
Article

<https://doi.org/10.61900/SPJVS.2023.04.14>

GONIOMETRIC MEASUREMENTS OF THE FEMORAL JOINT IN DOGS WITH HIP DYSPLASIA

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Abstract

Canine hip dysplasia is one of the most common orthopedic diseases presents in most breeds of dogs but more prevalent in large breeds. Clinical examination through tests such as Ortolani, Barlow, and Bardens, alongside with radiological, tomographic, magnetic resonance, and ultrasonographic examinations, are the only methods for screening and diagnosing canine hip dysplasia. Canine hip dysplasia can lead to other musculoskeletal diseases, with the most common ones being cruciate ligaments tear and spinal conditions such as IVDD or degenerative myelopathy. To assess hip changes, it is recommended that the patient to be heavily sedated, and the standard exposure will be with the hips in forced extension. Among knee conditions related to hip dysplasia, the most commonly reported are patellar luxation, partial cranial cruciate ligament rupture, and osteoarthritic changes. A study conducted on 65 dogs found concurrent hip dysplasia and patellar luxation in 28% of cases. Clinical goniometry is an objective and non-invasive method of measuring joint angles, allowing for the assessment of the normal range of joint movements. This method can indicate the severity of joint pathology. Currently, goniometry is often used in the field of imaging and it can be an important element in assessing the musculoskeletal system. The aim of this paper is to evaluate the effectiveness of goniometric measurements at the knee and hip joint levels in dogs with hip dysplasia and if there is a correlation. A total of 10 dogs from varying breeds of dogs aging from 1 to 3 years old, were deeply sedated in order to measure perform the x-rays in ventro-dorsal hip extended view for measuring the Norberg angle (Na), anatomic Latero-Proximal Femoral Angle (aLPFA), anatomic Latero-Distal Femoral Angle (aLDFA), mechanical Latero-Distal Femoral Angle (mLDFA), mechanical Latero-Proximal Femoral Angle (mLPFA). All patients were part of the clinical cases present in our department and the written consent of the owners was obtained for each dog. Norberg and femoral angles were measured within the local DICOM viewer and the statistical analysis was performed with IBM SPSS Statistics. All images were reviewed by an ECVDI resident, a radiology professor and a radiology intern. All patients within our study had a Na under the reference value of 105°. All the femoral angles were within limits regarding their normal values. We conclude that there is not a significant relation between the Na and the goniometric values obtained, most likely because of other factors that are influencing these measurements (ex. breed variations, femoral slightly rotation, muscle contracture due to poor anesthesia management, other musculoskeletal genetic disorders etc.). Further research on a more relevant statistical sample is recommended, in order to determine the normal goniometric values and the changes that appear in case of hip dysplasia.

Keywords: hip dysplasia, Norberg angle, musculoskeletal diseases, goniometric measurements
