

leptospirose vaccine coupled with oxytetracycline treatment did not improve the reproductive performance in beef cows.

Keywords: Beef cows; Leptospirose; Artificial insemination; Pregnancy rate

DOI: 10.1016/j.theriogenology.2007.05.005

PROGESTERONE CONCENTRATIONS IN GOATS RECEIVING SMALL RUMINANT CIDR[®]s VERSUS MODIFIED BOVINE CIDR[®]s

N. Hirsh, D. Matsas, S.L. Ayres

Tufts Cummings School of Veterinary Medicine, North Grafton, MA, USA

Administration of exogenous progesterone is an important part of estrus synchronization and superovulation protocols used in goat reproduction. Currently, progesterone implants for small ruminants are not available in the United States, but bovine controlled internal drug releasing devices (CIDR[®]s) containing progesterone have been approved. The purpose of this study was to compare the concentrations of serum progesterone produced using small ruminant CIDR[®]s to concentrations produced using modified bovine CIDR[®]s.

Six alpine does in anestrus were used in a crossover design. Three does had small ruminant CIDR[®]s (Eazi-Breed CIDR[®], InterAg, Hamilton, New Zealand) placed in the vagina, whereas the remaining does received bovine CIDR[®]s (Eazi-Breed CIDR[®]) that had been modified by removing one-third of the outer silicone shell containing progesterone, and threading this onto an 8 in. cable tie which was tightened to pull the shell into a 5-cm inverted V shape to fit into the vagina. Blood was collected daily for 3 days prior to CIDR[®] insertion, and for 14 days after insertion. The CIDR[®] was removed and blood was collected for an additional 3 days. The treatments were then reversed and blood was collected as above for a total of 37 days. Progesterone concentrations were determined by solid-phase radioimmunoassay (Coat-A-Count Progesterone RIA Kit, Diagnostics Products, Corporation, Los Angeles, CA, USA); data were analyzed using a two-way repeated ANOVA test (to compare concentrations over time). With the exception of Day 13 after CIDR[®] insertion, there were no significant differences between the concentrations of progesterone produced by the small ruminant CIDR[®]s and the modified bovine CIDR[®]s. The average serum proges-

terone peak was at, or just below, 4 ng/mL (average 3.85 for small ruminant and 4.01 for modified bovine CIDR[®]s) on the day after CIDR[®] insertion. Concentrations began to decline immediately, falling to <3.0 ng/mL by 8 and 9 days post-insertion for the small ruminant and modified bovine CIDR[®]s, respectively.

In summary, modified bovine CIDR[®]s produced serum progesterone concentrations comparable to those produced by small ruminant CIDR[®]s. These data could be important as evidence to support the use of modified bovine CIDR[®]s as an extra-label source of progesterone in small ruminant reproduction in the United States. In addition, bovine CIDR[®]s could potentially be modified to study the effects of prolonged sub-luteal and large-dose progesterone concentrations on estrous synchronization and superovulation in small ruminants.

Keywords: Goat; Progesterone; CIDR; Estrus synchronization

DOI: 10.1016/j.theriogenology.2007.05.006

DETERMINATION OF TESTICULAR BLOOD FLOW IN LLAMAS USING VASCULAR CASTING AND DOPPLER COLOR FLOW ULTRASONOGRAPHY

M. Grimes, M. Kutzler, R. Tyson, K. Timm

College of Veterinary Medicine, Oregon State University, Corvallis, OR, USA

Background: Information on reproductive abnormalities in camelids, specifically those pertaining to spermatogenesis, is extremely limited. Many male camelids have a high percentage of spermatozoa with abnormal morphology. These abnormalities include variable sperm head sizes and sperm head and midpiece vacuolar defects. In cattle, swine and humans, it has been shown that such abnormalities, in addition to genetic reasons, can result from poor scrotal thermoregulation or decreased testicular blood flow. We hypothesize that this is also true for camelids.

