Short Communication

DOI: 10.48165/ijar.2022.43.1.18

The Indian Journal of Animal Reproduction

The official journal of the Indian Society for Study of Animal Reproduction

Year 2022, Volume-43, Issue-1 (June)

ACS Publisher www.acspublisher.com

ISSN 0970-2997 (Print)

Successful Termination of Undesirable Pregnancy during First Trimester in Mare

Sajjan Kumar, Yash Pal, Ram Avatar Legha and Thirumala Rao Talluri*

ICAR-National Research Centre on Equines, Bikaner, Rajasthan

ABSTRACT

A seven-year-old Marwari mare that was routinely used in semen collection programme was mismated by a fertile stallion. The mare was active and alert and all the clinical and hematological parameters were observed to be normal at the time of examination of pregnancy. Rectal examination of the mare through ultrasonography on day 15 revealed an embryonic vesicle confirming the pregnancy. Initially, the pregnancy was tried to terminate with prostaglandins and prostaglandins in combination with oxytocin, but, the pregnancy persisted and the levels of progesterone (P_4) were observed to be elevated. Manual crushing for pregnancy termination was also tried but proved unsuccessful. Uterine lavage by infusing the weak iodine solution in combination with Ringer's lactate helped in flushing out the conceptus and the levels of P_4 were also observed to decrease after the expulsion and the uterus was also found to be devoid of any fluid. The mare showed uneventful recovery and exhibited regular cycles later on and did not show up any abnormalities in conceiving in the consecutive cycles.

Key words: Mare, Pregnancy, Termination, Prostaglandin, Progesterone

How to cite: Kumar, S., Pal, Y., Legha, R.A., & Talluri, T.R. (2022). Successful termination of undesirable pregnancy during first trimester in mare.
The Indian Journal of Animal Reproduction, 43(1), 86–89. 10.48165/ijar.2022.43.1.18

INTRODUCTION

Induced abortion can be described as the elective termination of an undesirable pregnancy for the safety of the dam and it may be desired during normal or abnormal pregnancy (Purohit *et al*., 2012). The methods of induction of abortion vary between species mainly because of different sources of progesterone production during pregnancy between species and within a species according to different stages of gestation (Youngquist and Threlfall, 2006). In mares, elective termination of pregnancy is performed for several reasons, including mismating, change in ownership, age or health of dam, abnormal gestation, and twin pregnancy. Many methods may be used to induce abor-

*Corresponding author.
E-mail address: raotalluri79@gmail.com (Thirumala Rao Talluri)
Received 04-01-2023; Accepted 03-04-2023

tion, and care should be taken to select a procedure that is safe and effective and that minimizes damage to the mare's reproductive tract and future breeding health. When terminating a pregnancy, the clinician should consider various factors like age of the mare, stage of gestation, presence of endometrial cups, expected time of return to estrus, number of fetuses, and physical and physiological status of the mare (Ragon, 2007). In every case of elective abortion, the animal should be re-examined at an appropriate time after the procedure to ensure that the pregnancy has been effectively terminated.

In most domestic animal species, early gestation is maintained by the progesterone produced by the primary corpus luteum, although in sheep and mare, the major source of progesterone during most parts of pregnancy is the placenta (Stellflug *et al*., 1997). The pharmacological induction of parturition is a common management tool in pigs (Kirkden *et al.,* 2013) and a regular veterinary treatment in cattle (Bo *et al*., 1992; Lewing *et al*., 1985; Nasser *et al*., 2008) whereas in mares such an approach has been dismissed for a long time. Induction of parturition in this species was restricted to pregnant mares with severe pathological conditions. Due to the species' particularities, the methods of pregnancy termination would depend upon the stage of gestation and the species (Ragon, 2007). The earlier pregnancy termination is attempted, the more likely it is to be safe and successful; however, no method has been shown to reliably terminate the pregnancy before day 5 after ovulation (Paccamonti, 1991; Squires and Bosu, 1993). After the corpus luteum (CL) is fully functional (days 5–6 after ovulation), elective abortion is easily accomplished by causing luteolysis. The simplest method is an intramuscular injection of prostaglandin $F_{2\alpha}$ ($PGF_{2\alpha}$) or a $PGF_{2\alpha}$ analogue. Nevertheless, in some cases after implantation, the mares become insensitive and do not expel the embryo/fetus. The present case reports a similar case in which novel methods of alternative expulsion of the fetus were tried and successfully terminated the unwanted pregnancy in a mare.

CASE HISTORY AND OBSERVATIONS

A seven-year-old mare that was involved in routine semen collection programmes as a dummy, was naturally served by a fertile stallion during semen collection trials. The mare was active, alert and the clinical parameters were also evaluated *viz*., rectal temperature (101.2°F), heart rate (32 beats/minute), respiration rate (14 breaths/minute) and the capillary refill time (2 sec.) and the parameters were found to be physiologically normal. The mare was neither exhibiting any restlessness symptoms nor showing any hyperthermia condition. All the hematological parameters were found to be normal and the progesterone concentrations were found to be optimal. The mare did not return to the estrus even after 15 days after service and upon ultrasonographic examination, mare was diagnosed as pregnant at day 15 and day 18 (Fig 1 A and B) and before the formation of endometrial cups.

