Progestin treatment of preovulatory mares fails to delay ovulation and may impair fertility
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Controlling ovulation to occur when popular stallions or transported semen is available is desirable to effectively manage broodmares. Some strategies successfully hasten ovulation (e.g., human chorionic gonadotropin and deslorelin), but there is no effective method to delay ovulation in mares. Our hypothesis was that progestins administered during the preovulatory period would delay ovulation without interfering with fertility. The objectives of this study were to determine if: i) CIDR-B or altrenogest can delay ovulation; ii) spontaneous ovulation follows cessation of treatment; iv) treatment affects fertility; v) treatment affects endometrial edema; vi) follicular growth and estrus is suppressed. Fourteen cyclic reproductively sound mares were examined by per rectal palpation and ultrasonography, every one to three d, according to ovarian and uterine findings. Once mares were confirmed in estrus with a large pre-ovulatory follicle (≥ 35 mm), they were sequentially and randomly allocated in a cross-over design, to one of three treatments: 1) control (no treatment, n = 25 cycles); 2) altrenogest (ReguMate® 0.044 mg/kg/d, for 48 h, n = 17 cycles); and 3) CIDR-B applied intra-vaginally for 48 h (n = 16 cycles) and were teased daily with a mature stallion until ovulation was detected. Mares were bred with cooled extended semen from a single fertile stallion within 24 h of semen collection, starting two d after treatment onset; mating was repeated every 48 h until ovulation was detected. Pregnancy diagnosis was performed 12 to 14 d after ovulation. Once confirmed pregnant, the embryonic vesicle was manually reduced and the mare received prostaglandin to return to estrus. All mares were used for four to six cycles, allowing each treatment to be repeated one or two times. The data were analyzed using StataIC® 10.0 (College Station, TX). The pregnancy rate (dichotomous outcome) was evaluated by multiple logistic regression, controlling for mare (random variable), cycle number, treatment and artificial inseminations (AIs) per cycle (fixed variables). Mixed linear model (continuous outcomes) was used to analyze follicle growth rate, time to ovulation, endometrial edema and estrus behavior, using the same random and fixed variables (except AIs per cycle). Neither CIDR nor altrenogest treatment delayed ovulation. The preovulatory follicular diameter was not affected by treatment. Treatment had no effect on rate of follicular growth and there were no significant differences in slope (P = 0.51) or intercept (P = 0.85) of the lines for follicle diameter relative to day of ovulation when corrected for day of ovulation. There were no significant differences between altrenogest, CIDR, and control groups for the number of matings per cycle (P = 0.27). Both treatments had prompt and dramatic effects on abolishing estrus behavior within 24 h (P < 0.0001); behavior returned to the control level after cessation of treatment. Both forms of treatment reduced endometrial edema by 24 h (CIDR) and 48 h (altrenogest); the edema score returned to normal after cessation of treatment within 24 h. Altrenogest treatment tended to reduce the pregnancy rate (P = 0.09). In summary, altrenogest or CIDR treatment of mares with preovulatory follicles did not delay ovulation, retard follicular growth, or reduce ovulatory diameter. Therefore, the use of progestins to delay ovulation in mares should be discouraged, because it lacks efficacy and may reduce successful establishment of pregnancy.

Keywords: Fertility, ovulation control, estrous behavior, mare.

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