

Evaluation of the ratio between the thickness of the bronchial wall and the pulmonary artery using Computed Tomography in cats seropositive to *Dirofilaria immitis*

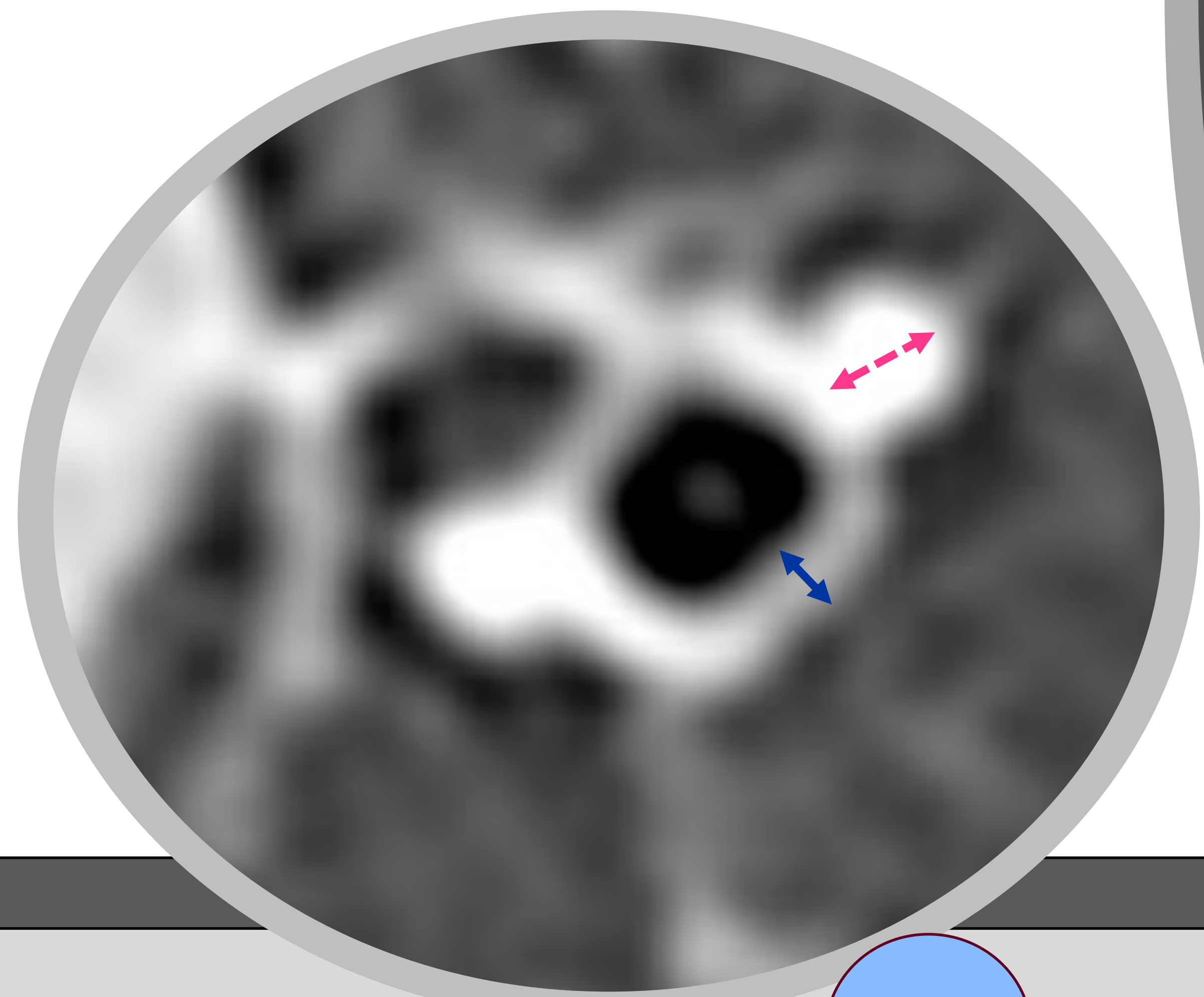
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Introduction

Computed tomography (CT) has been used for the assessment of the feline bronchial structures, damaged by inflammatory lung pathologies. The quantification of bronchial wall thickness has previously been described as an effective parameter to detect bronchiectasis in veterinary medicine. Cats with Heartworm-Associated Respiratory Disease (HARD) often suffer from dilated bronchial lumen because of the potent inflammatory response resulting from exposure to *Dirofilaria immitis*.

The aim of this study was to compare, using CT, the relationship obtained between the thickness of the bronchial wall (BW) and the adjacent pulmonary artery (PA) in healthy cats and cats with HARD in the cranial and caudal lung lobes.



Methodology

A total of 12 cats seropositive to specific IgG against *D. immitis* and with clinical signs compatible with HARD (group A) and 7 healthy and seronegative cats (group B) were included. The same CT scanner was used to evaluate the diameter of the bronchial wall and the adjacent pulmonary artery of the right cranial lobe, cranial and caudal aspect of the left cranial lobe, right caudal lobe, and left caudal lobe, following protocols established in previous studies. Statistical study was carried out using SPSS Version 25.0 software, through the Mann-Whitney U method.

