

C25**VASOVAGAL TONUS INDEX IN DOGS WITH MYXOMATOUS MITRAL VALVE DISEASE.** Bruna Cristina Bruler¹, Gustavo Dittrich¹, Amalia Turner Giannico¹, Tilde Rodrigues Froes¹, Aparecido Antonio Camacho², Marlos Goncalves Sousa¹. ¹Federal University of Parana, Curitiba, PR, Brazil, ²Sao Paulo State University, Jaboticabal, SP, Brazil

Decreased heart rate variability (HRV) has been found in dogs in congestive heart failure (CHF) and previous studies have acknowledged the use of HRV indices as prognostic indicators in patients with mitral valve disease (MVD). The vasovagal tonus index (VVTI) is an unconventional time domain indicator of HRV, which is mainly influenced by cardiac parasympathetic tone. In this cross-sectional observational study, we sought to investigate the VVTI in dogs with MVD. Electrocardiographic recordings of 30 dogs (7–16 years, 3.5–15.5 kg) previously classified into ACVIM stages A (controls), B, or C (10 dogs each group) were used to calculate the VVTI. For this, 20 consecutive R-R intervals were measured from each ECG recording (R-R1 to R-R20), and the index was obtained from the formula $VVTI = \ln [\text{VAR} (R-R1 - R-R20)]$, where LN: natural logarithm and VAR: variance. Bad quality ECG tracings and recordings from dogs with non-sinus rhythms or animals undergoing anti-arrhythmic treatment were not included in this investigation. Also, we recorded the BW-indexed LV in diastole and systole, wall stress index in diastole and systole, fractional shortening, left atrium-to-aorta ratio, mitral E wave, mitral E/A, isovolumetric relaxation time, and the E-to-IVRT ratio. All data underwent the Shapiro-Wilk test to check for normal distribution, while ANOVA, followed by Tukey's test, were used to compare the VVTI between groups. Pearson's test was used to search for linear correlations between the VVTI and the echocardiographic data. The mean values (with lower and upper 95% CI of mean) of VVTI for dogs in stages A, B, and C were, respectively: 8.45 (7.36 – 9.54), 6.09 (4.47 – 7.71) and 6.34 (5.01 – 7.68). A significant difference was found between groups ($P = 0.0189$), with the mean VVTI being significantly higher in control animals as compared to dogs with stage B MVD ($P < 0.05$). When it comes to the relationship between VVTI and cardiac rhythms, a significant difference existed between animals in sinus rhythm (SR), sinus arrhythmia (SA), and sinus tachycardia (ST) ($P = 0.0083$). The lowest VVTI was documented for dogs in ST (5.82; 95% CI 4.14 – 7.49), while the higher was found for animals presenting SR (8.27; 95% CI 7.40 – 9.15). Significant negative correlations were found between VVTI and LA/Ao ($R = -0.3699$; $P = 0.0443$), as well as between VVTI and heart rate ($R = -0.4864$; $P = 0.0064$). Although no correlation existed between body weight and the VVTI, age and VVTI attained a significant negative correlation ($R = -0.3827$; $P = 0.0369$). The negative correlation between VVTI and heart rate is likely ascribed to the role played by the parasympathetic tone in VVTI, therefore producing higher values when slower rates and irregular rhythms are present. Even though uncontrolled conditions during ECG recording, including stress and agitation, may increase HR, the lower VVTI found in animals exhibiting sinus tachycardia may suggest a sustained sympathetic activation. Although further investigation is warranted, the confidence intervals of this study point to the VVTI <5 being a potential prognostic indicator for CHF, whereas a VVTI >7.7 is likely suggestive of reduced risk for congestion. This is supported by the correlation between VVTI and LA/Ao, as well as the difference between the means of control dogs (stage A) and stage B MVD animals.

