COMPARISON BETWEEN AUTOMATIC APPROACH OF THE VERTEBRAL HEART SIZE AND NORMALIZED CARDIAC AREA TO ASSESS LEFT ATRIAL ENLARGEMENT IN POODLES WITH MITRAL INSUFFICIENCY. G.P.R. Banon, A.C.B.C. Fonseca Pinto, G.J.F. Banon, C.O. Baroni, G.T. Goldfeder, A. Pellegrino. School of Veterinary Medicine and Animal Science, University of São Paulo, Brazil, 05508 270.

Introduction/Purpose: Left atrial enlargement (LAE) is the earliest and most consistent radiographic finding of mitral regurgitation. According to the vertebral heart size (VHS) method, the maximal cardiac short axis is measured in the central third region, which might not include LAE. Normalized cardiac area (NCA), however, considers the contours of cardiac silhouette. The aim of this study was to compare the efficacy of VHS and NCA in radiographic diagnosis of LAE.

Methods: Thoracic radiographs of Poodles were allotted to five groups: (I) normal cardiopulmonary structures (n=18), (IIa) mild (n=4), (IIb) moderate (n=7), (IIc) severe (n=28) and (IId) absent (n=17) LAE. These LAE were confirmed by echocardiography to be caused by mitral insufficiency. Measurements were performed by one experienced veterinary radiologist in right lateral view, using computing techniques that permit to obtain automatically the VHS and NCA results. For VHS and NCA measurements in each group, the mean, the standard deviation (SD) and 95% confidence interval ($CI_{(\mu,\ 0.95)}$) were calculated. The VHS and NCA means for group I were compared with respective means of three other groups with LAE by using Student's unpaired t test. The kappa test was used to test the agreement between VHS or NCA and echo in heart enlargement diagnosis. Pearson correlation coefficients (R) were measured to evaluate the linear relationship between VHS or NCA and Ao/LA ratio. All analyses were carried out at the 5% significance level.

Results: In groups I, IIa, IIb and IIc, respectively, the VHS had a mean ± SD of $9.9 \pm 0.5v$, $10.4 \pm 0.4v$, $10.6 \pm 0.6v$ and $12 \pm 1.4v$, and a $CI_{(\mu1,\ 0.95)}$=[9.7; 10.1], $CI_{(\mu2a,\ 0.95)}$=[9.8; 10.9], $CI_{(\mu2b,\ 0.95)}$=[10; 11.2] and $CI_{(\mu2c,\ 0.95)}$=[11.5; 12.6]. In groups I, IIa, IIb and IIc, respectively, the NCA had a mean ±SD of $18.9 \pm 1.8v^2$, $20.6 \pm 1.5v^2$, $22.3 \pm 3.3v^2$ and $28.6 \pm 6.5v^2$, and a $CI_{(\mu1,\ 0.95)}$=[18; 19.7], $CI_{(\mu2a,\ 0.95)}$=[18.2; 22.9], $CI_{(\mu2b,\ 0.95)}$=[19.3; 25.4] and $CI_{(\mu2c,\ 0.95)}$=[26; 31.1]. For the VHS and NCA means, there were significant differences between the following groups: I and IIa ($P< 0.05$ and $P< 0.05$); I and IIb ($P< 0.05$ and $P= 0.001$), and I and IIc ($P< 0.001$ and $P< 0.001$). The values of kappa showed a moderate ($\kappa= 0.46$ and $\kappa= 0.45$) strength of agreement, respectively, between VHS or NCA and echo. The correlation coefficients ($R= -0.66$ and $R= -0.65$) showed that there was a significant linear relationship ($P< 0.001$), respectively, between VHS or NCA and Ao/LA ratio.

Discussion/Conclusion: The automatic approach proved adequate for an easy practical application. The determination of NCA includes all the data carried out by VHS and enjoys some few advantages in terms of accuracy to establish LAE.