Small animal Review

Summary: This issue's Small Animal Review features studies that seek to answer the long-standing question of the role of angiotensin-converting enzyme inhibitors in preclinical myxomatous mitral valve disease. Previous recommendations have suggested they are beneficial for use in dogs before they present with clinical signs, if cardiomegaly was present on radiographic or ultrasonographic examination. Systematic reviews and meta-analyses are considered the highest form of evidence and they can be helpful in answering questions when single trials do not have sufficient power to be conclusive.samples in measuring exposure to aromatic amines.

https://doi.org/10.12968.coan.2022.0027

Alex Gough MA VetMB CertSAM CertVC MRCV Postgraduate Researcher, University of Birmingham. alexgough71@hotmail.com

Angiotensin-converting enzyme inhibitors used in preclinical myxomatous mitral valve disease

Donati et al (2022) gathered all the available information on the use of angiotensin-converting enzyme inhibitors (ACEis) in preclinical myxomatous mitral valve disease (MMVD) in dogs. They performed a literature search using Medline, LILACS and CAB abstract databases and included studies that assessed the efficacy and adverse effects of using ACEis as part of the management of preclinical MMVD in dogs.

Four randomised clinical studies were included, the analysis of which showed that ACEis appeared to be safe in this setting, although there appeared to be little difference in the risk of developing congestive heart failure whether or not the drugs were used (the relative risk being 1.03 with a 95% confidence interval of 0.87–1.23). There also appeared to be little difference in rates of cardiovascular related and all-cause mortality (relative risks 1.01 and 0.93 respectively).

The ranges of error suggest that while it is possible ACEis may reduce the risk of developing congestive heart failure, it is almost equally likely that they actually increase the risk of developing heart failure. The authors concluded that administering ACEis to dogs with preclinical MMVD makes little to no difference to the risk of developing congestive heart failure, or the risk of cardiovascular or all-cause mortality.

Change of vertebral left atrial size in dogs with preclinical myxomatous mitral valve disease before the onset of congestive heart failure

It is useful to know when dogs have preclinical MMVD, since other interventions have more evidence for their benefit in this setting. It is also useful to predict when a dog is likely to go into congestive heart failure, and Lee et al (2022) performed a study to assess whether a change in vertebral left atrial size was predictive of onset of congestive heart failure.

A total of 41 dogs with MMVD were included in the study; 17 were included in a group that developed congestive heart failure and 24 in a group that remained free of congestive heart failure. The vertebral heart score (VHS) and vertebral left atrial size (VLAS) was assessed at three time points and the rates of change were calculated. At the first time point, no significant difference between the groups in VLAS was noted. However, at a median of 105 days before the development of congestive heart failure (or the last visit for those that did not develop the condition), the VLAS was significantly higher in those dogs that went on to develop congestive heart failure. The authors concluded that VLAS and the monthly change in VLAS can be highly predictive of whether dogs with preclinical MMVD are likely to go on to develop congestive heart failure in the next 6 months.

Retrospective evaluation of hypertrophic cardiomyopathy

Hypertrophic cardiomyopathy is a common heart disease in cats, but is relatively rare in dogs, with most cases of ventricular hypertrophy in this species because of other causes such as congenital heart disease. There is consequently little information about hypertrophic cardiomyopathy in dogs. Schober et al (2022) performed a retrospective evaluation of hypertrophic cardiomyopathy, including 68 dogs in order to investigate factors such as signalment, clinical findings and survival in these cases.

A total of 345 dogs with left ventricular hypertrophy were identified, but only 68 were recorded as having hypertrophic cardiomyopathy. The ages of the dogs included ranged from 0.3–14 years of age, with no sex predilection. 24% of cases were Shih Tzus and 24% were terrier breeds. 80% had a systolic heart murmur. Exercise intolerance and syncope were the most frequently reported clinical signs. Most dogs had symmetrical left ventricular hypertrophy, while a small number had asymmetrical hypertrophy of the left ventricular free wall and/or septum. Systolic anterior motion of the mitral valve was commonly noted. 89% of cases in which diastolic function was evaluated had diastolic dysfunction. Three dogs developed congestive heart failure and six dogs died suddenly. Recorded survival times ranges from 1 day to 114 months after diagnosis. The authors concluded that hypertrophic cardiomyopathy is a possible cause of left ventricular hypertrophy, that small breed dogs are predisposed, and that sudden death may occur, although congestive heart failure is uncommon.

References

Ames MK, Van Vranken P, Evans C, Atkins CE. Non-Arsenical Donati P, Tanducci A, Zanataa R et al. Angiotensin-converting enzyme inhibitors in preclinical myxomatous mitral valve disease in dogs: systematic review and meta-analysis. J Small Anim Pract. 2021;63(5):362–371. https://doi.org/10.1111/jsap.13461

Lee D, Yun T, Koo Y et al. Change of vertebral left atrial size in dogs with preclinical myxomatous mitral valve disease prior to the onset of congestive heart failure. 2022;42:23–33. https://doi.org/10.1016/j.jvc.2022.05.003

Schober KE, Fox PR, Abott J et al. Retrospective evaluation of hypertrophic cardiomyopathy in 68 dogs. 2022;36(3):865–876. https://doi.org/10.1111/jvim.16402