**ABSTRACT**

Title: STANDARDIZED CHARACTERIZATION OF THORACIC HIGH-RESOLUTION COMPUTED TOMOGRAPHIC FINDINGS IN WEST HIGHLAND WHITE TERRIERS WITH CANINE IDIOPATHIC PULMONARY FIBROSIS: EFFECT OF SEDATION VERSUS ANESTHESIA IN HEALTHY AND AFFECTED DOGS

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Purpose of the study: Canine idiopathic pulmonary fibrosis (CIPF) is a progressive interstitial lung disease mainly affecting West Highland white terriers (WHWTs). The aims of the present study were to (1) describe thoracic high-resolution computed tomography (T-HRCT) findings obtained in control and CIPF WHWTs using the glossary of the Fleischner Society and (2) compare T-HRCT images obtained under general anesthesia (T-HRCTGA) with those obtained under sedation (T-HRCTS).

Methods used: T-HRCT images from 11 WHWTs affected with CIPF and 9 age-matched control WHWTs were retrospectively reviewed by three observers (1 veterinarian and 2 physicians) in consensus. Specific T-HRCT features were independently assessed for presence/absence and scored according to their distribution extend (score ranging from 0 to 18) when possible. Overall T-HRCT quality and presence of motion artefacts were also graded.The Fisher’s exact test was used for the statistical analysis. *P-*value ≤ 0.05 was considered statistically significant.

Summary of the results: Ground glass opacity (GGO) was observed in all CIPF WHWTs and in 5/9 of controls (P=0.026). In control WHWTs, GGO was localized to right and/or left cranial lung lobes with an overall GGO score ≤ 2. In WHWTs affected with CIPF, GGO was present in all lung lobes in 8 dogs and in all but 2 lobes in 1 dog with an overall GGO score ranging from 9 to 18. In the remaining 2 CIPF dogs, GGO was localised to both cranial lung lobes in addition to the accessory lobe in 1 dog, with an overall GGO score was ≤ 4. Consolidations were observed in 5/11 CIPF WHWTs but not in controls (P=0.038), without lobar predilection. Overall consolidation score ranged from 1 to 6. A mosaic pattern, suggestive of air trapping, was noticed in 8/11 CIPF WHWTs but not in controls (P=0.001). The mosaic pattern was observed in all lung lobes in 4 dogs (global score from 10 to 18) and in 2 to 4 lung lobes in the 4 other dogs (global score from 2 to 10). Nodules were present in 3/11 CIPF WHWTs but not in controls. Reticulation, subpleural bands and parenchymal bands were noticed in 1, 1, and 3/11 CIPF WHWTs respectively. Honeycombing, emphysema, pleural effusion and pleural thickening were never observed. Bronchial wall thickening and bronchiectasis were present in 6/11 and 3/11 CIPF WHWTs respectively but not in controls (P=0.014 and P=0.218). The overall T-HRCTS quality was good in 10/17 examinations compared with 16/20 for T-HRCTGA (P=0.279). Motion artefacts were present in 15/17 T-HRCTS examinations compared with 7/20 for T-HRCTGA (P=0.002). However, those T-HRCTS motion artefacts were most frequently graded as mild (11/15) rather than moderate (2/15) or severe (2/15) (P=0.0004). T-HRCTS allowed identification of a mosaic pattern in 2 additional CIPF WHWTs, while consolidation could not be identified in 2 others. There was no other difference between T-HRCTGA and T-HRCTS.

Conclusions: GGO, consolidation, mosaic pattern and bronchial wall thickening are the main T-HRCT features of CIPF in WHWTs. Honeycombing, the major feature of IPF in humans, was never observed, which suggests a different disease pathophysiology or severity between the two species. T-HRCTS can be used for CIPF diagnosis.