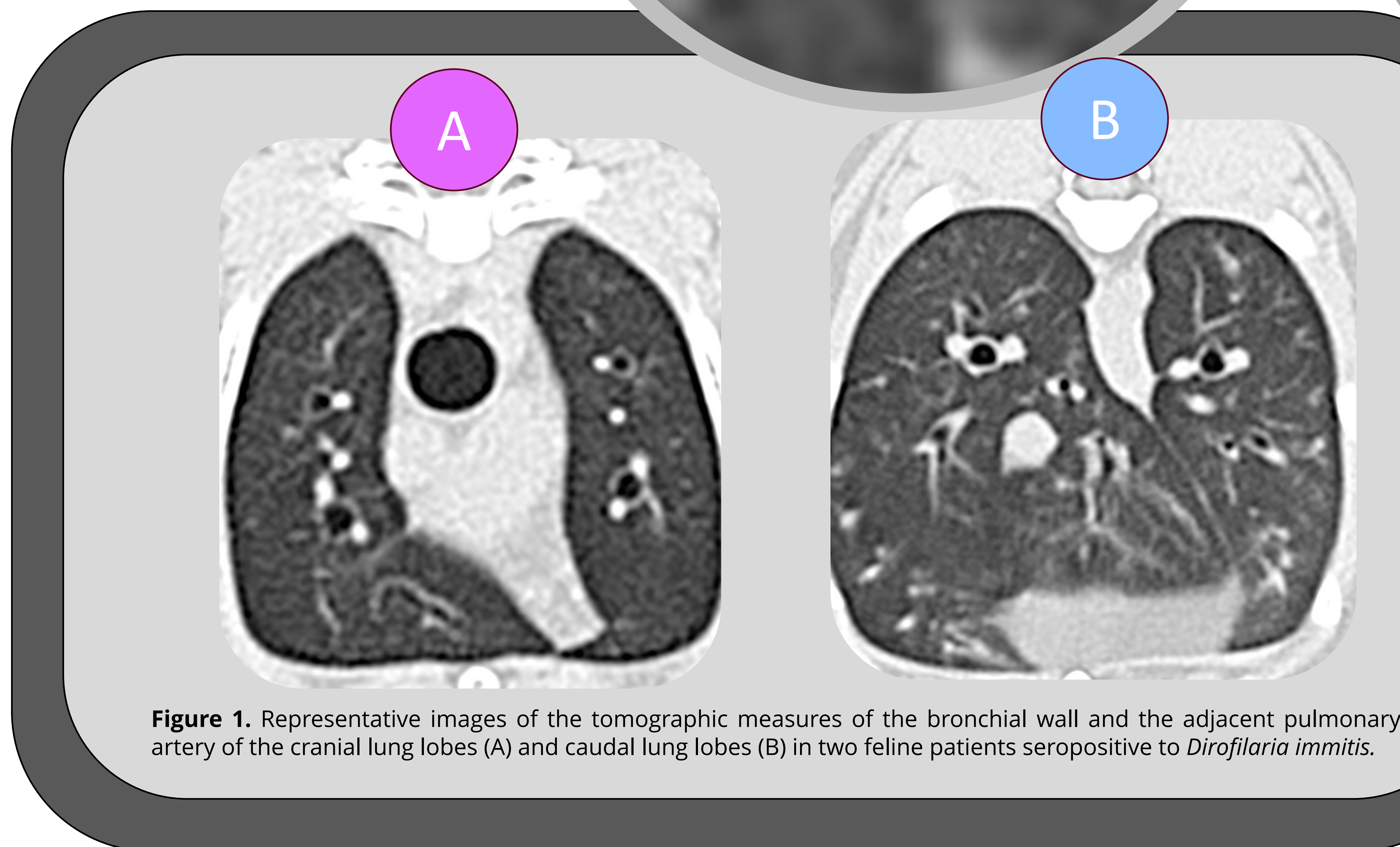


Figure 1. Representative images of the tomographic measures of the bronchial wall and the adjacent pulmonary artery of the cranial lung lobes (A) and caudal lung lobes (B) in two feline patients seropositive to *Dirofilaria immitis*.

Results

The BW/PA ratio was significantly higher for all lung lobes in seropositive cats (0.37 ± 0.04) compared to seronegative cats (0.2 ± 0.01) ($p < 0.000$). The right cranial lobe showed an average of 0.40 ± 0.15 in cats with HARD, being 0.21 ± 0.03 in healthy cats. Similarly, the cranial and caudal aspects of the left cranial lobe exhibited ratios of 0.42 ± 0.11 and 0.41 ± 0.06 in cats from group A, respectively, compared to 0.23 ± 0.03 and 0.20 ± 0.05 in group B. In the right caudal lobe, an average of 0.30 ± 0.08 was observed in seropositive felines, contrasting with 0.17 ± 0.03 in healthy cats. Finally, the left caudal lobe obtained an average of 0.31 ± 0.08 in group A and 0.18 ± 0.02 in group B.

Conclusions

Previous research compared the relationship between BW and PA in healthy dogs and dogs with chronic bronchitis using CT, revealing a higher ratio in the latter. Likewise, cats infected by immature forms of *D. immitis* have chronic bronchial lesions and restrictive lung disease. The results of this study showed that cats with HARD may have a larger bronchial wall than healthy cats, contributing to the development of respiratory signs. These results display the usefulness of CT to detect bronchiectasis in cats with *D. immitis*; nonetheless, more studies with a larger sample number are required.