Materials and methods: A fertile 6-year-old male alpaca was heparinized (40,000 IU sodium heparin IV) and exsanguinated under anesthesia (xylazine, guaifenesin and ketamine IV). Sixty liters of heparinized saline was flushed through the aorta and out of the caudal vena cava. Batson's No. 17 casting material was infused first through the aorta (red plastic) and then through the caudal vena cava (blue plastic) to determine position and size of the major vessels entering and

Table 1

Mean ($\pm$ S.D.) testicular blood flow (in cm/s) from fertile and infertile llamas

	TA PSV	TA EDV	MA PSV	MA EDV
Fertile	19.6 $\pm$ 5.4	6.4 $\pm$ 2.2	13.9 $\pm$ 3.1	8.6 $\pm$ 2.9
Infertile	16.5 $\pm$ 3.8	5.3 $\pm$ 1.8	10.4 $\pm$ 2.0	6.7 $\pm$ 0.3

leaving the testes. The pelvic region was then separated and digested in a 3% potassium hydroxide solution.

Fertile ($n = 8$) and infertile ($n = 4$) male llamas were sedated with butorphanol (15 mg IV and 15 mg IM) and positioned in sternal recumbency. A Philips iU22 ultrasound system was used to perform a color pulse-wave Doppler study of the suprastesticular (TA) and marginal arteries (MA) of both testes from each male using an L12-5 probe. Peak systolic (PSV) and end diastolic velocity (EDV) were averaged for each individual and compared between groups with a Student's *t*-test. Significance was defined as $P < 0.05$.

Results: Based on the vascular casting study, we found that the testicular artery originates from the ventral surface of the aorta, gives rise to an epididymal branch, and becomes very tortuous as it approaches the testis. Mean $\pm$ S.D. testicular blood flow from both groups of llamas is summarized in Table 1. Peak systolic velocity within the marginal arteries was higher in fertile males compared to infertile males ($P = 0.03$). There was no difference in blood flow in the other three parameters.

Conclusions: Determining testicular blood flow will assist in the diagnosis of infertility in camelids during breeding soundness evaluations.

Keywords: Blood flow; Camelid; Doppler ultrasonography; Testes; Vasculature

DOI: 10.1016/j.theriogenology.2007.05.007

EARLY PREGNANCY DIAGNOSIS BY PALPATION PER RECTUM: EFFECT OF NUMBER OF FETAL MEMBRANE SLIPS ON PREGNANCY LOSS IN DAIRY CATTLE

J.E. Romano^{1,a}, J.A. Thompson¹, D.C. Kraemer²

¹ Large Animal Clinical Sciences, College of Veterinary Medicine and Biomedical Sciences, Texas A & M University, College Station, TX 77845, USA

² Veterinary Physiology and Pharmacology, College of Veterinary Medicine and Biomedical Sciences, Texas A & M University, College Station, TX 77845, USA

^aPresent address: Veterinary Population Medicine, College of Veterinary Medicine, University of Minnesota, St. Paul, MN, USA.

In bovine practice, palpation per rectum [PPR] is one of the most frequent procedures performed by veterinarians and is the most frequent method used for pregnancy diagnosis. There is contradictory information regarding the potential deleterious effects of palpation per rectum for early pregnancy diagnosis on embryo/fetus viability. Earlier we reported no deleterious effect of palpation per rectum for pregnancy diagnosis between 30 and 60 days of pregnancy. However, under practical conditions, some females require more than one fetal membrane slip to establish a diagnosis. This additional manipulation could increase the potential deleterious effect of palpation per rectum. The objective of this study was to estimate the effect of the number of fetal membrane slips performed by palpation per rectum during early pregnancy diagnosis on pregnancy loss in dairy cattle. A controlled, randomized block-design experiment with two blocks, one by category and the other by number of embryos was conducted. Pregnant females (483) with a viable embryo detected by transrectal ultrasonography [TRUS] between 29 and 32 days after AI were randomly divided into three groups: control group [NPAL group; $n = 159$], palpation per rectum-1 [PAL-1 group; $n = 163$] and palpation per rectum-2 [PAL-2 group; $n = 161$]. The NPAL group was not submitted to palpation per rectum. The PAL-1 and PAL-2 groups were submitted to palpation per rectum using the fetal membrane slip technique once and twice between 34 and 41 days of pregnancy, respectively. The fetal membrane slip consisted of the compression of the pregnant uterine horn and allowing chorioallantoic membrane slip between the fingers. All the groups were submitted to two additional TRUS (Days 45 and 60 of pregnancy); Day 45 was used to monitor the potential immediate deleterious effect of PPR on embryo viability,