TREATMENT AND DISCUSSION

The mare was administered with mild repeated doses of PGF2α (dinoprost promethamine @10mg or 2 ml) on day 15th and 17th of pregnancy. Mild symptoms of colic, restlessness and sweating of the mare were observed after treatment with prostaglandins. There was no expulsion and the size of the embryonic vesicle was found to increase in comparison to day 15. On day 18th, we further administered oxytocin (20 IU) in addition to PGF2α to cause the luteolysis. However, the lysis of the CL did not happen and the secondary corpora lutea was persisting on the ovary. Manual crushing of the conceptus was also tried but it became less efficacious. On day 20, we tried for intrauterine infusion/ uterine lavage of the mare. We placed a long Foley catheter having Y junction (30 French, 80 cm) in the uterus and infused 2 to 3 litres of sterile ringer lactate along with weak Lugol's solution (0.1%). This treatment was found to be effective and we could observe the embry-

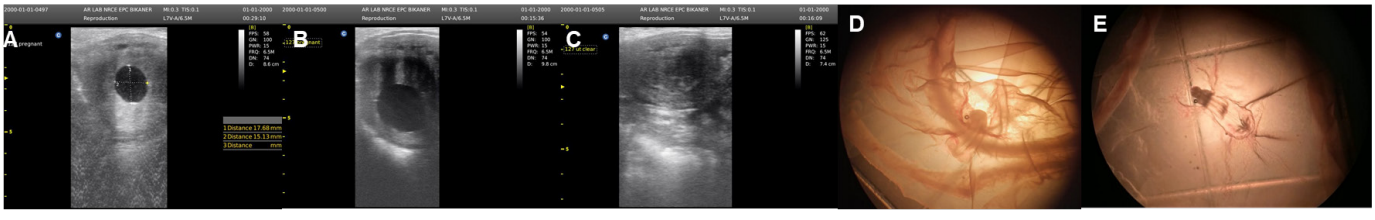

Fig.1. Illustration of sequential events during the termination of pregnancy in mare.A. detection pregnancyat day15. B reconfirmation of pregnancy at day 18 after administration of prostaglandins and Oxytocin C cleared uterus upon flushing on day 21 D& E Flushed contents of the uterus displaying the initial stages of fetus.

onic vesicle and conceptus in the recovered fluid. The same was examined under a stereo zoom microscope (Fig 1 D and E). Further, we also checked the uterine body and horns via ultrasonography for any presence of an embryonic vesicle or fluid. The uterus was found to be clear of fluid and embryonic vesicle (Fig. 1 C). We also evaluated the concentrations of Progesterone which were found to be reduced after the expulsion of the conceptus (Fig. 2).

In literature, there are reports for expelling the conceptus using several drugs including estrogen, prostaglandins and valethamate bromide (Phogat *et al*., 1994) and failure of this therapy may be recorded if the cervix is hard and indurated (Roberts, 2004). In such cases, repeated treatment can be attempted if physiological parameters are in the normal range (Dutt *et al*., 2018). Repeated administration of prostaglandin is the treatment of choice for termination of pregnancy in mares more than 40 days pregnant (Daels *et al*., 1995). It is well documented that PGF2α or its analogues need to be administered every 12-24 h (3-5 days) for successful induction of abortion (Douglas *et al*.,1974; Rathwell *et al*.,1987; Squires and Bosu,1993). Suggested preparations include dinoprost promethamine (10 mg IM) (Rathwell *et al*., 1987), fluprostenol 250 µg IM (Squires *et al*.,1980) and cloprostenol 250 µg IM (Daels *et al*., 1995). The technique can sometimes be used up to day 70 of pregnancy but is usually successful up to day 35 (Lofstedt, 1986). Abortion is probably caused by embryotoxic effects or the release of endogenous PGF2α as a result of cervical and uterine manipulations (Paccamonti, 1991). Uterine lavage can be performed by the infusion of sterile saline (2 to 3 liters in increments of 500-1000 mL) or lactated Ringer solution (Pycock, 2008). Infusions of dilute povidine iodine, weak Lugol's solution or nitrofurazone have been used successfully (Pycock, 2008), however, the potential dangers of damage to the endometrium preclude the frequent use of these infusions.

