

# **EFFECTS OF AGE ON ECHOCARDIOGRAPHIC MEASUREMENTS IN HEALTHY HORSES OF THE HALF-BLOOD BREED**

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## **Abstract**

In any species, for echocardiography to allow distinguishing between normal subjects and subjects suffering from heart disease, it is essential to dispose of reliable specific reference values. In human medicine, the effect of several physiological factors such as body size, ethnicity, gender, ageing, growth, training, or pregnancy on echocardiographic reference values have been demonstrated. In horses, the effect of training, body weight (BW), sex and breed on echocardiographic parameters has been described, but the effect of growth and ageing was poorly documented in this species. The aim of this study was to describe the relationship between age and echocardiographic measurements in horses.

Echocardiography was performed in 59 healthy half-blood horses, 24 females and 35 males, weighing 78 to 662 kg and aged from 10 days to 35 years-old. Standard bidimensional and time-motion mode echocardiography was performed in each horse, which allowed the measurement of the right ventricular internal diameter in diastole, the left ventricular internal diameter in systole and diastole, the interventricular septum and left ventricular free wall thickness in systole and diastole, and the aortic, pulmonary and left atrium internal diameter in diastole. The correlation between the echocardiographic measurements and the age was studied using a simple linear and a logarithmic regression test.

All echocardiographic parameters showed a moderate to strong significant ( $p < 0.05$ ) correlation with age, and the coefficient of determination obtained using the logarithmic regression test was always higher ( $R^2$  0.35 to 0.80) than the one obtained using the linear regression test ( $R^2$  0.25 to 0.49).

In the equine species, especially in the early growing period (up to 3 years of age), echocardiographic reference values should be established in each breed using logarithmic regression equations as a function of age or BW (the BW showing a strong correlation with age in a given breed). This could increase the diagnostic value of echocardiography in equine cardiology.