCLUSIONS. Dogs with ruptures of the anterior cruciate ligament and observed exhibiting continuous lameness should receive Cranial Drawer and Tibial Compression Tests and radiological examinations. Ruptures of the anterior cruciate ligament indicate atypical movement between joint surfaces which evokes inner meniscal pathologies and progressive osteoarthritis. Increasingly common histological findings are characteristic to chronic inflammation: thickening of the joint capsule, inflammatory cell infiltrations, lubricant layer villous hyperplasia and polyps, observations of increased fibrocyte counts and collagen tissue.