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European Society of Veterinary Cardiology screening guidelines for dilated cardiomyopathy in Doberman Pinschers

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Abstract *Background:* Dilated cardiomyopathy (DCM) is the most common cardiac disease in large breed dogs and is inherited in Doberman Pinschers with a high prevalence (58%).
Objective: The European Society for Veterinary Cardiology convened a task force to formulate screening guidelines for DCM in Dobermans.
Recommendations: Screening for occult DCM in Dobermans should start at three years of age and use both Holter monitoring and echocardiography. Yearly screening over the life of the dog is recommended, as a one-time screening is not sufficient to rule out future development of DCM. The preferred echocardiographic method is the measurement of the left ventricular volume by Simpson's method

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of discs (SMOD). Less than 50 single ventricular premature complexes (VPCs) in 24 h are considered to be normal in Dobermans, although detection of any number of VPCs is cause for concern. Greater than 300 VPCs in 24 h or two subsequent recordings within a year showing between 50 and 300 VPCs in 24 h is considered diagnostic of occult DCM in Dobermans regardless of the concurrent echocardiographic findings. The guidelines also provide recommendations concerning ancillary tests, that are not included in the standard screening protocol, but which may have some utility when recommended tests are not available or financially untenable on an annual basis. These tests include assay of cardiac biomarkers (Troponin I and N-Terminal pro-B-type Natriuretic Peptide) as well as a 5-min resting electrocardiogram (ECG).
Conclusion: The current guidelines should help to establish an early diagnosis of DCM in Dobermans.

Abbreviation table

cTnI	cardiac troponin I
DCM	dilated cardiomyopathy
ECG	resting electrocardiogram
EPSS	E-point to septal separation
LV	left ventricle
LVIDd	left ventricular internal diameter by M-Mode in diastole
LVIDs	left ventricular internal diameter by M-Mode in systole
NT-proBNP	N-terminal pro B-type natriuretic peptide
SI	sphericity index
SMOD	Simpson's method of discs
VPC(s)	ventricular premature complex(es)

Introduction

Cardiomyopathies are a heterogeneous group of diseases of the myocardium associated with mechanical and/or electrical dysfunction that usually (but not invariably) exhibit inappropriate ventricular hypertrophy or dilation [1]. Dilated cardiomyopathy (DCM) is defined by the presence of left ventricular dilation and contractile dysfunction, in the absence of abnormal loading conditions and severe coronary artery disease [2].

Dilated cardiomyopathy is one of the most common cardiac diseases in dogs and humans [1,3]. In the dog, it primarily affects large and giant breeds [3]. Some breeds, such as the Doberman, Newfoundland, Portuguese water dog, Great Dane, Cocker spaniel, and Irish wolfhound exhibit a higher prevalence of DCM [3—6].

Dilated cardiomyopathy in Dobermans is an inherited, slowly progressive disease [7—9]. The occult stage of the disease is characterized by evidence of morphologic or electrical derangement in the absence of clinical signs of heart disease [10—14]. The occult stage may last for several years, before clinical signs develop [8,12]. The morphologic abnormality consists of left ventricular (LV) enlargement in systole and later in diastole [15]. Ventricular premature complexes are a common finding in the occult stage of DCM in Dobermans [6,9,10,12—14,16—20]. Sudden death, caused by ventricular tachycardia-fibrillation, occurs during the occult stage in at least 25—30% of affected dogs [6,9,17]. These abnormalities, morphologic or electrical, may coexist or may be of predominantly one form at any time during the occult stage [6,10,17,21,22].

A recent study showed a high cumulative prevalence (58.8%) of cardiomyopathy in Dobermans in Europe [8], comparable to that reported in the United States and Canada (45 and 63%).[f] [21,23]. The early descriptions of DCM in Dobermans suggested that cardiomyopathy predominantly affected males [13] and was later confirmed, although females are also affected.[f] [11—13,17,21] One study showed that in Dobermans, approximately 50% of male dogs and 33% of female dogs develop DCM,[f] whereas another study found no gender difference [24]. The most recent study showed that the disease is equally distributed in male and female dogs in Europe [8]. The difference in reported gender distributions between earlier and later studies might be explained by the inconsistent inclusion of a 24-h electrocardiogram (Holter) or electrocardiogram

[f] O'Grady M.R., Horne R. The prevalence of dilated cardiomyopathy in Doberman Pinschers: A 4.5 year follow-up (abstract). J Vet Intern Med 1998; 12:199.