**Retrospective evaluation of effect of heart rate on survival in dogs with AF**

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Atrial fibrillation (AF) is a common arrhythmia in dogs, usually associated with a rapid ventricular response rate, and typically managed with pharmacological rate control. This retrospective study aimed at assessing the effect of heart rate (HR) on survival time in dogs with AF. Forty-six dogs from 2 sites with AF and at least one 24h Holter recording were included from records reviewed between 2008-2016. The mean heart rate (meanHR, 24h average), minimum HR (minHR, 1 minute average), maximum HR (maxHR, 1 minute average) were recorded at the time when adequate rate control was presumed and no further adjustments of rate control therapy were made. Long-term outcome was ascertained and the primary study endpoint was all cause mortality.

All dogs had structural heart disease, 31/46 were in congestive heart failure, 44/46 were receiving anti-arrhythmic drugs. MeanHR was 125bpm (range 62-203bpm), minHR was 82bpm (range 37-163bpm) and maxHR was 217bpm (range 126-307bpm). Sex, age, weight, cardiac diagnosis, and study site had no significant impact on survival. For every 10bpm increase in meanHR, the risk of all-cause mortality increased by 35% (hazard ratio 1.35; 95% CI 1.17-1.55; p<0.001). Median survival time of dogs with meanHR <125bpm (n=23) was significantly longer (1037 days; range 524-open) than dogs with meanHR ≥125bpm (n=23) (105 days; range 67-267days) (p=0.0012). Only meanHR was independently associated with survival time (p<0.003) by multivariate regression. Our results suggest that aggressive rate control in dogs with AF leads to reduced mortality and prospective studies targeting meanHR of 125bpm or lower are indicated.