C26**SICK SINUS SYNDROME AND SINUS NODE DYSFUNCTION: CASE SERIES REPORTS OF FMVZ-USP CARDIOLOGY SERVICE (2007–2015).** Rebecca Bastos Pessoa¹, Guilherme Teixeira Goldfeder¹, Patricia Pereira Costa Chamas², Denise Saretta Schwartz¹, Paula Staudacher Leal de Carvalho¹, Maria Helena Matiko Akao Larsson¹. ¹School of Veterinary Medicine and Animal Science – University of São Paulo (FMVZ-USP), São Paulo, SP, Brazil, ²Paulista University, São Paulo, SP, Brazil

Sick Sinus Syndrome is a complex disease characterized by an abnormal cardiac impulse formation on the sinus node. The term

Sinus Node Dysfunction refers to the variety of electrocardiographic features involved in this condition. When Sinus Node Dysfunction is associated with clinical manifestations it is referred to as the Sick Sinus Syndrome. A survey of affected dogs attended at the Cardiology Service in the Department of Internal Medicine of the Veterinary Teaching Hospital (HOVET) of the School of Veterinary Medicine and Animal Science - University of São Paulo (FMVZ-USP) from 2007 to 2015 was performed. Seventeen cases were reviewed. Breeds involved were Schnauzer (71%), Cocker Spaniel (6%), Poodle (6%) and Dachshund (6%), besides a mongrel dog (6%). There was a predominance of female dogs (71%). The most common clinical manifestations observed were syncope (71%), presyncope (24%), dyspnea (18%) and exercise intolerance (12%). Twelve percent of the dogs were asymptomatic. The most frequent electrocardiographic changes found were sinus arrest (75%), junctional escape rhythm (73%), supraventricular tachycardia (53%) and sinus arrhythmia (53%). Forty-seven percent of the dogs presented tachycardia-bradycardia syndrome. Only 24% of the animals received pacemaker implants, given the high percentage of animals unable to go through surgical/anesthetic procedures (29%), and the presence of asymptomatic animals. The dogs that received pacemaker implants lived for 20.4 months (mean value), whereas the ones that were treated conservatively lived for 10.8 months (mean value). These values showed benefit to those patients who received pacemaker implants, but was hindered by the high percentage of comorbidities in older animals, besides the small number of patients enrolled in this retrospective study.

C27**THE UTILITY OF SPECTRAL DOPPLER OF THE HEPATIC VEINS IN DOGS WITH TRICUSPID REGURGITATION.** Kensuke Nakamura, Tatsuyuki Osuga, Tomoya Morita, Keitaro Morishita, Noboru Sasaki, Hiroshi Ohta, Mitsuyoshi Takiguchi. Hokkaido University, Sapporo, Japan

Echocardiographic assessment of the severity of tricuspid regurgitation (TR) is less reliable compared to mitral regurgitation due to the complicated geometry and function of right ventricle. Spectral Doppler of hepatic veins (SDHV) has emerged as a useful examination to evaluate the severity of TR in humans. The hepatic vein blood flow waveform is multiphasic and typically consisted with four peaks. A small retrograde a-wave occurring after the P-wave of the electrocardiographic is created by retrograde blood flow during atrial contraction. A large anterograde S-wave occurring immediately after the QRX complex is created by blood flow toward the heart during ventricular systole. A small retrograde v-wave occurs after ventricular systole. A large anterograde D-wave occurring after T-wave is created by ventricular diastole. The objective of the present study was to investigate the correlation between the presence of ascites and the findings of SDHV in dogs with TR. This is a clinical cohort study including twenty-seven client-owned dogs with TR. Dogs were divided into two groups based on the presence of ascites. Physical examination, SDHV and echocardiographic variables were compared between the groups. For the assessment of the comparative accuracy in identifying patients with ascites, receiver operating characteristic (ROC) curves was used. Peak velocity of v-wave and D-wave in dogs with ascites ($n = 11$) was significantly higher than dogs without ascites ($n = 16$). The highest accuracy was obtained for v-wave, with an area under the ROC curve (AUC) of 0.99, followed by D-wave, with an AUC of 0.95; late diastolic velocity of the septal mitral annulus (Am), with an AUC of 0.907. TR peak velocity had no significant difference between two groups. In conclusion, v-wave and D-wave obtained by SDHV has strong correlation with the presence of ascites in dogs with TR.