



EFFECT OF CLIMATIC VARIATION ON HOSPITAL ADMISSION AND OUTCOME IN DOGS WITH MYXOMATOUS MITRAL VALVE DISEASE AND NEW ONSET PULMONARY EDEMA

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The effect of seasonal variation on hospital admissions and outcome in humans with cardiovascular disease and congestive heart failure (CHF) has been described [1,2]. Little information is available regarding similar effects in dogs with myxomatous mitral valve disease (MMVD). Indeed, only one study evaluated the circadian and seasonal presentations of 119 dogs with congestive CHF caused by various cardiovascular diseases and manifesting with different clinical presentations including pulmonary edema, pleural or pericardial effusion, ascites, and dyspnea [3]. The aim of the present study was to evaluate the effect of the climatic variation on admission and outcome in dogs with MMVD and first onset CHF.

Ninety-six client-owned dogs with MMVD and a first occurrence pulmonary edema were included in this clinical cohort study. Recorded clinical and echocardiographic variables were cumulated and analyzed with dogs allocated into groups according to a temperature-wise manner considering the mean of the average (Tave) and maximum ambient temperature (Tmax) of the 14 days preceding hospital admission. A survival analysis was also performed. Tmax but not Tave significantly influenced both the prevalence of CHF admission and survival of affected dogs. In particular, 44 dogs (45.8%) developed CHF during the hot climate while 21 (21.9%, $P < 0.001$) dogs and 31 (32.3%, $P = 0.073$) dogs developed CHF during the cold and intermediate climate, respectively. Dogs developing CHF during the hot climate lived longer (median survival time 518 days, 95% CI=159–876 days; HR=0.536, 95% CI=0.305-0.942) compared to those decompensating during the cold-intermediate climate (median survival time 280 days, 95% CI=104-456 days; $P = 0.028$).

Results of the present study showed that high Tmax but not Tave in the preceding 14 days is more frequently associated with first occurrence of CHF in dogs with MMVD. Although the exact cause of seasonality in CHF outcomes is not clearly understood, dogs developing CHF during the hot climate have a better prognosis compared to those developing CHF during the cold-intermediate climate.

[1] Yamamoto Y, et al. Seasonal variation in patients with acute heart failure: prognostic impact of admission in the summer. *Heart Vessels* 2015;30:193-203. [2] Akintoye et al. Seasonal variation in hospitalization outcomes in patients admitted for heart failure in the United States. *Clinical Cardiol* 2017;40:1105-1111. [3] Steinberg GR, et al. A retrospective study of circadian and seasonal presentations of dogs with congestive heart failure: 119 cases (1997–2009). *J Vet Emerg Crit Care* 2012;22:341-346.