THE EFFECT OF CLOPROSTINOL ON PERSISTENT CORPUS LUTEUM IN CATTLE

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ABSTRACT

The present investigation was conducted on cows maintained at Radha Vallbh Goushala, Dhorewala Pillibanga (Rajasthan). The 50 cows were examined per rectum to check the condition of genitalia for PCL in which 9 showed a condition of PCL. These PCL cases were treated with 2 ml of Estrumate intramuscularly on the same day. It was found that 85% of animals as determined by the examination of reproductive tracts became normal and consequently 60% were pregnant at first service whereas 25% were repeat breeder.

Key words: Cow, persistent corpus luteum, PGF2α

Introduction

The ability of a cow of successfully mating, conceiving, parturiting and raising a healthy calf each year is essential for economical milk production. Therefore, causes for failures in reproduction must be identified and overcome. In a normal phenomenon of ovulation, the cells that develop within the follicle undergo a differentiation process by the action of pituitary hormones. This process is called luteinization and gives rise to the second ovarian structure, the corpora lutea (Rowlands and Weir, 1984; Christensen and Gillim,1969). This structure is often referred to simply as the CL and plays a major role in secreting the hormone progesterone. The CL goes through a maturation and regression cycle much the same as the follicle (Weir and Rowlands, 1977). The CL remains fully functional from Day 5 to Day 15 of the cycle and if the female does not become pregnant then begins to regress (Ahmad *et al*., 1995). The CL regresses and no longer secretes progesterone and the follicle of the next oestrus cycle begins to develop (Stevens *et al*., 1995). As the CL regresses further, it converts in to the corpus albicans and remains visible on the ovary for several subsequent cycles (Hafez, 2006). Any condition that prolongs the period of time that blood levels of progesterone remain high will have the same effect as pregnancy in stopping the regular 21-day-cycle (Gordon, 1996). Occasionally, the CL does not regress normally (persistent CL) even though the animal does not become pregnant and reduce the fertility and productivity. PCL continue to produce enough progesterone to prevent further follicular development, ovulation and oestrus. Severe endometritis may be associated with PCL due to toxic damage to the endometrium, which prevents proper secretion of luteolytic prostaglandins. This can also occur with pyometra, foetal mummification and maceration, i.e. conditions that simulate pregnancy (Boyd,1977). Peters and Lamming (1986) reported PCL to be rare (under 2%) in cows with normal uteri. The present study was designed to determine the efficacy of PGF2α for correcting this condition in the cows.

Materials and Methods

The present investigation was carried out on cows (n=50) maintained at Radha Vallbh Goushala, Dhorewala, Pillibanga (Rajasthan). The cows in anoestrus for a long time were examined per rectum to check the condition of genitalia for PCL. The cows having PCL were treated with PGF2α, 2 ml of Estrumate (Cloprostinol; MSD Pharmaceutical) intramuscularly. The effects of this treatment were determined by putting these animals to teasers. The animals, which showed oestrus, were inseminated. The cows were examined for returning to oestrus or subsequent pregnancy status.

Results and Discussion

The results regarding the PCL in cows are shown in Fig. 1. It was found that 18% (9 cows) were suffering from this condition, whereas remaining (82%) had anoestrus due to the malnutrition or some other genital disorders. It was found that the treatment regressed PCL in approximately 78% of the animals (7 cows) whereas 22% were still having PCL intact. This was also confirmed by the oestrus behaviour of the animals. Moreover, of the animals, which showed response to this treatment, 85.71% (6 cows) were pregnant.

It has been shown that luteolysis in cow is by the production of PGF2α (Flint *et al*., 1992; Silvia *et al.*, 1991). Several studies have shown that the levels of PGF2α are reduced in the presence of a viable conceptus (or its signal) *in vivo* and *in vitro* (Bazer, 1992; Danet-Desnoyers, 1994; Lashari and Tasawar, 2010). The longer survival of PCL could be attributed either to weaker luteolytic signal or strong luteotrophic support. It has been shown that treatment with PGE2 protects the CL from spontaneous regression (Pratt *et al*., 1977) as well as luteolysis induced by exogenous PGF2α (Henderson *et al.,* 1977). The results of the present study indicate that after exogenous PGF2α treatment, 78% animals showed response by accepting the male. It was assumed that in these cows, the PGE2 concentrations were not as high as that could protect the PCL in the presence of exogenous PGF2α treatment and thereby PCL regressed. Moreover, in remaining cows (22%) the concentrations of PGE2 were higher and in this condition 2 ml of PGF2α was not enough to overcome the antiluteolytic effect of PGE2. To verify this assumption some more work

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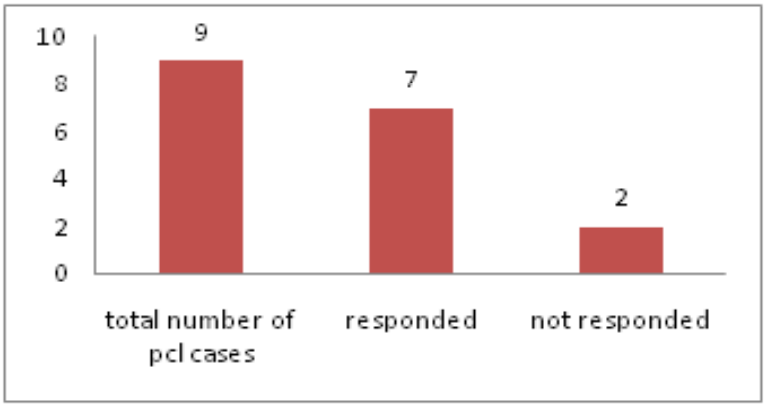

Fig. 1: Showing total number of types of cases

need to be done. However, this possibility gets support from earlier report of Boyd (1977) who found that severe endometritis may be associated with a PCL due to toxic damage to the endometrium, which prevents proper secretion of luteolytic prostaglandins. The results of this study also indicate that majority of animals who showed response to this treatment got pregnant with the first insemination (85.71%) and remaining repeated (14.29%). It indicates that this treatment had the potential to improve the fertility in lactating cows and thereby enhance the life time productivity of cows.

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