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REVELATIONS

Gestafortin is not efficacious for maintaining equine pregnancy

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Oral progestogen therapy is used frequently in the management of broodmares. In the absence of ovarian progesterone secretion, administration of exogenous progestogens will maintain equine pregnancy. Following administration of $PGF_{2\alpha}$ or removal of the ovaries, pregnancy can be maintained by administering progesterone in oil (100 mg/day), repositol progesterone (1000 mg /4 days), or altrenogest (22 or 44 mg/day) (Hawkins, Neely and Stabenfeldt 1979; Shideler *et al*,1982; Kastelic, Adams and Ginther 1987). Progestogen administration has also been used to prepare of ovariectomised recipient mares for embryo transfer (Hinrichs, Sertich and Kenney 1986). Recently, we have shown that exogenous progestogen therapy prevents pregnancy loss following endotoxaemia in mares less than 60 days pregnant (Daels *et al* 1988).

In Europe, Gestafortin, an oral progestogen for cattle, has been used to suppress oestrous behaviour in the performance mare and to induce regular cyclic activity early in the breeding season, at a dosage of 20 mg/day (unpublished data). In this experiment, we tested the use of Gestafortin for the maintenance of pregnancy in mares.

Four mares, 20 days pregnant, were given an intramuscular (im) injection of 10 mg dinoprost trimethamine (Lutalyse, Upjohn, Missouri) and subsequently treated daily with 10, 20, 40 or 80 mg Gestafortin (6-chloro-6-dehydro-17a-acetoxyprogesterone, Gestafortin, Bayer Leverkusen, Germany) *per os*. Gestafortin pills were crushed, mixed with corn syrup and administered with a 60 ml syringe. Pregnancy was monitored daily by palpation and ultrasonography of the uterus *per rectum* (Aloka DX 210, 5 Mhz linear transducer). Daily blood samples were collected by venipuncture in collection tubes containing heparin (Monoject, Sherwood Medical, Missouri). Plasma was separated and frozen (-20°C) until analysed. Progesterone concentrations were determined by enzyme immunoassay (Munro and Stabenfeldt 1984). Treatment ceased when the embryonic vesicle could no longer be detected by ultrasonography.

In another study conducted in the same year, 13 pregnant mares were given an im injection of dinoprost on Day 15 of pregnancy and subsequently treated with 44 mg/day altrenogest (Regu-Mate, Hoechst-Roussel Agri-Vet, New Jersey) *per os* until Day 80 of gestation. Pregnancy was monitored three times per week by palpation and ultrasonography *per rectum*.

The results are summarised in Table 1. In all mares treated with Gestafortin, plasma progesterone concentrations ranged from 3.2 to 4.7 ng/ml on the day prior to $PGF_{2\alpha}$ administration and decreased to less than 1ng/ml by the second day following injection of $PGF_{2\alpha}$. On the first day after $PGF_{2\alpha}$ administration, no changes in uterine and cervical tone were observed and the embryo appeared intact on ultrasonography. The mares were mated at first oestrus following treatment and three conceived.

In the 13 mares treated with $PGF_{2\alpha}$ and Regu-Mate, endogenous plasma progesterone concentrations decreased to less than 1 ng/ml within three days following prostaglandin injection.

The incidence of pregnancy loss in the mares treated with $PGF_{2\alpha}$ and Regu-Mate (23 per cent) is only slightly higher than the incidence of pregnancy loss reported in normal mares (approximately 15 per cent; Villahoz, Squires, Voss and Shideler 1985; Woods *et al* 1987).

Although the number of mares is small, Gestafortin at the doses and interval used does not appear to maintain pregnancy in the mare. It is possible that higher doses and/or more frequent administration would maintain pregnancy but cost and labour make more intensive treatment regimes less attractive than existing treatments.

TABLE 1: Results of pregnancies in four mares treated with Gestafortin and 13 mares treated with Regu-Mate following $PGF_{2\alpha}$ on Day 15 of gestation

Mare	Dose	Result
Gestafortin		
1	10mg/day	Embryonic vesicle no longer detected on Day 2 post $PGF_{2\alpha}$
2	20 mg/day	Embryonic vesicle no longer detected on Day 2 post $PGF_{2\alpha}$
3	40 mg/day	Embryonic vesicle no longer detected on Day 3 post $PGF_{2\alpha}$
4	80 mg/day	Signs of failing pregnancy on Day 4 and vesicle no longer detected on Day 8 post $PGF_{2\alpha}$
Regu-Mate (44 mg/day)		
10 mares: remained pregnant until Day 80 of gestation		
3 mares: foetal death observed on Days 38, 54 and 64 respectively		

