

LEFT VENTRICULAR FUNCTION DURING ATRIAL FIBRILLATION AND FOLLOW UP AFTER SUCCEFULL CARDIOVERSION TO SINUS RHYTHM IN WARMBLOOD HORSES

A. Dufourni, A. Decloedt, E. Bellemans, D. De Clercq, G. van Loon.

Equine, Cardioteam, Department of Large Animal Internal Medicine, Faculty of Veterinary Medicine, Ghent University, Salisburylaan 133, 9820 Merelbeke, Belgium

Reverse remodeling after cardioversion of atrial fibrillation (AF) to sinus rhythm results in restoration of atrial contractile function and left atrial size. Little is known about the impact on ventricular function. Left ventricular (LV) function was assessed in 30 Warmblood horses treated by transvenous electrical cardioversion or administration of quinidine sulphate for AF at three time points: before cardioversion in AF, at 24 hours and 6 weeks after successful cardioversion. Measurements were performed from M-mode images and tissue Doppler imaging of the LV. Differences between time points were analyzed by univariate linear regression analysis with post-hoc Bonferroni correction for multiple comparisons. Statistical significance was defined as $p < 0.05$. During AF, horses showed a significantly reduced end-diastolic ventricular internal diameter (LVIDd) (11.6 ± 1.0 cm) but heart rate (50 ± 13 bpm) was also significantly increased. LVIDd and fractional shortening (FS) increased progressively after cardioversion, although FS changes did not reach statistical significance. From 24h to 6 weeks in sinus rhythm, the pre-ejection period (102 ± 24 and 88 ± 17 ms) decreased significantly, while the late diastolic LV myocardial velocity (A wave) (3.9 ± 1.8 and 6.5 ± 2.0 cm/s), early diastolic myocardial velocity (E wave) (18.2 ± 4.0 and 19.9 ± 4.2 cm/s) and the A/E ratio increased progressively. This study suggests that left ventricular systolic and diastolic function is reduced during AF and increases progressively after successful cardioversion. The resulting reduced cardiac output may affect cardiac function during exercise. Therefore, assessment of both left ventricular and atrial function might be useful before the horse returns to full athletic performance.

Keywords: Arrhythmia – Equine - systolic function - diastolic function