INCREASED NORMALIZED PULMONARY TRANSIT TIMES AND PULMONARY BLOOD VOLUMES IN CARDIOMYOPATHIC CATS WITH OR WITHOUT CONGESTIVE HEART FAILURE.

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The aim of this study was to estimate heart-rate normalized pulmonary transit times (nPTT) in cardiomyopathic cats with or without congestive heart failure (CHF), to assess potential associations of echocardiographic variables and nPTT, and to evaluate nPTT as a test for presence of CHF.

48 privately owned cats were included. nPTT was measured using echocardiography and the ultrasound contrast media Sonovue® in 3 groups of cats: healthy cats (Group 1), cats with cardiomyopathy (CM) but without CHF (Group 2), and cats with CM and CHF (Group 3). Receiver operating characteristic curves (ROC) were created for nPTT, left atrial diameter (LAD) and the left atrial to aortic root ratio (LA:AO) to assess and compare their usefulness as tests for presence of CHF. Interrelations between pulmonary blood volume (PBV), nPTT, stroke volume (SV) and echocardiographic variables were investigated by means of uni- and multivariate analysis.

nPTT values in group 1, group 2 and group 3 were 3.63 (interquartile range (IQR) 3.20-4.22), 6.09 (IQR 5.0-7.02), and 8.49 (IQR 7.58-11.04), respectively. Values were significantly different between all 3 groups. Pulmonary blood volumes in group 1, group 2, and group 3 were 27.94 ml (IQR 21.02ml-33.17ml), 42.83 ml (IQR 38.46ml-50.36ml) and 49.48 ml (IQR 38.84ml-64.39 ml). SV, PBV and shortening fraction <30% were significant predictors of nPTT. NPTT and LA:AO ratio, not SV were the main predictors of PBV. Analyzing ROC for nPTT as a clinical test for CHF yielded an AUC of 0.956 which was similar for LA:AO ratio.

nPTT may be useful test for the presence of CHF in cats with CM and as a measure of cardiac performance. nPTT and LA:AO ratios predict CHF with equal accuracy. Increased PBV is significantly associated with higher nPTT and LA:AO ratios. Both decreased SV and increased PBV explain the increased nPTT in cardiomyopathic cats.