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Short Communication

GESTAFORTIN IS NOT A PRACTICAL TREATMENT FOR THE MAINTENANCE OF PREGNANCY IN THE MARE

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Introduction

Oral progestogen therapy is utilized frequently in the management of the broodmare. In the absence of ovarian progesterone secretion, administration of exogenous progestogens will maintain pregnancy in the mare. It has been reported that following administration of PGF_{2a} or removal of the ovaries, pregnancy can be maintained by the administration of progesterone in oil (100 mg/day), repositol progesterone (1000 mg every 4 days), or altrenogest (22 mg or 44 mg/day) (Hawkins et al 1979; Shideler et al. 1982, Kastelic et al. 1987). Progestogen administration has also been used successfully in the preparation of ovariectomized recipient mares for embryo transfer (Hinrichs, 1986). Recently, we have shown that exogenous progestogen therapy effectively prevents pregnancy loss following endotoxemia in mares less than 60 days pregnant (Daels et al, in press).

In Europe, GESTAFORTIN, an oral progestogen for cattle, has been used in the horse industry for suppression of estrous behavior in the performance mare and for the induction of regular cyclic activity in the early mare in the early breeding season, at a dosage of 20 mg/day (personal observations). In this experiment, we have tested the use of Gestafortin as a practical alternative to existing progestogens for the maintenance of pregnancy in mares.

Material and methods

Four mares, 20 days pregnant, were given an intramuscular injection of 10 mg dinoprost trimethamine (Lutalyse, Upjohn, MI 49001, USA) and subsequently treated daily with 10, 20, 40 or 80 mg Gestafortin (6-chloro-6-dehydro-17a-acetoxyprogesterone, Gestafortin, Bayer Leverkusen, Germany) per os. Gestafortin pills were crushed, mixed with corn syrup and administered with a 60 ml syringe. The pregnancy was monitored daily by palpation and ultrasonography of the uterus per rectum (Aloka DX210, 5 Mhz linear transducer). Daily blood samples were collected by venipuncture in collection tubes containing heparin (Monoject, Sherwood Medical St Louis, MO). Plasma was separated and stored frozen (-20 ^{o}C) until analyzed. Progesterone concentrations were determined by enzymeimmunoassay (Munro and Stabenfeldt 1984). Treatment was stopped when the embryonic vesicle could no longer be detected by ultrasonography.

In another study conducted in the same year, 13 pregnant mares, were given an intramuscular injection of dinoprost and subsequently treated with 44 mg/day altrenogest (Regu-Mate, Hoechst-Roussel Agri-Vet, Somerville, NJ) per os until Day 80 of gestation.

Pregnancy was monitored 3 times/week by palpation and ultrasonography per rectum.

Results

In all mares, treated with Gestafortin, plasma progesterone concentrations ranged between 3.2 and 4.7 ng/ml on the day prior the $PGF_{2\alpha}$ administration and decreased to values less than 1 ng/ml by the second day following injection of $PGF_{2\alpha}$. On the first day after $PGF_{2\alpha}$ administration, no changes in uterine and cervical tone were observed and the embryo appeared intact on ultrasonography. In two mares, treated with 10 and 20 mg/day, resorption of the embryonic vesicle occurred on Day 2 after $PGF_{2\alpha}$ administration. At this time, no vesicle was seen in the uterus and signs of uterine edema were observed on ultrasonography. In the third mare, treated with 40 mg/day, the embryo was no longer detected on Day 3 after the $PGF_{2\alpha}$ administration. In the fourth mare, treated with 80 mg/day, signs of a failing pregnancy were detected on Day 4 and the vesicle could no longer be detected on Day 8. Mares returned to estrus 3 to 5 days after the end of treatment. The mares were mated at first estrus following treatment and 3 mares conceived.

Ten of 13 mares, treated with Regu-Mate, were pregnant on Day 80 of gestation. In 3 mares, fetal death was observed on Days 38, 54 and 64, respectively. Endogenous progesterone concentrations decreased to values less than 1 ng/ml within 3 days after prostaglandin injection in all mares.

Discussion

The incidence of pregnancy loss in the mares treated with Regu-Mate (20%) is consistent with other reports on the incidence of pregnancy loss in normal mares for the same period of gestation (Villahoz et al, 1985, Woods et al, 1987).

While the number of mares is small, it appears that Gestafortin, at the doses and interval used does not support pregnancy in the mare. It is possible that higher doses and/or more frequent administration will support pregnancy but cost and labor make more intensive treatment regimes with Gestafortin a less attractive method when compared to existing treatments.

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