Using behavior to time initiation of oxytocin administration to prolong luteal function in mares
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Poor performance and undesirable behavior during estrus are common complaints made by horse owners and trainers. Administration of exogenous oxytocin starting on Day 7 of diestrus has been shown to be effective in extending luteal function and preventing estrus behavior in mares. The current therapy protocol requires serial veterinary examinations to determine the exact date of ovulation, which may not be feasible in all situations. The objective of this study was to use estrus behavior alone to determine the appropriate time for starting the oxytocin protocol. We hypothesized that administration of oxytocin beginning 8 days after the onset of behavioral estrus will prolong the luteal phase. Twenty-two light breed mares (aged 4 to 20 years) were teased once by introducing them to a stallion and observing for signs of sexual receptivity. Mares not displaying signs of estrus received 250 ug of cloprostenol (IM) and were teased again 3 to 4 days later. On the day that estrus behavior was observed (Day 0), mares were randomly divided into two groups: Oxytocin (n=11): oxytocin (60 IU, IM) was administered once daily from Day 8 to 17; Control (n=11): did not receive treatment. Blood samples were collected from all mares every 4 days throughout Day 17, and every 7 days thereafter until Day 45. Serum progesterone concentration was determined by chemoluminescence and progesterone concentrations >1 ng/ml were indicative of a functioning corpus luteum. Interestrus interval was defined as the period between Day 0 and the day when serum progesterone reached <1 ng/mL. The average interestrus interval between groups was compared by independent samples t-test. Data are presented as mean ± SEM. Significance was set at P<0.05. The average interestrus interval was higher for oxytocin treated mares compared to control mares (21.5±1.6 vs. 32.4±4.2 days, respectively). In the oxytocin group, the interestrus interval was longer than 31 days in 6/11 (54.5%) mares and up to 45 days in 5/11 mares (45.45%). Our results are supportive of our hypothesis but are slightly lower than reported success rates obtained in previous studies that initiated oxytocin treatments based on the day of ovulation (60 to 70% response rate).1 Potentially, the success rate of our study would be improved if oxytocin treatment duration were extended beyond 10 days. The same authors reported improved efficacy when oxytocin administration was extended up to 29 days.1 We conclude that luteal maintenance was attained by once daily oxytocin administration beginning 8 days following behavioral signs of estrus.

Keywords: Oxytocin, mare, estrus, behavior, corpus luteum

References