STUDIES ON THE THERAPY WITH GONADOTROPIN-RELEASING HORMONE (GnRH) AND HUMAN CHORIONIC GONADOTROPIN (hCG) IN GENITAL DISORDERS IN BITCHES

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Abstract

Infertility in bitch is characterized by a variety of clinical manifestations depending on the disorders of reproductive system. The purpose of this study was to asses the efficacy of gonadotropin-releasing hormone (GnRH) and human chorionic gonadotropin (hCG) in the treatment of prolonged estrus caused by follicular cysts in bitch.
In this study, there were diagnosed 10 bitches with prolonged estrus having as etiology the presence of follicular cysts. The intensity of clinical signs was studied and vaginal smears were performed, resulting in high percentages of keratinized cells in bitches with follicular cysts. Determinations of estrogen and progesterone hormones were made, the presence of follicular cysts being suspected based on the high values of estrogen and duration of estrus. Duration of estrus signs ranged between 32-76 days, progesterone concentration was between 1.3-3.4 ng/ml, while the concentration of estrogen hormones ranged between 141.5-379.5 pg/ml. Based on the high values of estrogen hormones, the presence of keratinized cells, the duration of estrus and the age of bitch it was suspected the existence of follicular cysts. The efficacy of hormonal treatment (GnRH and/or hCG) was monitored by determining the values of estrogen and progesterone hormones, the results being correlated with the interpretation of vaginal smears and clinical manifestations. Following hormonal treatments, in 7 bitches clinical signs of estrus disappeared in 4-6 days, while 3 bitches still presented the clinical manifestations characteristic to estrus phase after the treatment.

Key words: *bitches, follicular cysts, gonadotropin-releasing hormone, human chorionic gonadotropin*.

INTRODUCTION

Perpetuation of the species and breed, even perpetuation of valuable qualities of certain individuals within the breed involves, beyond genetic selection, healthy females, especially from the reproductive point of view (Cernescu, 1995; Bîrţoiu and Seiciu, 2004).
With the increase in both number and importance of pet carnivores, multiple reproductive problems began to appear. The occurrence of infertility states in bitches can be determined by many complex etiological factors (Feldman and Nelson, 1996; Davol, 2002).

In addition to lesional changes, an important aspect of the incidence of reproductive disorders is the functional modifications, affecting the hormonal status, with implication in the reproductive sphere (Guerin et al., 1996).
By the researches conducted in this area, we intended to improve reproduction management by identifying and solving certain problems through treatments with gonadotropin-releasing hormone (GnRH) and human chorionic gonadotropin (hCG) in prolonged estrus caused by follicular cysts in bitch (Vanderlip, 1987).

MATERIALS AND METHODS

In this study were diagnosed 10 bitches with prolonged estrus determined by the presence of follicular cysts. During the study, it was observed the intensity of clinical manifestations and vaginal smears were performed to determine the percentage of keratinized cells; at the same time, there were made determinations of the estrogens and progesterone hormones, and based on their values and duration of estrus the presence of follicular cysts was suspected.
Anamnesis was the first method used, supplemented by gynecological sheet. Based on history, data were obtained on previous estrous cycles and previous genital disorders.
Clinical examination included a general examination aimed to assess body temperature, condition of the skin and mucosa, circulatory, respiratory and digestive functions, after which a thorough genital examination was conducted.
Cyto-vaginal smear allowed the global assessment of cells number, form, presence or absence of leukocytes and erythrocytes, the grouping of cells (scattered, isolated or grouped in colonies), presence or absence of mucus and tinctorial affinity of the cell cytoplasm.
Hormonal determinations consisted in the determination of serum progesterone and estrogens, specific kits being used.
Based on ultrasound investigations in correlation with the results of anamnesis, clinical examination, vaginal smears and hormonal determinations, it was suspected the presence of ovarian cysts.

RESULTS AND DISCUSSIONS

In the present study, the causes of prolonged estrus were represented by follicular cysts. In bitches with follicular cysts, clinical signs had a high intensity, especially exacerbated libido.

Duration of estrous signs ranged between 32 and 76 days. Although females age was taken into account, it wasn't established a significant prevalence of cases depending on this feature.

Vaginal smears were performed in all bitches diagnosed with prolonged estrus; the percentage of keratinized cells was very high, ranging from 82-92%.

Bitches with prolonged estrus showed a blood concentration of progesterone ranging between 1.3 and 3.4 ng / ml, while estrogens concentrations ranged between 141.5 and 379.5 pg / ml (Table 1).

