SHORT COMMUNICATION

CIRCADIAN INTRAOCULAR PRESSURE RHYTHMS IN ATHLETIC HORSES UNDER DIFFERENT LIGHTING REGIME

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The present study was undertaken to investigate the existence of intraocular pressure (IOP) rhythms in athletic thoroughbred horses maintained under a 24 h cycle of light and darkness (LD) or under constant light (LL) or constant dark (DD) conditions. We identified an IOP circadian rhythm that is entrained to the 24 h LD cycle. IOP was low during the dark phase and high during the light phase, with a peak at the end of the light phase (ZT10). The circadian rhythm of IOP persisted in DD (with a peak at CT9.5), demonstrating an endogenous component in IOP rhythm. As previously shown in other mammalian species, horse IOP circadian rhythmicity was abolished in LL. Because tonometry is performed in horses for the diagnosis of ophthalmologic diseases, such as glaucoma or anterior uveitis, the daily variation in IOP must be taken into account in clinical practice to properly time tests and to interpret clinical findings.

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Keywords Intraocular pressure, Circadian rhythm, Equus caballus, Light-dark cycle, Tonometry

INTRODUCTION

The mammalian circadian clock regulates the temporal organization of biochemical and physiological functions (Dardente & Germakian, Submitted July 29, 2008, Returned for revision August 12, 2008, Accepted October 8, 2008

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