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### **POLYSOMNOGRAPHY AND 24-HOUR OBSERVATION IN THE EVALUATION OF EQUINE SLEEP DISORDERS: NARCOLEPSY OR REM-SLEEP DEFICIENCY?**

**Introduction:** Narcolepsy is a chronic neurological disorder characterized by excessive daytime sleepiness, cataplexy, sleep paralysis, and hallucinations. Although the pathogenesis is not completely understood, it has been shown that a lack of the hypothalamic hormone hypocretin is crucial in humans and dogs. In the horse a similar aetiology is suspected, but there are no studies to support this hypothesis and some cases are described as examples of sporadic idiopathic hypersomnia instead.

**Aim of the study:** To investigate the pathogenesis of atonic collapses through ethological, clinical and polysomnographic examinations.

**Material and Methods:** A call to owners was made, followed by a survey which was completed by 177 owners of narcoleptic horses. 39 horses were studied via clinical examinations, polysomnographic measurements, and 24-hour observation. Furthermore the individual management and stabling conditions were investigated.

**Results and Conclusions:** 37/39 horses showed up to 199 collapses (MW 64.0 ± 40,5) per day. In 20/39 horses a correlation between the onset of collapse and an event such as change of stabling or illness was observed. In 36 % (14/39) the stable size was too small. 34 horses refused to lie down and showed an altered, restless sleep profile. Collapses mainly occurred during nighttime ( $p < 0.001$ ) and in 86.7 % during rapid eye movement (REM) sleep while standing. Naturally REM-sleep occurs every night and only in a recumbent position, which can be explained by the low muscle tone during this sleep stage <sup>(1)</sup>. Presumably „narcolepsy“ of adult horses is not a neurological disorder but rather a REM-sleep deficiency due to recumbent sleep deprivation caused by illness, husbandry shortcomings or ethological deficits. As a result the horses fall into REM-sleep while in a standing position, leading to collapses. A positive correlation between the amount of REM-sleep and the number of collapses was observed ( $p = 0.001$ ).

#### References

1. Kalus M. Schlafverhalten und Physiologie des Schlafes beim Pferd auf der Basis polysomnographischer Untersuchungen: Ludwigs-Maximilians-Universität München; 2014.