

## Practical Approach to Incidental Heart Murmurs

MARCO L. MARGIOCCO DMV, MS, DACVIM & DECVIM-CA Cardiology

The identification of a heart murmur is a common reason to suspect or even confirm the presence of heart disease. There are however different clinical scenarios whereby further workup may or may not be warranted. This is particularly true when a heart murmur is an incidental finding during an examination not initially aimed at the cardiovascular system, such as routine wellness examinations, pre-anesthetic examinations or examinations performed to address clinical signs pertinent to other systems or organs. The decision to recommend further workup in this case is of great medical importance and depends on a host of variables, the most important being the attending Veterinarian's confidence in accurately assessing the characteristics of the heart murmur and their relevance to the specific clinical setting (i.e. species, breed, age, history, presenting complaints, co-morbid conditions). Other important variables pertain to the client (cost, concern, anxiety, intention to breed, intention to train and medical understanding). Availability of imaging technology and level of expertise of operators in the area are also important factors. Characterization of certain mechanisms of heart murmurs, particularly dynamic outflow tract obstructions, as well as understanding of heritability of certain conditions imply referral to a board-certified veterinary cardiologist not only for interpretation but also for generating all the necessary images, which often require adoption of non-conventional imaging views. Successful management of a patient with an incidental heart murmur requires a correct diagnosis, the only means to accurate prognostication, appropriate initiation of treatment if needed, discussion of an adequate management plan (monitoring, follow-up) ultimately leading to a satisfied client who understands the implications of the heart murmur and associated recommendations. It would be easy to recommend that all patients with incidentally identified heart murmurs undergo echocardiography. Realistically, however, our mandate as attending clinicians is to be competent on the matter and offer our clients different options based on the specifics of each case. The remainder of this presentation will discuss some of the most common and important scenarios.

### DOGS

Echocardiography is recommended in any dog of any age if the heart murmur is diastolic, continuous, accompanied by other heart sound abnormalities (e.g., a gallop sound or arrhythmia other than sinus arrhythmia), associated with historical or physical signs of cardiovascular disease, radiating to the carotid region, louder over the right hemithorax, or louder over the left cardiac base but of grade  $\geq 3/6$ .

Puppies with soft murmurs - Puppies with grade 1/6 to 2/6 systolic murmurs loudest over the left cranial thoracic region may have one of two classes of underlying cause: functional or innocent murmurs that are of no consequence and most often resolve with growth, or minor congenital heart

defects that may be of no importance to the individual dog but can be significant in certain situations (e.g., breeding stock, planned extensive training and competitions). In these cases, 2-D and Doppler echocardiography should be discussed with the puppy's owner and recommended if justified based on the above-mentioned factors.

Adult dogs - Adult dogs with systolic, left apical murmurs commonly have mitral regurgitation. In small-breed dogs (< 20 kg), the most common cause is degenerative mitral valve disease (DMVD), and thoracic radiography can be used as an initial diagnostic test. Normal cardiac silhouette size and absence of clinical signs make clinically significant mitral regurgitation unlikely, and treatment is not indicated. Cardiomegaly warrants serial thoracic radiography, echocardiography, or both.

In larger dogs ( $\geq$  20 kg, but also Spaniels and Whippets), a specific diagnosis is much less certain from auscultation alone. Dilated cardiomyopathy, infective endocarditis, mitral valve dysplasia, and DMVD are well-recognized and not easily distinguished radiographically or on auscultation. Therefore, echocardiography is the first-line test in larger dogs with systolic, left apical murmurs.

## CATS

Echocardiography is recommended in any cat if the heart murmur is of grade 3-4/6 or louder, diastolic, continuous, accompanied by an arrhythmia or gallop sound, or associated with possible clinical signs of heart disease. In cats with soft (grade 1/6 to 3/6) systolic murmurs, the underlying cause of the murmur and the clinical severity of the causative disorder cannot be predicted from murmur characteristics such as the point of maximal intensity, murmur grade, or variability of murmur intensity with heart rate. Such cats should be evaluated further when imminent cardiovascular stress (e.g., general anesthesia, fluidotherapy), owner concerns, and availability and cost of tests justify doing so. This determination is different for every patient and client. Reasonable approaches can include the following: ancillary tests selected on the basis of risk (e.g., measurement of arterial blood pressure and serum thyroxine concentration in geriatric adult cats); measurement of circulating NT-proBNP concentration, with a low value making clinically important cardiomyopathy unlikely; thoracic radiography, with certain changes in the cardiac silhouette suggestive of heart disease but with limited sensitivity and specificity; and 2-D and Doppler echocardiography (sensitivity and specificity being operator-dependent) to definitively identify the murmur's cause and establish risk of deleterious cardiac sequelae, if any.

---

*The recommendations included in this presentation were elaborated by the Working Group of the American College of Veterinary Internal Medicine Specialty of Cardiology on Incidentally Detected Heart Murmurs.*

## REFERENCE

Management of incidentally detected heart murmurs in dogs and cats. Côté E. et Al. J Am Vet Med Assoc. 2015 May 15; 246(10):1076-88. doi: 10.2460/javma.246.10.1076.