Recommendations on the Management of Incidentally Detected Heart Murmurs

By: Michael Hickey, DVM, Diplomate, ACVIM (Cardiology)

The Journal of the American Veterinary Medical Association recently published a set of guidelines addressing the management of pets with heart murmurs detected in the course of a wellness exam, or in the work-up of a non-cardiac illness.¹ A working group of ACVIM board-certified cardiologists composed the recommendations.

Successful initial management of a diagnosis of a new heart murmur involves:

- Accurate description of the murmur
- Deciding whether a murmur is more likely functional (non-pathologic) or pathologic (insofar as it is possible from physical examination)
- Accurate communication of the potential significance of the murmur with the pet’s family
- Selection of appropriate diagnostic tests to determine a cause and stage severity of the condition underlying the murmur.

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Meet Sarah C. Bell, our newest cardiologist!

Dr. Bell started with CVCA in September 2015. We are very excited to welcome her to our office at the Pet E.R. in Towson, MD and in CARE Veterinary Center in Frederick, MD.

Dr. Bell graduated from the University of Georgia College of Veterinary Medicine in 2009, and completed a rotating internship at North Carolina State University the following year. She then moved to Pittsburgh to practice emergency medicine before deciding to pursue a residency in cardiology. Dr. Bell completed her residency at the University of Missouri and achieved Diplomate status with the American College of Veterinary Internal Medicine (Cardiology) in 2015. She is very excited to join the team at CVCA.

Dr. Bell's interests include management of congestive heart failure and diagnosis and interventional treatment of congenital heart disease. During her free time she likes to cook and visit great restaurants, read, and travel with her husband. She also enjoys taking her 2 dogs on hikes and lounging with her 2 cats.

Dr. Bell is excited about joining the CVCA team and exploring everything Maryland has to offer.

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Recommendations on the Mgmt. of Incidentally Detected Heart Murmurs

The working group used a 6-point scale for describing heart murmur intensity, which is summarized in the table.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Always focal, nearly imperceptible, heard only in quiet environment</td>
</tr>
<tr>
<td>II</td>
<td>Always focal, readily heard but soft</td>
</tr>
<tr>
<td>III</td>
<td>Heard in multiple auscultatory regions, moderate intensity</td>
</tr>
<tr>
<td>IV</td>
<td>Heard in most/all auscultatory regions, loud, no palpable thrill</td>
</tr>
<tr>
<td>V</td>
<td>Qualities of IV, but with palpable thrill, not heard when stethoscope lifted from thorax</td>
</tr>
<tr>
<td>VI</td>
<td>Qualities of V, but also heard when stethoscope lifted 1 cm from thorax</td>
</tr>
</tbody>
</table>

Heart murmurs are also described by the phase of the heart cycle during which they occur (systolic, diastolic, or continuous), the area over which the murmur is loudest (point of maximal intensity – right or left, apex or base).

Full assessment of a heart murmur also brings into account other physical examination findings and demographic information (mucous membrane color, pulse quality, heart rate and rhythm, respiratory auscultatory finds, age and breed).

Selection of further diagnostic tests should be made with the potential diagnosis in mind as well as accounting for:

- The client’s concern or anxiety about the significant of the murmur
- The intended use of the animal (i.e. breeding or performance animal)
- Planned events likely to be cardiovascular stressors (e.g. anesthesia, plane travel)
- The perceived value of available diagnostic tests in each patient’s situation.

There are numerous diagnostics tests available to the primary care veterinarian that give potentially valuable information in classifying a murmur as likely functional or likely nonfunctional, including electrocardiography, thoracic radiography, and cardiac biomarkers. Definitive diagnosis of the etiology of a heart murmur and staging of heart disease requires echocardiography, ideally performed by a board-certified veterinary cardiologist.

