



Research Paper

Medical Science

Induction of estrus with (PMSG and hCG) in Iraqi bitches

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ABSTRACT

Twenty (20) anestrous bitches aged 2-5 years were used in this study. They were diagnosed clinically by external and vaginal examination and the bitches were divided into two groups (10 bitches each). The 1st group 10 bitches consider as control group were pursued from estrus cycle, mating, pregnancy, parturition and lactation showed estrus cycle normally and conception and parturition rate 100%. The 2nd (treated group) treated I/M with 20 IU eCG /kg/ bitch for 6 days with single injection 500 IU of hCG /Bitch on day 7. Treated group results showed that the number of responded (show proestrus bleeding) were 60%, and 40% were get pregnant and birth. These results recorded a significant differences in estrus and conception rate between normal and treated groups ($P<0.01$). The total numbers of born puppies for both groups were (68), (47) 1st group and (21) for 2nd group and no significant differences in number of born puppies between normal and treated groups and mean of response duration from the beginning of treatment to onset of proestrus bleeding were (19.3 ± 1.45) days. In conclusion the results of this study have shown that administration of the gonadotrophic hormones (eCG and hCG) have a low efficiency of the induction of estrus in anestrous bitches comparing with normal group.

KEYWORDS

Bitch, eCG, Estrus, Anestrous Bitches.

Introduction

The dog has been used in medical researchers as a model for humans, but the lack of appreciation of differences in reproductive patterns and hormonal effect and sensitivity led to classical misconception for instance regarding to the teratogenic effect of progestagens on mammary gland. The dogs have proved to a very useful model in studies on human prostatic functions.

The domestic dogs have one, two, sometimes three estrus cycles per year and no obvious seasonality, through recent researchers that fertility lower during the warm season (Linde-Forsberg, 2000). The long estrus cycle and the variation in bitches combined the proestrus and estrus period varying from 7 to 27 days and make a difficult to decide on days mating or artificial insemination should be performed and poor timing of the mating is the common cause of failure to become pregnant.

The female dog comes into season approximately every 6-8 months, during this period it becomes more erratic with age and is somewhat irregular when cycles first begin. Perusal of literature revealed the use of a variety of exogenous hormones and their combinations viz., oestrogens, GnRH, FSH & LH and eCG & hCG for induction of oestrus in bitches with varying results (Shille *et al.*, 1984, Vanderlip *et al.*, 1987, Concannon, 1992 and Bouchard *et al.*, 1993).

Several studies of the concentrations of Estrogens and Progesterone during the oestrous cycle and pregnancy of the dog (Masken, 1972; Smith & McDonald, 1974; Concannon *et al.*, 1975 and Nett *et al.*, 1975) have added considerably to our understanding of canine reproductive physiology. The administration of one or more exogenous gonadotrophic hormone preparation to stimulate an ovarian response that results in proestrus followed by fertile estrus with either spontaneous ovulation or ovulation induced by additional hormones (hCG or GnRH) administration (Kurtzier, *et al.*, 2007; Wright, *et al.*, 1982). So the aim of this study is to induction of fertile estrus by using PMSG and hCG during winter and spring.

Materials and Methods

The study was conducted in the College of Veterinary Medicine of Baghdad. Twenty healthy anestrous bitches (local breeds) aged 2-5 years were used in duration from November 2014 to April 2015. These bitches were diagnosed by vaginal examination, abdominal palpation and ultrasonography, then divided into two groups each group include 10 bitches. The 1st group (control) was pursued normally from estrus cycle until lactation and 2nd group (Induced group) treated with eCG (Folligon-Interval- manufactured of European Union). 20 IU/kg/Bitch/I.M for 6 days followed by single injection of hCG (IVF-3/yongje- dong, Iksan-si, Jeonbuk-do, Korea) 500 IU/bitch on day 7.

They were subjected to ultrasound and abdominal palpation for pregnancy diagnosis between day 20-40 post breeding and the pregnancy were followed up until whelping and number and viability of newborn was also recorded.

Statistical analysis includes mean, standard error, ANOVA and T-test for analyzing the data (Steel *et al.*, 1980).

Results and Discussion

The results for study the comparison between the bitches show normal cyclic (10 bitches) (control group) and show a significant differences during estrus ($P<0.01$) at rate 100% of normal group and 60% for treated group. Whereas conception rate showed a significant differences ($P<0.01$) at rate 100% for normal group and 40% for treated group. There are no significant differences in numbers of puppies between two groups (Table 1 and Fig. 1, 2 & 3).

Whereas the duration of response for observation proestrus bleeding 60% and onset to proestrus of treated group was (19.3 ± 1.45) days.

The present result of response agree with other study that showed (15.23 ± 2.36) and (14.23 ± 2.43) days and showed a significant differences ($P<0.01$) (Alhamedawi, 2012), while disagree with Van Haften, (1989) which reported a mean treatment onset to proestrus of 28 days in bitches treated with bromocriptine.

Verstegen, *et al.*, (1999) could obtain a proestrus response of 93.33% in bitches treated with cabergoline. While the animals responding to the treatment, the mean time taken from treatment onset to proestrus was found to be 13.44 ± 3.12 days. This might be due to the fact that the bitches involved in this trial were belonging to different breeds and age groups.

Table 1: Percentage of estrus animal, duration of response (in days), conception rate and numbers of born puppies during pregnancy of dog.

Group	Numbers of animals	Estrus rate		Duration days of response	Conception rate		Numbers of born puppies
		Numbers	Percentage		Numbers	Percentage	
Control	10	10	100%	----	10	100%	47
Treatment	10	6	60%	19.3 \pm 1.45	4	40%	21
Total	20	16	80%		14	70%	68

-There is a significant difference in estrus and conception rate between normal and treated group at level $P<0.01$.

-There is no significant difference in numbers of born puppies between normal and treated group.

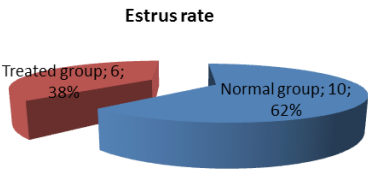


Figure 1: Numbers of estrus rate in normal and treated groups.

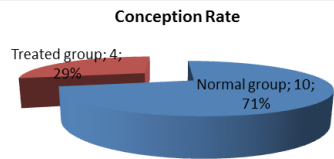


Figure 2: Numbers of conception rate in normal and treated groups.

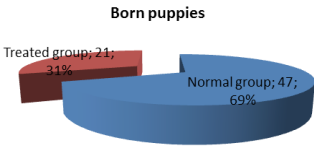


Figure 3: Numbers born puppies in normal and treated group.

Present results agreed with Al hamedawi, (2012) which showed Conception rate for group of bitches treated with PMSG and HCG were 60% and given a significant differences ($P<0.01$) with untreated group which showed 83.3%.

Bitches response was 60% which showed the proestrus response in the present study, this results was found to be lower than that of an earlier trial in which (Verstegen, 1999) could obtain proestrus response of 93.3% in bitches treated with cabergoline while agreement with other workers (Cancannon, 1997 and Oncin, 1997) which recorded 50%-70% and their response seems to be due to the role of gonadotrophic hormone to stimulate ovarian response that result proestrus followed by fertile estrus.

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