Echocardiographic evaluation of diastolic parameters in dogs with dilated cardiomyopathy

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Abstract

Echocardiography is a valuable tool for the evaluation of systolic and diastolic cardiac function. A high correlation between measurements of diastolic mitral inflow parameters analyzed with Doppler echocardiography and invasive methods makes the former valuable. The aim of this study was to ascertain if significant differences occur in diastolic myocardial parameters between dogs with no heart disease and dogs with subclinical or clinical dilated cardiomyopathy. Furthermore the aim of the study was to determine whether heart failure in dilated cardiomyopathy is a result of systolic dysfunction alone or both systolic and diastolic dysfunction. Eleven parameters were analyzed: E wave, E-AT, E-DT, E time, A wave, A-AT, A-DT, A time, E+A time, E/A ratio, and IVRT. The study confirmed the value of noninvasive echocardiographic assessment of diastolic function in dogs with dilated cardiomyopathy. Significant differences were found in E wave, E-AT, E time, E/A ratio and IVRT between healthy dogs and dogs with dilated cardiomyopathy. All are characterized by a significant decrease compared to healthy dogs after taking into account age and body weight except for the E/A ratio, which significantly increased in value. There were no significant changes in any of the Doppler parameters for diastolic evaluation in subclinical cases of DCM. Advanced heart failure in dilated cardiomyopathy entails systolic and diastolic dysfunction.

Key words: diastolic, dysfunction, myocardial, cardiac, dilated cardiomyopathy, dog

Introduction

Echocardiography is a valuable diagnostic tool because it makes it possible to picture cardiac and major blood vessel structures in a non-invasive fashion. Common indications for an echocardiographic examination in veterinary practice include diagnosis and monitoring of valvular disease, cardiomyopathies, pericardial disease, complications of pulmonary disease, fluid within the pericardium or thoracic cavity (i.e. cases of cardiac neoplasia), the presence of intracardiac masses and cardiac neoplasia, congenital heart defects, hypertension, as well as left ventricular function (Chetlin et al. 2003, Quinones et al. 2003, Munagala et al. 2005).

An echocardiographic examination based on a thorough knowledge of cardiac and great blood vessel anatomy enables recognition of anatomical abnormalities of the heart, including congenital or acquired defects, as well as a qualitative and sometimes