



Morphological Assessment of the Normal Stifle Joint in Persian Cats Based on the Computed Tomography Images

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Abstract

BACKGROUND: One of the most practical and accurate diagnostic imaging methods is computed tomography (CT) scan, which can be used to examine bones and joints in small animals.

OBJECTIVES: This study aimed to evaluate the morphology, morphometry, and anatomy of the stifle joint of the Persian cat based on the CT images.

METHODS: This descriptive cross-sectional study examined 10 clinically healthy adult Persian cats (5 males and 5 females) with a mean age of 2.4 years and a mean weight of 4.7 kg. To prepare CT images, the anesthetized Persian cat put on the CT scanner plate in a dorsoventral position. While the hind limbs of the cat were fully extended and kept towards the back, the sagittal, transverse and dorsal scans were taken at 2-mm intervals from the distal third of the femur to the proximal third of the tibia in the lateral and anterior posterior planes.

RESULTS: Based on the results, the CT method can help identify most of the anatomical structures of the stifle joint without the use of contrast material. The bones were white due to their high density, medullary cavity were dark, and muscles and tendons were visible in different gray scales on the CT images. The posterior cruciate ligament, the anterior and posterior ends of the lateral meniscus, and the posterior end of the medial meniscus were well identifiable in the sagittal reconstruction. Collateral ligaments, anterior cruciate ligament, and the middle part of the menisci were better seen in the dorsal plane. The only anatomical structure that was not identified in the multiplanar reconstructions was the anterior end of the medial meniscus. The medial and lateral parts of fabella were clearly visible under the tendons of the gastrocnemius muscles. Bony structures and infrapatellar fat pad could also be identified on the CT images.

CONCLUSIONS: The anatomical structure of the stifle joint of the Persian cats is similar to that of house cats. The CT images can be used for teaching anatomy, interpretation of CT scan images, and diagnosis of musculoskeletal complications and treatment of Persian cats.

Keywords: Computed tomography, Morphology, Morphometric, Persian cat, Stifle joint

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Figure Legends and Table Captions

Table 1. Weight (kg) and age (years) of the study Persian cats.

Table 2 and 3. Right and left stifle joint parameter values (mm) in male Persian cats.

Table 4 and 5. Right and left stifle joint parameter values (mm) in female Persian cats.

Table 6. Mean values of joint parameters (mm) in male and female Persian cats.

Figure 1. The reconstructed CT image of the normal left stifle joint in a 3-year-old male Persian cat in the sagittal plane. (a1) End of lateral meniscus, (a2) End of medial meniscus, (b) Lateral meniscus (arrows), (c) Anterior cruciate ligament (black arrow), (d) Posterior cruciate ligament (white arrow), (e) medial meniscus (arrows).

Figure 2. The reconstructed CT image of a normal left stifle joint in a 3-year-old male Persian cat in the dorsal plane, (a) Lateral meniscus (black arrows) and medial meniscus (white arrows), (b and c) 1. Caudal cruciate ligament 2. Cranial cruciate ligament, (d) 1. Menisofemoral ligament 2. Caudal cruciate ligament.

Diagram 1. The values of the left stifle joint parameters in male and female Persian cats.

Diagram 2. The values of the right stifle joint parameters in male and female Persian cats.