Animal Reproduction

Folliculogenesis, oogenesis, and superovulation

Is the ovarian vascularization correlated with superovulatory response and *in vivo* embryo production in native brazilian sheep?

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The use of color Doppler ultrasonography in multiple ovulation and embryo transfer (MOET) protocols for sheep allows the real-time monitoring of ovarian blood flow and potentially can be a tool to predict embryo production in sheep. Therefore, the present study tested the correlation of ovarian vascularization at 36 h after the end of the superovulation treatment and at 12h (Day 15) before the non-surgical embryo recovery (NSER) (Day 16) with estrus response (ER%), duration of estrus (DE), number of corpus luteum (CL), number of anovulatory follicles (AF), number of structures recovered (SR), number of viable embryos (VE; Grade 1-3). A total of 40 ewes (Morada Nova and Santa Inês ewes, *n* = 20/breed) received a new (G-new, *n* = 20) or reused (G-reused, *n* = 20) intravaginal progesterone device (Eazi-breed CIDR®, Zoetis, New Zealand) for 9 days. At 60 h before CIDR® removal, the pFSH (133mg, FolltropinV®, Vetoquinol, Brazil) treatment was initiated in six decreasing doses (25-25-15-15-10-10%) i.m. administrated 12 h apart. On day of CIDR® removal two equal doses of d-cloprostenol (37.5µg, Prolise®, AgenerUnião, Brazil) were applied 12 h apart. On Days 12 to 15 three equal doses of flunixinmeglumine (6.75 mg; Banamine®, MSD, Brazil) were i.m. injected. All ewes showed estrus and and were mated with fertile rams. Color Doppler and B-mode transrectal ultrasounds (Z5Vet®, Mindray, China) were performed at 36 h after CIDR® removal and 12 h before NSER.Females that had more than four corpus luteum bodies were administered d-cloprostenol (37.5 µg) and estradiol benzoate i.m. (1 mg, Estrogin®; Biofarm, SP, Brazil) at 8 pm the previous day and oxytocin i.v. (50 IU Oxytocin forte®; UCB, SP, Brazil) 20 minutes before NSER. Pearson's correlation was performed between ovarian vascularization and variables of estrus, superovulatory response and embryo yields ($P<0.05$). The ovarian vascularization at 36 h did not correlate ($P>0.05$) with any variable, whereas the ovarian vascularization at 12h was positively correlated ($P<0.05$) with CL ($r = 0.41$), ER ($r = 0.43$) and VE ($r = 0.44$). In conclusion, the ovarian vascularization in the early luteal phase has positive correlation with superovulatory response and embryo yields, whereas at the preovulatory period it does not correlate with any evaluated variable. Financial support: Embrapa (02.13.06.026.00.02/ 02.13.06.026.00.04), FAPEMIG (PPM 00201-17), Capes (88882.344029/2019-01).