

Table 1

Effects of mare age and FSH treatment on numbers of oocytes collected per cycle, cleavage and blastocysts per oocyte, and pregnancies with a heartbeat per embryo transfer

	Young mares (<i>n</i> = 22)		Old mares (<i>n</i> = 15)	
	eFSH	No eFSH	eFSH	No eFSH
Oocytes per cycle*	1.08 ± 0.1 ^a	0.74 ± 0.1 ^b	1.08 ± 0.1 ^a	0.86 ± 0.1 ^{ab}
Cleavage rate at 48 h after ICSI (%)	74 (14/19)	52 (14/27)	62 (13/21)	67 (18/27)
Blastocysts per oocyte injected (%)	42 (8/19)	30 (8/27)	24 (5/21)	22 (6/27)
Pregnancies per embryo transfer (%)	50 (3/6)	33 (2/6)	40 (2/5)	60 (3/5)

Values with different superscripts (a and b) within rows differ ($P < 0.05$).

*LS means ± S.E.M.

using Fisher's Exact Test (SAS Institute Inc., Cary, NC, USA). More ($P = 0.01$) oocytes were collected per cycle from mares treated with FSH than not treated (LS means ± S.E.M. of 1.1 ± 0.1 and 0.8 ± 0.1 , respectively). Cleavage, blastocyst and pregnancy rates were not affected ($P > 0.05$) by age or FSH treatment (Table 1). Numbers of delayed embryos (<4 cells at 48 h) were similar ($P = 0.8$) for young and old mares (8/28, 29% and 10/31, 32%). In conclusion, FSH increased the number of oocytes collected per cycle. Embryo development was not different after ICSI of oocytes from young and old mares. We inferred that ICSI could be used to alleviate fertilization delays, and potentially improve early embryo development in old mares.

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Keywords: Oocyte; FSH; Aging; Embryo; Intracytoplasmic sperm injection

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DOSE RESPONSE TO OVULATION-INDUCING FACTOR (OIF) IN LLAMAS

V.M. Tanco, M.H. Ratto, M. Lazzarotto, G.P. Adams
Veterinary Biomedical Sciences, University of Saskatchewan, Sask. S7N 5B4, Canada

The existence of an ovulation-inducing factor (OIF) has been documented recently in the seminal plasma of llamas and alpacas—a discovery that challenges the concept that physical stimulation is responsible for eliciting ovulation in these species [1]. The objectives of the study were to determine if the dose of OIF needed to elicit ovulation is physiologically relevant (i.e., what proportion of an ejaculatory dose), and to test the hypothesis that CL form and function is affected by OIF in a dose-dependant manner. Female llamas were assigned randomly to

five groups ($n = 10$ /group) and given a single im dose of 500, 250, 125 or 60 µg of purified OIF (representative of 1/2 to 1/16 that is present in a single ejaculate), or 1 mL phosphate-buffered saline (controls). Ovulation and CL development were monitored by transrectal ultrasonography. Blood samples were taken every-other-day from Days 0 (the day of treatment) to 16 for measurement of plasma progesterone concentrations. More frequent blood sampling (16 samples in 12 h) was done on four animals per group to determine changes in plasma concentrations of LH. Ovulation rates were compared among groups by Chi-square analysis. Single-point measurements were compared among groups by analysis of variance, and serial data were compared by analysis of variance for repeated measures using Tukey's multiple comparisons as a post hoc test (GraphPad Prism Software, Version 3.0, San Diego, CA, USA). The diameter of the largest follicle at the time of treatment did not differ among groups ($P = 0.30$). Ovulation rates were 9/10, 9/10, 7/10, 3/10, 0/10 in groups given decreasing doses of OIF and the control group, respectively ($P < 0.05$). The maximum diameter of the CL was greatest ($P < 0.05$) in the high-dose group (mean ± S.E.M.; 13.5 ± 0.5 , 10.9 ± 0.7 , 11.6 ± 0.7 , 10.9 ± 1.0 mm). The day-to-day profiles of CL diameter and plasma progesterone concentration were highest in the high-dose group, and decreased in a dose-dependent manner (day effect, $P < 0.01$; group effect, $P < 0.01$; day-by-group interaction, $P < 0.01$). Similarly, plasma LH concentrations during the 12-h period after treatment were highest in the high-dose group ($P < 0.05$), and decreased in a dose-dependent manner (time effect, $P < 0.01$; group effect, $P = 0.18$; day-by-group interaction, $P < 0.01$). A rise in plasma LH concentration was apparent in all llamas that ovulated, and absent in all but one llama (treated with 60 µg of OIF) that failed to ovulate. Among only those llamas that ovulated, the CL was detected earliest (2.1 ± 0.1 , 2.5 ± 0.2 , 2.3 ± 0.2 , 3.3 ± 0.3 days after treatment, respectively; $P < 0.05$),

and the plasma progesterone profile was greatest ($P < 0.05$) in the high-dose group. We concluded that OIF from seminal plasma had a dose-dependent effect on ovulation rate and CL form and function in llamas, and the effect was at physiologically relevant doses.