The working group addressed the approach to heart murmurs by species and age-group.
Pediatric Canine (<6 months for small breed; <1 year for large breed)

Functional, physiologic, or flow murmurs (synonymous terms for the same phenomenon) are common in pediatric dogs. These murmurs are typically dynamic in intensity with heart rate or activity, are early or mid-systolic, are not associated with other auscultory abnormalities (click, gallop, arrhythmia), are focal, and are of low intensity (focal grade I or II/VI). Murmurs not fitting this profile are more likely to be representative of a congenital heart defect or other cardiovascular pathology. While heart murmurs fitting this profile are more likely to be representative of a functional murmur, an equivocal or mild form of a congenital cardiac defect cannot be conclusively ruled-out by physical examination alone. This is of particular importance in dogs intended to be used for breeding or performance.

Adult and Geriatric Canine

Systolic heart murmurs identified in adult dogs can be the result of non-cardiac disease, such as anemia, and may be considered functional. These murmurs would be expected to fit the profile of a functional murmur above, and should resolve with correction of the underlying condition.

Newly identified systolic murmurs in adult dogs are often left apical in point of maximal intensity and reflective of mitral regurgitation. The etiology of new mitral regurgitation is most often degenerative mitral valve disease (DMVD) in small breed dogs, though in large breed dogs there is a higher concern for mitral regurgitation secondary to dilated cardiomyopathy or bacterial endocarditis, in addition to DMVD.

Continuous and diastolic murmurs are almost always pathologic.

Pediatric Feline (<6 months of age)

Functional murmurs are quite common in young cats, owing to high sympathetic tone and a thin body shape conducive to the transmission and auscultation of soft heart murmurs. The delineation between a functional and pathologic murmur in this population is difficult based upon physical examination alone as heart murmurs are an inconsistent feature of even significant heart disease in cats, and can be soft, systolic, and basilar.

Echocardiography is the only modality that can accurately distinguish a functional murmur from a pathologic murmur in cats. Definitively knowing the cardiac status of a cat with a heart murmur is made even more important in the setting of cats used for breeding (i.e. are in a position to perpetuate a predisposition to cardiomyopathy or congenital heart disease) or in cats who will be subjected to general anesthesia or fluid therapy. Thoracic radiographs give some indication of relative cardiac size and, in a cat with clinical signs concerning for heart failure, are helpful in assessing for the presence of pulmonary edema or pleural effusion.

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Adult & Geriatric Feline

Hypertrophic cardiomyopathy is a relatively common disease in cats with some 16% of overtly healthy cats showing echocardiographic signs of the disease (Paige). The presence of a systolic heart murmur makes the presence of HCM more likely than in a patient without a heart murmur, however, 19-35% of cats with incidentally auscultated heart murmurs are documented to have a functional cause (most commonly dynamic right ventricular outflow obstruction). Diseases causing functional murmurs (systemic hypertension, hyperthyroidism, and anemia) are relatively common in adult and geriatric cats. Heart murmurs in cats are often labile, changing in intensity and point of maximum intensity with changes in heart rate and sympathetic tone. A labile heart murmur is not necessarily a functional heart murmur. The presence of a gallop sound or an arrhythmia is significant and may be more predictive of the presence of heart disease than a heart murmur in an adult cat.

Thoracic radiographs are helpful in identifying obvious significant cardiomegaly (VHS > 9.3 is highly specific for heart disease in a dyspneic cat), however, mild and even moderate cardiac changes may yield equivocal or false negative results. NT-proBNP is helpful in determining a level of suspicion for significant heart disease and a positive result warrants further investigation with echocardiography. Echocardiography is superior to thoracic radiographs in identifying left atrial enlargement which is an important risk factor for future CHF and thromboembolism in cats.

Conclusion

Heart murmurs are often first noted during a routine wellness examination or in the process of evaluating illnesses unrelated to the cardiovascular system. The decision to pursue advanced work-up of an incidentally auscultated heart murmur depends on the characteristics of the heart murmur, any other associated findings (e.g. gallop sound, arrhythmia), the signalment of the patient, the lifestyle or use of the patient (e.g. house pet vs. working dog vs. breeding stock), the results of other diagnostics such as thoracic radiographs and NT-proBNP, and the desire of the owner to obtain a definitive diagnosis.

Reference:

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