THE EFFECT OF PROSTAGLANDIN IN EARLY DIESTRUS OR PROGESTERONE AND ESTRADIOL ADMINISTRATION, ON EQUINE FSH TREATED DONOR MARE EMBRYO RECOVERY AND RECIPIENT PREGNANCY RATE

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There are limited data on the success of different estrus synchronization protocols combined with the administration of eFSH in horses, and no information on embryo quality and post-transfer pregnancy rate. The main objectives of this study were to investigate and compare estrus synchronization parameters, ovulation (Ov) rates, embryo recovery and quality, and subsequent pregnancy rate, using two estrus synchronization methods combined with eFSH treatment. Twelve donor mares were used in a randomized crossover design in two consecutive estrus cycles. Daily transrectal palpation and ultrasonography were performed during estrus and for $\geq$2 days post-Ov. Group 1 was progesterone and estradiol 17β (PE) (150 and 10 mg, respectively, every 24 h, IM) for 10 days, followed by prostaglandin F2α (PGF2α, 5 mg, SQ) on the last day of PE treatment. Group 2 was PGF2α on Day 5 post-Ov. In both donor groups, when a follicle >20 mm in diameter was detected, eFSH was given (12.5 mg IM every 12 h) until at least one follicle >35 mm in diameter was present. Mares were then given hCG (2000 IU, IM), and bred at 48-h intervals using fresh semen (>100 million normal and motile spermatozoa) until Ov (Day 0 = day of first ovulation). Recipient mares were treated with hCG as needed for Ov alignment ($\pm$2 days) with the donor. Nonsurgical embryo recovery flushes were performed on Day 7 or 8 post-Ov. Embryos were loaded into 0.5 mL straws and transferred non-surgically (Universal Pipette) into the recipient's uterine body. Follicle size at PGF2α, intervals from PGF2α to Ov and hCG to Ov, follicle size at start of eFSH, duration of eFSH, follicles >35 mm at hCG, follicles >35 mm pre-Ov, interval between Ovs, number of Ovs and embryos, embryo quality score (1, poor to 4, excellent) based on morphologic appearance, and pregnancy rate were compared between groups with one-way ANOVA or Chi-square. There was a difference between groups (PE 10.8 $\pm$ 2.3, PG 8.7 $\pm$ 2.3 days) in the interval from PG to Ov ($p < 0.0456$). The mean number of Ovs tended to be higher in the PG treated group ($p = 0.1062$). There were 15 embryos for 30 Ovs in PG group and 4/15 (26.7%) resulted in pregnancies. There were 11 embryos for 18 Ovs and 5/11 pregnancies (45.5%) in the PE group. The combined PE and PG results were 48 Ovs, 26 embryos, and 9 pregnancies with 26/48 embryos per Ov (54.2%), 9/26 recipient pregnancies per embryo (34.6%), and 9/23 pregnancies per cycle. We observed undersized (for their age), morphologically disturbed embryos in both groups, indicating a loss of embryonic viability. The estrus synchronization methods used (in eFSH-treated donor mares) had no significant effect on embryo recovery and recipient pregnancy rate. The cost benefit ratio of eFSH treatment in these protocols should be examined.

Keywords: Embryo transfer; eFSH; Superovulation; Estrus synchronization; Equine