Estradiol cypionate aided treatment for experimentally induced ascending placentitis in mares


Departamento de Clinicas Veterinaria, Faculdade de Medicine Veterinária, Universidade Federal de Pelotas, Pelotas, Rio Grande do Sul, Brazil; Department of Veterinary Clinical Medicine, College of Veterinary Medicine, University of Illinois Urbana-Champaign, Urbana IL; Department of Veterinary Clinical Sciences, College of Veterinary Medicine, The Ohio State University, Columbus, OH

The overall goal of this study was to assess the efficacy of various therapeutic combinations of a long-acting estrogen (estradiol cypionate; ECP) and a long-acting progestin (altrenogest; ALT) in addition to basic treatment for placentitis with trimethoprim-sulfamethoxazole and flunixin meglumine (TMS+FM). Specific aims for this experiment were to evaluate (i) time from induction of bacterial placentitis to delivery, gestational length, and foal parameters (high-risk, survival, and birth weight); and (ii) serum steroid concentrations (progesterone, 17α-hydroxyprogesterone, 17β-estradiol, and cortisol) in response to treatment. Pregnant mares (300 d gestation, n=46) were randomly split into healthy mares (control group, CONT, n=8) and mares with experimentally induced ascending placentitis (n=38). Placentitis was induced via intracervical inoculation of Streptococcus equi subspecies zooepidemicus. Thereafter, induced mares were randomly assigned into: (1) TMS+FM (n=8); (2) TMS+FM+ALT (n=8); (3) TMS+FM+ALT+ECP (n=6); (4) TMS+FM+ECP (n=6); and (5) no treatment (INOC, n=10). Treatments were started 48 h after bacterial inoculation and carried out for 10 d. All mares had blood samples collected and were assessed for signs of placentitis daily until foaling, or for 10 d. Steroids were analyzed via RIA. Continuous data were analyzed by ANOVA, and categorical data analyzed by Fisher’s exact test. Significance was set at p<0.05. Mares in the TMS+FM+ECP (346 ± 5; 46 ± 4 d) and CONT (335 ± 5; 35 ± 5 d) groups had the longest gestation lengths and induction to delivery intervals. However, gestation length for these groups was similar to TMS+FM+ALT+ECP (330 ± 11; 22 ± 6 d). Foal survival at parturition and 7 d after delivery were similar across treated groups (66.7-100%), and CONT group. Similar to CONT, TMS+FM+ECP had no high-risk foals; other treated groups had higher incidences (50-75%) (p<0.05). The inclusion of ECP in the treatments resulted in foals with body weight similar to CONT group (p>0.05). There were no group effects or time by group interactions on concentrations of steroids assessed herein (p>0.05). In conclusion, mares with experimentally induced ascending placentitis benefited from estrogen supplementation, but progestin supplementation did not appear to make a difference in outcomes.

Keywords: Pregnancy loss, foal survival, placental pathology, estrogen, progestins

Acknowledgments

CAPES, CNPq, and FAPERGS foundations are acknowledged for providing scholarships to graduate students (L.O.A., L.S.F., I.S.F., F.M.P., and V.M.), and post-doctoral fellowship (B.R.C. Bolsista da CAPES – Brasil #99999.005570/2015-08). Our thanks to Dr. Katarzyna Dembek for her assistance with laboratory techniques.