Fetoplacental steroids and eCG concentrations in a pregnant mare receiving intrauterine cloprostenol sodium
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Recently, a new therapeutic procedure involving intrauterine (IU) administration of cloprostenol (CLP) was described to terminate unwanted pregnancies in surrogate mares.1 Despite widespread use of this technique in South America, there are limited data on fetoplacental steroids and eCG concentrations following IU administration of CLP. The objectives were to determine clinical reproductive parameters, progesterone, estrogens and equine chorionic gonadotropin (eCG) concentrations following IU administration of CLP in a controlled abortion case. A seven year-old maiden Quarter Horse mare was presented for pregnancy termination at 60 days after ovulation. Transrectal palpation and ultrasonography examination revealed a single live fetus, normal fetal fluids and ovaries with multiple corpora lutea consistent with 60 day pregnancy. The mare’s perineal region was cleaned using povidone iodine. Cloprostenol sodium (500 mcg) extended in 10 mL of physiological saline was administered IU via transcervical route with an insemination pipette. The mare was observed for signs of discomfort for one hour following the treatment. Transrectal ultrasonography was performed at 12, 24, 48, 72, 96 h and 7 and 15 days after the treatment. Blood was collected simultaneously for hormone analyses. Estrone sulfate, estradiol 17 β, progesterone and eCG were measured by immunoassays. The mare showed no signs of discomfort following treatment. Transrectal ultrasound showed decreased blood flow to the corpora lutea by 24h. Following treatment, fetal movement was observed up to 48h and by 72h, the fetus was not active but still had a heartbeat. Since the mare had not aborted by 72h, second dose of IU cloprostenol (500 mcg in 10 mL of saline) was administered. During the treatment the mare’s cervix was observed relaxed and softened. The mare passed the fetus and the fetal membranes 94 and 22h after first and second treatment, respectively. Uterine lavage was performed with 3L of lactated Ringer’s solution 4h after abortion, and oxytocin (20 units/IM/BID) was administered for three days. Seven days after abortion retained endometrial cups and a trace amount of anechoic intrauterine fluid accumulation were noted. By 15d after abortion, no IU fluid, a trace amount of endometrial edema, and multiple small follicles were observed. At that time, no endometrial cups were visualized, although serum eCG concentrations remained elevated (ranging from 6,930 to 8,000 mIU/ml). Serum progesterone declined to baseline concentration by 96h (9.11, 3.02 1.48 and 0.18 ng/ml at 0, 12, 72 and 96h, respectively). Estrone sulfate and estradiol were 28.92 and 74.29 ng/ml initially at 0 h, increased to 50.15 and 98.25 ng/ml at 48 h and declined to 3.71 and 36.66 ng/ml, at 96h. In conclusion, this new approach effectively induced abortion in this mare with minimal side effects, however, the mare aborted 94h after initial prostaglandin administration (~22h after the second dose), which is remarkably longer than the average (i.e. 24h) reported by Aguilar et al.1 and longer than reported by the standard protocol using prostaglandin (60-72h) intramuscularly. Clearly, the endometrial cups were still actively secreting eCG at 15 days after abortion and it is uncertain how long endometrial cups will persist in this mare.

Keywords: Abortion, prostaglandin, fetoplacental unit, steroids

Reference