

DETERMINATION OF THE TIME OF DAY OF SPONTANEOUS OVULATION IN THE MARE

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The ability to accurately predict and control ovulation in the mare is essential for efficient breeding management. Knowing the time of day most mares ovulate would simplify the use of frozen semen in the mare. Some studies found that more mares ovulate at night, while others refuted this idea. It is perceived among equine veterinarians that a majority of mares ovulate in the early morning hours after midnight. Previous studies have examined mares two to four times a day when attempting to determine the time of day a mare was most likely to ovulate. The purpose of this study was to examine mares every 2 h to determine if there was a most prevalent time of ovulation. Our hypothesis was that a significantly greater number of mares would ovulate between 8 p.m. and 6 a.m. with the peak number of ovulations occurring between 10 p.m. and 2 a.m. A herd of 50 mares was examined by transrectal ultrasound twice weekly to identify mares that were in estrus. Mares that were determined to be in estrus (follicle ≥ 30 mm, uterine edema, and/or teasing to a stallion) were monitored daily until a 40 mm follicle was observed, at which time they were examined ultrasonographically every 2 h until ovulation was observed. If a mare had two follicles, only the first ovulation was recorded to eliminate any effects that the first ovulation may have on the second follicle.

Between June 22, 2004 and July 26, 2004, 25 mares were detected in estrus and were monitored via ultrasound every 2 h until ovulation was observed. Statistical analysis was performed using a Chi-squared test. When the day was divided into three 8 h segments (4 p.m.–12 a.m., 12 a.m.–8 a.m., and 8 a.m.–4 p.m.) a significantly greater number of mares (14/25) ovulated between 4 p.m. and 12 a.m. as compared to the other time segments ($p = 0.0424$). Furthermore, if the day was divided into two 12 h segments (2 p.m.–2 a.m. and 2 a.m.–2 p.m.) a significantly greater number of mares (20/25) ovulated between 2 p.m. and 2 a.m. ($p = 0.0027$). Results of this study support the hypothesis that there is a trend for ovulations to occur in the late evening to early night hours. Further research is needed to explain the endocrinology behind this phenomenon. Better understanding of the factors controlling ovulation in the mare will afford the practitioner better control when manipulating the estrous cycle.

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