

CLINICAL MANAGEMENT OF MISALLIANCE BY USING PROGESTERONE RECEPTOR ANTAGONIST, MIFEPRISTONE, IN A GERIATRIC GERMAN SHEPHERD BITCH

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A 13 year old German shepherd bitch presented to the TVCC with a complaint of misalliance. Vaginal exfoliative cytology revealed that bitch was in estrus. Animal subjected to ultrasound scanning on 32nd day after mating which revealed presence of 3-4 gestational sacs. Anti progestagen, mifepristone, was chosen to terminate pregnancy at the dose rate of 2.5 mg / Kg body weight, twice a day for 4.5 days. Ultra sound scan of the abdomen at the end of treatment revealed no gestational sacs and resorption of all fetuses suggesting that oral antiprogesterone therapy proved to be a safe means to terminate unwanted pregnancy in this case.

Key words: Mismating, Gestational sacs, Antiprogesterone, Mifepristone, Geriatric bitch.

Methods for post coital contraception and induction of abortion in dogs are commonly implemented to prevent the birth of unwanted litters that result from unplanned matings. Safe and efficacious methods are not readily available and estrogen administration to prevent implantation can have particularly harmful effects (Concannon, 1983 and Bowen *et al.*, 1985). Petterson and Tidholm (2009) reported 51% pregnancy rate in bitches in which mating had been observed. This indicated that early use of pharmacological agents to terminate or prevent pregnancy may be unwarranted in many cases. However use of many of the currently available abortifacients is accompanied by unwanted and sometimes severe side effects. So attention has been given to agents that prevent the action of progesterone i.e. progesterone receptor antagonist, which were proven to be an effective and safe means to terminate unwanted pregnancy in the dog. Galac *et al.*, (2000) reported effective abortion in at least 95% of bitches treated in mid pregnancy using aglepristone, an anti progestagen. The present paper reports a case of mismating in a 13 year old dog and its effective treatment using progesterone receptor antagonist, mifepristone.

Case history and observations

A German shepherd bitch, aged 13 years, weighing 30 kg was presented to the Teaching Veterinary Clinical Complex, college of veterinary science, Proddatur, with a complaint of mismating. The owner reported that the bitch crossed once with a stray dog two days back. All the physiological parameters were within the normal range. Vaginal smears were prepared to study exfoliative vaginal cytology. The cytology showed the presence of more than 80% of cornified cells indicating estrus but no sperms were observed. The bitch was subjected to ultra sound scan on the 32nd day after crossing which revealed the presence of 3-4 gestational sacs with comma shaped embryo (Fig. 1).

Treatment and Discussion

To terminate pregnancy in the geriatric bitch a progesterone receptor antagonist, mifepristone was administered at the dose rate of 2.5 mg/Kg body weight twice daily for 5 days. After the end of treatment, clinical examination revealed normal physiological parameters and ultra sound scan revealed absence of gestational sacs with involuting uterine horns (Fig 2).



Fig 1: Ultrasonography revealing gestational with embryo



Fig 2: Absence of gestational sacs after sac treatment

Drugs used to terminate or prevent pregnancy vary in effectiveness and magnitude of side effects. Previously used medical methods of terminating pregnancy in bitch include the use of estrogen, prostaglandins, dopamine agonists and corticosteroids. Estrogen has a toxic effect on the oocytes and alters the transportation time in the oviducts and tightens the utero tubal junction. This leads to implantation failure and embryonic death as also reported by JoChle *et al.* (1975). However the use of estrogens can result in side effects such as cystic endometrial hyperplasia, pyometra and bone marrow suppression as also mentioned by Whitehead (2008) and Bowen *et al.* (1985).

Progesterone is a natural steroid hormone secreted by the corpus luteum in the ovary. It plays a crucial role in establishing and maintaining pregnancy in the bitch. Pregnancy can be terminated by luteolytic treatments including repeated administration of prostaglandins. Their efficacy as an abortive drug results from induction of uterine contractions and luteolysis. However prostaglandins have narrow margin between lethal dose LD₅₀ and therapeutic dose and many side effects such as hyper ventilation, vomiting, defecation, urination, ataxia and pad sweating, limiting their use in canine practice as also have been narrated by Feldman *et al.* (1993) Fieni *et al.* (1997).

During the second part of the luteal phase luteotropic factors originating from the pituitary such as prolactin and possibly LH are essential for maintenance of CL; also mentioned by Concannon *et al.* (1987). Consequently unwanted pregnancy in dogs can be terminated during mid gestation by pharmacological agents which suppress prolactin release or interfere with the action or synthesis of progesterone. However uses of many of the currently available anti prolactins are accompanied by unwanted and sometimes severe side effects.

Combining prostaglandins and dopamine agonists that exerts anti prolactenergic effects have shown good results and fewer side effects also reported by Onclin *et al.* (1993). Zone *et al.* (1995) has reported that Dexamethasone has also been used to terminate pregnancy in bitches. However the use of corticosteroids to induce abortions is unsuitable as high doses are required for several days resulting in pregnancy termination from around day 40 as mentioned by Petterson and Tidholm, (2009).

Because of the undesirable side effects of the above mentioned drugs, attention has been given to agents that prevent the action of progesterone i.e. progesterone receptor antagonists. A progesterone receptor antagonist stabilizes the receptors structure by its high affinity and prevents progesterone from exerting its biological effect. The use of progesterone

receptor antagonist appeared more effective and acceptable treatment without any side effects it is accordance to Concannon *et al.* (1990), Linde- Forsberg *et al.* (1992), Galac *et al.* (2000) and Pridhvidhar Reddy *et al.* (2014). The treatment adopted in the present case was inaccordance with the treatment of Concannon *et al.*, (1990). In the present case, the bitch was old and as it may not tolerate any side effects of drugs, mifepristone was chosen as drug of choice to terminate pregnancy. The owner reported no side effects except a little brown vaginal discharge on second day of treatment. All the fetuses were resorbed and the owner was satisfied with the treatment.

Our study was supported by Concannon *et al.*, 1990 who stated that termination of all pregnancies occurred in the presence of elevated concentration of progesterone, demonstrated that the abortifacient effect was due to direct progesterone antagonist effects at the level of uterus and independent of any additional effect of luteal function. Also by Kelly *et al.*, 1985 who reported invitro secretion of endometrial prostaglandin with mifepristone. In the present case the bitch was closely observed and monitored via ultrasonography this was in accordance to the report of Taverne *et al.* (1989) - Termination of an unwanted pregnancy in the bitch should always be closely monitored, particularly with sequential transabdominal ultrasonographic B mode.

Conclusion

It is concluded that the progesterone antagonist mifepristone can be used safely to terminate pregnancy in a geriatric dog.

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