Keywords: Seminal plasma; Camelids; Ovulation-inducing factor; Ovulation; Semen

Reference

- [1] Adams GP, Ratto MH, Huanca W, Singh J. Ovulation-inducing factor in the seminal plasma of alpacas and llamas. *Biol Reprod* 2005;73:452–7.

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INFLUENCE OF AGE, SEX, BREED ON THE OCCURRENCE OF RECTAL TEARS: 99 CASES (1985–2006)

A. Claes, B.A. Ball, J.A. Brown, P.H. Kass

Population Health and Reproduction, School of Veterinary Medicine, Veterinary Medical Teaching Hospital, UC Davis, CA 95616, USA

Equine rectal tears remain an important problem in veterinary practice. Although previous studies have characterized different treatments and outcomes following rectal perforation in the horse, there is relatively little information available concerning the associations of age, breed or sex on the occurrence of rectal perforation in the horse. Therefore, the objective of this retrospective study was to characterize the age, breed, sex and type of examination in horses presented for rectal tears to a referral hospital and compare these parameters with those of the general hospital population. For this study, medical records of 99 horses presented to the Veterinary Medical Teaching Hospital (VMTH) between April 1985 and August 2006 for rectal tears were reviewed. Age, breed, sex and type of examination were recorded for comparison with all of the equine inpatients presented during this interval. The Chi-square test of Homogeneity or Kruskal-Wallis Test was used to determine if age, sex or breed of the population with rectal tears differed from those of the overall equine inpatient population during this interval.

Horses with rectal tears included 42 Arabian Horses, 23 Quarter Horses, 13 Thoroughbreds, 4 American Paint Horses, 3 American Miniature Horses, 5 crossbreds and 9 ‘other’ breeds. There were 64 mares, 29 geldings and

only 6 stallions in the study population. Horses ranged from 6 months to 32 years of age. Median age at admission was 12 years. The majority of the rectal tears had been associated with colic examinations ($n = 44$) or reproductive examinations ($n = 35$). Eleven rectal tears had been associated with medical examinations ($n = 4$), dystocias ($n = 4$) and ‘others’ ($n = 3$); the remaining nine rectal tears were of unknown origin due to a lack of information in the data base.

Overall, the percentage of horses with a rectal tear represented 0.1% of all cases presented to the VMTH. Rectal tears were more common in older horses, with a greater frequency of rectal tears in horses >9 years of age ($P < 0.0001$). Mares and geldings represented the largest proportion of rectal tears; mares were more likely to have a rectal tear ($P < 0.0001$) than stallions or geldings. Although the total hospital population was mainly comprised of Thoroughbreds and Quarter Horses, rectal tears occurred proportionally more often in Arabian and American Miniature Horses ($P < 0.0001$). In conclusion, Arabian and American Miniature Horses were overrepresented in the population of horses presenting for rectal tears and horses >9 years of age had a greater occurrence of rectal tears.

Keywords: Rectal tears; Age; Sex; Breed; Horse

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USE OF BOVINE OOCYTES TO EVALUATE IN VITRO FERTILIZING CAPACITY OF EQUINE SPERM

L.F. Campos-Chillón, M. Barcelo-Fimbres, E.M. Carnevale, G.E. Seidel Jr.

Biomedical Sciences, Colorado State University, Fort Collins, CO, USA

Inappropriate capacitation of sperm is likely one reason for poor success with equine IVF. We tested the suitability of bovine oocytes for evaluating fertilizing capacity of equine sperm by comparing: (1) gradient density versus swim up for sperm separation; (2) heparin concentrations; and (3) zona pellucida (ZP) intact and ZP-free oocytes. Percoll density gradient swim-up separation was used in four replicates with 2 and 10 $\mu\text{g/mL}$ of heparin in the fertilization medium and ZP-intact or ZP-free oocytes (2×2 factorial design). Bovine oocytes ($n = 280$) were aspirated from 2 to 8 mm follicles from abattoir-derived ovaries. Oocytes were matured for 23 h at 38.8 °C in 5% CO_2 in