Table 1. Intensity of clinical manifestations and results of hormonal determinations in bitches diagnosed with prolonged estrus

No	Breed	Age (years	Clinical signs			Level of estro-gens (pg/ml)	Level of progeste-rone (ng/ml)	Diagnosis
			Vaginal bleeding	Exacerbation of libido	Acceptance of mating			
1	Bichon	4	+++++	++	++++	243.7	2.8	Follicular cysts
2	Irish setter	4	+++	+++	++++	156.2	3.4	Follicular cysts
3	Dalmatian	7.5	++++	++	++++	379.5	2.1	Follicular cysts
4	German Shepherd	4	++++	+++++	+++	291.3	3.0	Follicular cysts
5	Boxer	2	++++	+++++	+++	233.5	2.6	Follicular cysts
6	Collie	3.5	+++	+++	+++++	141.5	2.1	Follicular cysts
7	Doberman	6	+++	+++++	++++	205.2	2.6	Follicular cysts
8	Caniche	5	++++	++++	+++++	188.2	2.1	Follicular cysts
9	German Shepherd	3	+++	+++	++++	208.9	2.7	Follicular cysts
10	Cocker Spaniel	3	++++	+++	++++	167.3	1.3	Follicular cysts

For the treatment of follicular cysts it was administered gonadotropin-releasing hormone (GnRH) (Fertagyl – vials of 5 ml, 100 μg/ml) or human chorionic gonadotropin (hCG) (Chorulon – vials of 500 I.U.), in order to stimulate the release of pituitary hormones, respectively to induce luteinization or involution of follicular cysts, following physiological model.

In case of Chorulon (hCG), the administered dose was 22 I.U. / kg, while for Fertagyl (Gn-RH), the dose was 50 μg / animal. The number of administrations varied between 2 and 5, every 2 days.

The efficacy of hormonal preparations was monitored by determining the values of estrogens and progesterone hormones. Hormonal determinations were performed at 2 and 6 days after the last administration. The results were correlated with the interpretation of vaginal smears and clinical manifestations (Table 2).

Table 2. Therapeutic protocols and the results of hormonal determinations

No.	**Breed**	**Age (years)**	**Therapeutic protocol**	**Number of adm.**	**Estrogens after the treatment (pg/ml)**		**Progesterone after the treatment (ng/ml)**	
					2nd day	**6th day**	**2nd day**	**6th day**
1	Bichon	4	GnRH, 50 μg/animal (Fertagyl)	4	142.3	32.3	1.1	0.7
2	Irish setter	4	hCG, 22 UI/kg (Chorulon)	3	121.2	12.2	1.4	11.9
3	Dalmatian	7.5	hCG, 22 UI/kg (Chorulon)	4	376.2	365.2	2.0	2.1
4	German Shepherd	4	hCG, 22 UI/kg (Chorulon)	2	200.2	22.2	1.9	10.5
5	Boxer	2	GnRH 50 μg/animal (Fertagyl)	5	232.2	235.4	2.3	2.2
6	Collie	3.5	GnRH 50 μg/animal (Fertagyl)	4	106.2	6.3	2.9	24.6
7	Doberman	6	hCG, 22 UI/kg (Chorulon)	2	172.3	17.6	2.7	14.3
8	Caniche	5	GnRH 50 μg/animal (Fertagyl)	4	123.7	26.5	1.7	1.3
9	German Shepherd	3	GnRH 50 μg/animal (Fertagyl)	3	210.5	206.3	2.1	2.0
10	Cocker Spaniel	3	hCG, 22 UI/kg (Chorulon)	3	105.9	19.4	1.8	1.5

Thus, in four cases has been observed the significant decrease of estrogens hormones levels, 6 days after the last administration of medication. These changes were correlated with the disappearance of keratinized cells in vaginal smears and the appearance of cells specific to metestrus. Progesterone values registered significant increases in the 6th day after the last administration, and this was interpreted as a sign of cysts luteinization (cases no. 2, 4, 6, 7).
In three bitches, reduced estrogen levels were associated with basal values of progesterone (< 2 ng / ml), changes that can be interpreted by the regression of follicular cysts and anoestrus (cases no. 1, 8, 10). Vaginal smears were characterized by the presence of large numbers of parabasal cells and intermediate epithelial cells.
Following performed treatments, three bitches still presented elevated levels of estrogens, accompanied by characteristic clinical manifestations of estrous phase (cases no. 3, 5, 9); in these cases, ovariohysterectomy was applied.

CONCLUSIONS

One of the main genital disorders in bitch is the presence of prolonged estrus due to follicular cysts.
In the studied cases of bitches with follicular cysts, progesterone values ranged between 1.3 and 3.4 ng / ml, while estrogen concentration ranged between 141.5 and 379.5 pg / ml.
The treatment of follicular cysts consisted in the administration of gonadotropin-releasing hormone (GnRH) in five cases and human chorionic gonadotropin (hCG) in five cases.
Consecutive the performed treatments, clinical healing of seven bitches was registered.
Following the treatments, three bitches still presented characteristic clinical manifestations of estrous phase; in these cases, the treatment consisted of ovariohysterectomy.

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