

# ECG of the Month

This monthly feature is being sponsored by the Academy of Veterinary Cardiology. Readers of the *JAVMA* are invited to submit contributions. Contributions should include: (1) a brief description of the case (150 words); (2) good contrast glossy photographs (5 in by 7 in) of tracings, with ECG lead, voltage calibration scale, and paper speed indicated; and (3) a discussion of the abnormality.

Send comments and tracings to Dr. Phillip Ogburn, Department of Small Animal Clinical Sciences, College of Veterinary Medicine, University of Minnesota, 1352 Boyd Ave, St Paul, MN 55108.

**A**n 8-year-old male domestic short-haired cat was diagnosed with left-sided congestive heart failure secondary to hypertrophic cardiomyopathy. Treatment for heart failure had not previously been prescribed. An ECG was obtained during initial evaluation (Fig 1).

## ECG Interpretation and Discussion

The most noticeable feature of the ECG is the presence of regularly recurring, spiked waveforms. Although they mimic paroxysmal tachycardia, they coincided with the expiratory phase of respiration when the cat purred loudly; they are movement

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artifacts caused by the purring. The cardiac rhythm is sinus in origin; the purring artifacts do not interrupt the underlying rhythm, as would an actual arrhythmia. The P-QRS-T complexes can be seen clearly in between the purring episodes.

There is a slight variation in the sinus rate as well as the P-R interval. Sinus arrhythmia is uncommonly found in cats and is generally regarded as an abnormal finding. It has been associated with digoxin-induced toxicosis, severe respiratory system disease, high intracranial pressure, or cerebral dysfunction.<sup>1</sup> However, this cat did not have any of these conditions. Fluctuations in vagal tone from these or other causes could also induce some variability in P-R interval. The cat's underlying myocardial disease may also have been the cause. Occasionally sinus arrhythmia is observed in calm, healthy cats. The QRS complexes are within normal limits of width, although they are notched. This was attributed to a minor intraventricular conduction disturbance. Intraventricular conduction disturbances of various kinds have been reported with feline myocardial disease,<sup>1</sup> as have degeneration and fibrosis of the cardiac conduction system and myocardium.<sup>2</sup>

## References

1. Tilley LP. *Essentials of canine and feline electrocardiography*, 2nd ed. Philadelphia: Lea & Febiger, 1985;207, 108-115.
2. Liu SK, Tilley LP, Tashjian RJ. Lesions of the conduction system in a cat with hypertrophic cardiomyopathy. *Rec Adv Stud Cardiac Struct Metab* 1975;10:681-93.

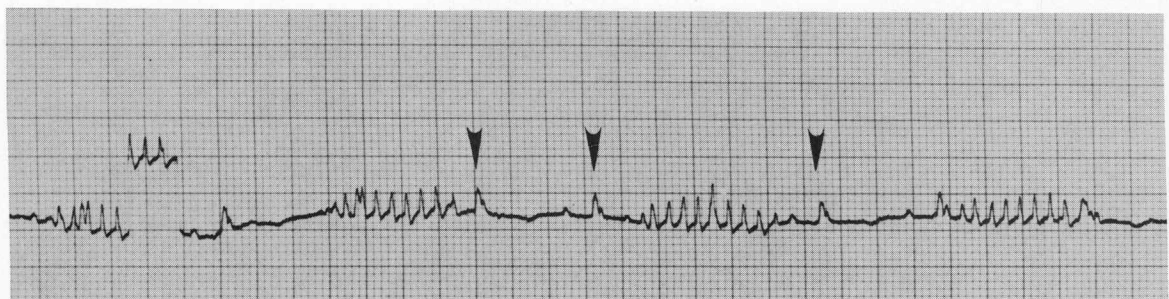


Figure 1—Lead-aVF ECG from a cat with hypertrophic cardiomyopathy. Notice spiked waveforms, which coincided with the expiratory phase of respiration; these were movement artifacts caused by purring. The P-QRS-T complexes (arrowheads) can be seen between the purring episodes. Paper speed, 50 mm/s; 1 cm = 1 mV.