Evaluation of dexamethasone on fetal maturation and delivery in mares when administered on days 305 to 307 of gestation

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In many species corticosteroids are administered to the dam to induce precocious fetal maturation when the pregnancy is at risk; however in the mare this has met with mixed results. Previously we showed that 24 mg betamethasone administered to pregnant mares on d305 to 307 of pregnancy tended to hasten delivery 1 and more recently Ousey, et al 2 demonstrated mares receiving 100 mg dexamethasone (dex) on d315 to 317 had significantly decreased gestation length. Thus, we hypothesized mares receiving 100 mgs dex on d305 to 307 of gestation would significantly advance parturition and our objective was to determine if this treatment safely induced precocious fetal maturation and delivery at this stage of gestation.

Ten light breed mares were stratified by age and breeding date into two groups: 100 mg dex IM (DEX, n=5) or 50 mL saline IM (CON, n=5) on d305 to 307 of gestation. Jugular blood samples were obtained daily from d304 to 310 and then every other day until parturition to assess serum progesterone (P4) and cortisol concentration. All foals were APGAR scored and weighed at birth and blood samples were obtained at birth, 24 and 48 h to evaluate serum P4 and cortisol. Additionally, at 24 hours IgG concentration was measured and a complete blood count was performed.

Mixed model analysis with repeated measures was used to analyze the treatment and time effect on mare and foal P4 concentration and foal weights. T-tests were used to determine significance of other variables. DEX mares had a shorter gestation length (328 +/- 14 vs. 341 +/- 10); but not significantly different. DEX mares had significantly higher P4 on days 307, 308, and 309 and significantly lower P4 between both 0 to 48 and 48 to 96 h prior to foaling compared to CON mares. DEX mares delivered lighter foals at birth (P=0.007) and had lower IgG concentrations (P=0.01). Foals of the DEX mares did not have significantly different indices of maturity (neutrophil:lymphocyte ratio, white blood cell count and APGAR score) compared to CON foals. Although dex treatment on d305 to 307 did not significantly shorten gestation length this could be related to the small sample size of this study. In addition, decreased mammary development of DEX mares may indicate parturition was hastened with treatment and further studies are on-going.

Keywords: Horse, fetus, maturation, glucocorticoids, parturition

References