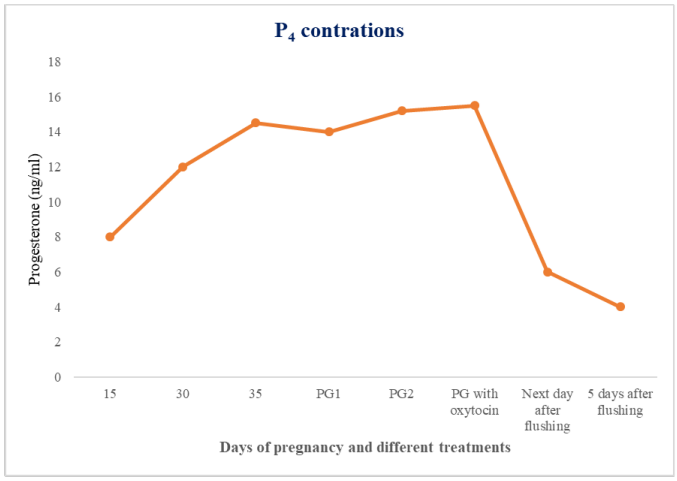

Fig.2. Plasma progesterone during pregnancy and after administration of prostaglandin F2a (PGF2a) analogue and after flushing wish ringer's lactate (RL) and 0.1% Lugol's lodine.

CONCLUSIONS

In conclusion, the present case study reports that uterine lavage with ringer lactate and weak iodine solution was found to be the efficacious treatment for the unresponsive cases of termination of pregnancy (after day 15) in mares.

CONFLICT OF INTEREST

The authors have no conflict of interest.

REFERENCES

Bo, G., Fernandez, M., Barth, A. and Mapletoft, R. (1992). Reduced incidence of retained placenta with induction of parturition in the cow. *Theriogenology,* **38**(1): 45-61.

Daels, P. F., Mohammed, H., Montavon, S., Stabenfeldt, G., Hughes, J., Odensvik, K. and Kindahl, H. (1995). Endogenous prostaglandin secretion during cloprostenol-induced abortion in mares. *Anim. Reprod. Sci.,* **40**(4): 305-321.

Douglas, R., Squires, E. and Ginther, O. (1974). Induction of abortion in mares with prostaglandin F2α. *J. Anim. Sci.,* **39**(2): 404-407.

Dutt, R., Singh, G., Gahalot, S.C., Yadav, V., Patil, S.S.and Sharma, K. (2018). Fetal Maceration in a Cross-Bred Holstein Friesian Cow-A CaseReport. *Int. J. Pure App. Biosci*., **6**(1): 1288-1290.

Kirkden, R., Broom, D. andAndersen, I. (2013). Piglet mortality: the impact of induction of farrowing using prostaglandins and oxytocin. *Anim. Reprod. Sci,* **138**(1-2): 14-24.

Lewing, F. J., Proulx, J., and Mapletoft, R. J. (1985). Induction of parturition in the cow using cloprostenol and dexamethasone in combination. *The Canadian. Vet.J,* **26**(10): 317.

Lofstedt, R. (1986). Termination of unwanted pregnancy in the mare *Current Therapy in Theriogenology*2nd ed., WB Saunders, Philadelphia.pp. 715-717

Nasser, L., Rezende, L., Bo, G. andBarth, A. (2008). Induction of parturition in Zebu-cross recipients carrying in vitro-produced Bos indicus embryos. *Theriogenology,* **69**(1): 116-123.

Paccamonti, D. (1991). Elective termination of pregnancy in mares. *J.American Vet. Med.Assoc,* **198**(4): 683-689.

Phogat, J., Bugalia, N. andGupta, S. (1994). Clinical efficacy of dexamethasone in prolonged gestation and valethamate bromide in dystocia due to insufficient dilation of cervix in buffalos (bubalus-bubalis). *Ind. Vet. J,* **71**(11): 1085-1087.

Purohit, G., Shekher, C., Kumar, P. andSolanki, K. (2012). Induced termination of pregnancy in domestic farm animals. *Iran. J. Appl. Anim. Sci*. **2**(1): 1-12.

Pycock J. (2008). Problems in late pregnancy. Pp. 241-243. 10th International Congr World Equine. Vet. Assoc. Moscow.

Ragon, A. C. (2007). Induced abortion *Current Therapy in Large Animal Theriogenology* (pp. 196-198): Elsevier.

Rathwell, A., Asbury, A., Hansen, P. andArchbald, L. (1987). Reproductive function of mares given daily injections of prostaglandin F2α beginning at day 42 of pregnancy. *Theriogenology,* **27**(4): 621-630.

Roberts, S. J. (2004). *Veterinary obstetrics and genital diseases*: CBS Publishers & Distributors Pvt. Limited.

Squires, E. andBosu, W. (1993). Induction of abortion during early to midgestation *Equine Reproduction* (pp. 563-566): Lea & Febiger, Philadelphia.

Squires, E., Hillman, R., Pickett, B. andNett, T. (1980). Induction of abortion in mares with Equimate: effect on secretion of progesterone, PMSG and reproductive performance. *J.A.Sci,* **50**(3): 490-495.

Stellflug, J., Weems, Y. andWeems, C. (1997). Clinical reproductive physiology of ewes. *Current Therapy in Large Animal Theriogenology. WB Saunders, Philadelphia*.pp 594-598.

Youngquist, R. S. andThrelfall, W. R. (2006). *Current therapy in large animal theriogenology*: Elsevier Health Sciences.