JOURNAL OF EQUINE VETERINARY SCIENCE

Journal of Equine Veterinary Science
Volume 33, Issue 12, Pages 1110–1114, December 2013

Evaluation of Echocardiographic Parameters During Increasing Infusion Rates of Dobutamine in Isoflurane-Anesthetized Horses

Valentina Vitale, DVM, Micaela Sgorbini, DVM, PhD, MS, Angela Briganti, DVM, PhD, Michele Corazza, DVM, Gloria Breghi, DVM, Francesco Staffieri, DVM, PhD

Received: November 4, 2012; Received in revised form: February 17, 2013; Accepted: April 12, 2013; Published Online: June 10, 2013

DOI: http://dx.doi.org/10.1016/j.jevs.2013.04.012

Abstract

The purpose of this study was to evaluate changes in echocardiographic parameters during increasing infusion rates of dobutamine in isoflurane-anesthetized horses and to compare our results with those of previous studies. Six Standardbred female healthy horses were included in this study. All animals were anesthetized and infused with dobutamine at different rates. mean arterial pressure (MAP), heart rate (HR), and some echocardiographic measurements were recorded. Statistical analysis was applied. Under basal conditions (time 0 [T0]), HR ranged between 32 and 42 beats per minute (bpm), and MAP was between 39 and 63 mm Hg. MAP increased significantly from T0 compared with values at T2, T2, and T3 in a dose-dependent manner, while HR increased significantly only at T3 if compared to the other measuring times. Left ventricular internal diameter during diastole (LVDs) decreased significantly in a dose-dependent manner, with increasing of the infusion rate of dobutamine. Interventricular septal dimension during diastole (IVSs) increased significantly, and end-systole left ventricular volumes (LVVols) decreased significantly at T2 and T3 compared to T1. Ejection fraction (%) increased significantly between T0 and T1, T2, and T3. Cardiac output increased significantly only at the higher dosage (T3 vs. others) of dobutamine, but cardiac power output was enhanced significantly at T2 versus that at T0 and T1 and at T3 versus all the previous measurements. Arrhythmias were diagnosed in 5 of 6 (83.3%). In this study, the increase of MAP was found to be dose-dependent, according with literature. The HR and MAP values registered at T0 were comparable to previous results obtained both in anesthetized and conscious horses, while at T1, T2, and T3, HR and MAP values were similar only too those reported in anesthetized horses. IVSs increased and LVDs decreased significantly with the increment of dobutamine infusion rate. These findings suggest that dobutamine, even at low infusion rates, induces an enhancement in cardiac systolic function. The dose-dependent increase of IVSs and decrease of LVDs measurements are in line with those reported for dobutamine administered in conscious horses but with lower values. The LVVols dose-dependent reduction obtained in this study is in line with that in other reports, but both LVold and LVVols values after dobutamine infusion at different dosages are lower if compared to previous studies. The low LVol values and the wide standard deviation have influenced consequently the derived indices values (stroke volume [SV], EF, cardiac output [CO]). In the present study, SV did not significantly increase during dobutamine infusion. These results disagree with those reported by others. The increment of CO might be due mainly to the enhanced HR rather than to the weak changes of SV. Cardiac power output increased significantly from the 5 mcg/kg/min dosage in a dose-dependent manner, as reported by others.

Keywords:
Horse, Echocardiographic measurement, Dobutamine

Cardiac Power Output during Dobutamine Stress Test in Horses
Charlotte Sandersen, Kathleen McEntee, Stefan Deleuze, Johanne Detilleux, Hélène Amory
Journal of Equine Veterinary Science, Vol. 29, Issue 4

Intraoperative Analgesic Effect of Intrafunicular Lidocaine Injection During Orchiectomy in Isoflurane-Anesthetized Martina Franca Donkeys
Riccardo Suriano, Vincenzo Varasano, Domenico Robbe, Augusto Carluccio, Paola Straticò, Alberto Contri, Lucio Petrizzi
Journal of Equine Veterinary Science, Vol. 34, Issue 6

Electroencephalographic Responses to a Noxious Surgical Stimulus in Mules, Horses, and Ponies
Nicola J. Grint, Craig B. Johnson, Silvia De Sa Lorena, Stelio Luna, Carlos A. Hussni, Helen R. Whay, Joanna C. Murrell
Journal of Equine Veterinary Science, Vol. 34, Issue 8

View All

< Previous Article

Journal of Equine Veterinary Science
Volume 33, Issue 12, Pages 1110–1114, December 2013

Next Article >