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REVIEW

Management of incidentally detected heart murmurs in dogs and cats^{☆,☆☆}



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KEYWORDS

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Abstract A dog or a cat has an incidentally detected heart murmur if the murmur is an unexpected discovery during a veterinary consultation that was not initially focused on the cardiovascular system. This document presents approaches for managing dogs and cats that have incidentally-detected heart murmurs, with an emphasis on murmur characteristics, signalment profiling, and multifactorial decision-making to choose an optimal course for a given patient.

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Abbreviations

CHF	congestive heart failure
CKCS	Cavalier King Charles spaniel
DCM	dilated cardiomyopathy
DMVD	degenerative or myxomatous atrioventricular valve disease
NT-proBNP	amino-terminal pro-B-type natriuretic peptide
VHS	vertebral heart score
VSD	ventricular septal defect
2-D	two-dimensional

Introduction

A dog or cat has an incidentally detected heart murmur if the murmur is an unexpected discovery during a veterinary consultation that was not initially focused on the cardiovascular system. Common examples include auscultation of a murmur during an annual wellness examination, prior to general anesthesia, or during evaluation of a patient for a noncardiac medical condition.

Successful management of an animal with an incidentally detected heart murmur requires a correct diagnosis to accomplish the goals of accurate prognostication, appropriate initiation of treatment, if needed, and having a satisfied client who fully understands the implications of the murmur, including the impact of the underlying disorder on the animal's health. This document presents current information by species and age group to help veterinarians make appropriate decisions and initial diagnostic plans after incidental detection of a murmur in a dog or cat. This article was first published in the *Journal of the American Veterinary Medical Association*.¹

An incidentally detected heart murmur might or might not require further diagnostic investigation. Definitive diagnosis of the cause of a murmur benefits the patient because it serves as the basis for providing an appropriate level of treatment and

monitoring. It also provides value for the client (by allowing an accurate assessment of presence and severity of disease in the pet and its prognosis) and for the veterinarian (by corroborating or expanding on auscultatory findings and on the understanding of the impact that a given condition can have on the patient). In general, the veterinarian who has detected a murmur is in the best position to develop the initial diagnostic and case management plans in conjunction with the client, given the veterinarian's familiarity with the patient, the client, and the characteristics of the murmur, as determined by careful auscultation.

The first and often most challenging step is to determine the clinical importance of a murmur. Its characteristics may suggest that it most likely results from a cardiovascular lesion (termed pathological murmur) or that it is most likely associated with a structurally normal heart (termed nonpathological murmur). The terms nonpathological murmur, functional murmur, innocent murmur, and flow murmur are similar inasmuch as they all signify that a murmur is not caused by a structural cardiovascular lesion; however, each has a specific meaning (Fig. 1).² In this document, nonpathological murmur will be used as the principal term to describe murmurs that are not associated with structural cardiovascular lesions.

Veterinarians investigating the clinical significance of a heart murmur should optimally include the following steps in the patient's evaluation:

- Determine, by careful auscultation, whether the murmur is most likely to be pathological or nonpathological (Tables 1 and 2).^{2–4} A veterinarian's ability to make this determination increases with experience in auscultating dogs;⁵ in cats, often it is not possible to classify systolic murmurs of intensity grades 1/6 through 3/6 as clearly pathological or nonpathological.
- When auscultation reveals that the murmur is convincingly nonpathological, identify and

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