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Original article

Right ventricular function during pharmacological and exercise stress testing in horses

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Highlights

- Right ventricular function was examined in healthy horses using exercise and pharmacological stress echocardiography.
- Post-exercise and pharmacological stress echocardiography resulted in similar heart rates and cardiac output.
- Cardiac troponin I concentrations were significantly elevated after pharmacological stress testing.
- Pulmonary artery pressures were significantly higher post-exercise, with alterations of right ventricular function.

Abstract

The disproportionate rise of pulmonary artery pressure compared to systemic blood pressure during exercise can lead to detrimental right ventricular remodelling in endurance athletes. Horses may act as an extreme model of these athletic cardiovascular adaptations, as they show a three fold increase in pulmonary pressures during exercise. Right ventricular function was examined in ten healthy horses using post-exercise and pharmacological stress echocardiography in a randomised cross-over design. Exercise testing was performed on a treadmill while pharmacological testing was performed using an atropine-dobutamine infusion.

Heart rate, systemic blood pressure and cardiac output during echocardiography were similar post-exercise compared to maximal pharmacological stress. Systolic pulmonary artery pressure was significantly higher during the exercise test (121±15 mmHg) and during