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Canine idiopathic pulmonary fibrosis (CIPF) is a progressive parenchymal lung disease affecting aging West Highland white terriers (WHWTs). Pulmonary hypertension (PH) is a known co-morbidity in WHWTs affected with CIPF necessitating close monitoring.

The aim of this descriptive study was to assess echocardiographic variations of PH parameters and the effect of treatment with sildenafil in WHWTs affected with CIPF.

WHWTs with compatible imaging and/or histopathological features of CIPF that had an echocardiography performed at diagnosis and a minimum of one echocardiographic follow-up were retrospectively selected over an 11-year period (2013–2024) (n=28, median age 11.0 years, range 7.4–15.3). Rechecks were conducted approximately every 6 months until death or loss of follow-up. Echocardiographic data were collected for a maximum of 4 follow-ups for the purpose of this study. Right heart parameters were measured off-line. The probability of PH was defined as low, intermediate, or high according to the 2020 ACVIM consensus guidelines. Linear mixed models were used to investigate the effects of sildenafil treatment, time, and their interaction with echocardiographic parameters. Statistical significance was set at $P < 0.05$.

At baseline, 11 (39.3%), 8 (28.6%), and 9 (32.1%) WHWTs affected with CIPF had low, intermediate, or high probability respectively, for PH, with none receiving sildenafil therapy. Median follow-up time was 21.6 months (range 14.7–35.0). At the first recheck, the probability of PH increased in 9 (31.2%), decreased in 3 (10.7%), and remained unchanged in 16 (57.1%) WHWTs, with 13 (46.4%) receiving sildenafil treatment for approximately 6 months. Sildenafil treatment significantly reduced main pulmonary artery to aorta ratio (MPA/Ao) with an estimated decrease of 0.06 units (95%CI:0.01–0.11) in treated dogs ($P=0.027$). Time was associated with an enlargement in minimum right pulmonary artery diameter (RPADmin) and right ventricular internal dimension in diastole (RVIDd), with an estimated increase of 0.35 mm (95%CI:0.09–0.62, $P=0.013$) and 0.07 cm (95%CI:0.02–0.11, $P=0.004$) respectively, every 6 months. Significant interactions between treatment and time were found for MPA/Ao (Est.:0.02, 95%CI:0–0.04, $P=0.023$), RVID_Ao (Est.:0.04, 95%CI:0.01–0.07, $P=0.015$) and right ventricle fractional area change (FAC) (Est.:–2.57, 95%CI:–4.81, –0.33, $P=0.041$), suggesting a moderating effect of sildenafil on the impact of time for these parameters. No other significant effects of treatment or time were noted on echocardiographic measurements. Over the study period, 24 WHWTs died including 17 from cardio-respiratory causes.

In conclusion, this study highlights the importance of regular echocardiographic follow-ups over the course of CIPF and suggests that sildenafil may mitigate the progression of specific echocardiographic parameters related to PH.

DISCLOSURES

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