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SHORT COMMUNICATION

Studies on clinical signs, vaginoscopy and vaginal cytology for predicting appropriate breeding time in bitches*

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ABSTRACT

A comparative study for the reliability on clinical signs, vaginoscopy and vaginal cytology for detecting appropriate breeding time in bitches was carried out. The clinical signs of estrus was characterized by decrease in vulvul oedema and soft appearance of vulva is 91.67% of the cases. The vaginoscopy at the estrus revealed dense creamy or paper while mucosa and angulated mucosal shrinkage in all the bitches studied. Vaginal cytology revealed more than 95% superficial cells, an indicator of oestrus in 91.67% of bitches. Thus vaginal endoscopy was found to be more specific for estrus detection and for better breeding management followed by vaginal cytology and clinical symptoms.

Key words : Clinical signs, vaginoscopy, vaginal cytology, bitches

One of the major cause of infertility in bitches is mating at an inappropriate time in relation to estrous (Hewitt and England, 2000). Many dog breeders follow standard mating regimens, usually defined, number of days after the onset of vulval bleeding (England, 1998). However, the time of ovulation is variable in the bitches in relation to the onset of proestrus. So, accurate monitoring of bitches during oestrus cycle will enable the breeder to predict optimal time for mating or insemination. In the present study, the efficacy of the present study, three commonly used methods namely the clinical symptoms, vaginoscop and vaginal cytology was compared to predict the optimal time for breeding.

Twelve bitches of different breeds brought to the college clinics during proestrus from the experimental animals for this study and were observed for clinical symptoms during estrus phase. For vaginoscopy and vaginal cytology, studies were performed at intervals of 2 days until day 1 of diestrus. Vaginoscopic procedure was performed with karl storz fibreoptica endoscope. The bitches were restrained in their standing position under mild sedation. The assembled endoscope tip was introduced in a dorsocranial direction and proceeded horizontally thereafter. The endoscopic view was recorded with the help of endoscopic aided camera The vaginal smears were obtained from all bitches by cotton swab technique as described by Feldman and Nelson (1996) stained with Leishman's stain and observed under oil immersion objective. When vaginal cytology smears showed > 80% superficial plus cornified cells, the owners were advised to breed their dogs on alternate days throughout the period of standing oestrus.

Clinical symptoms : Proestrus in bitches was characterised by edematous vulva and a bloody discharge. In late proestrus or early estrus a decrease in vulval oedema was noticed in 91.67% of the cases and the vulva appeared small and soft. The colour of the discharge which was bloody during proestrus changed to a straw coloured serosanguinous discharge with the onset of estrus in 75% of the cases. In 25% of bitches a pinkish discharge was noticed. In majority of the bitches the vaginal mm which appeared congested during proestrus became palor during oestrus.

Vaginoscopy : Throughout the period of proestrus, the vaginal mucosa appeared pinkish and oedematous. Late proestrus or early estrus, was characterized by shrinkage of mucosa without angulation. As estrus progressed, a progressive shrinkage in vaginal mucosa with angulated mucosal folds was observed. The mucosa became pale and creamy while in appearance this was similar to the findings reported by Tams (1990) and Hewitt

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and England (2000). They suggested that the enlarged, oedematous and pink coloured mucosal folds were due to thickening of mucosal epithelium and oedema within the submucosa, may be due to oestrogens activity.

At oestrus, dense creamy or paper white mucosa and angulated mucosal shrinkage was observed in almost all the bitches which might be due to shrinkage accompanied by wrinkling of the mucosal folds as suggested by England (1998) and Hewitt and England (2000). The optimum time for insemination occurs during this period when angulation is maximal (Tams, 1990). Dioestrus was characterised by a pale mucosa and absence of mucosal shrinkage.

During anoestrus, mucosal shrinkage was absent and mucosa was flat in all the bitches, which corroboratedwith the results of England (1998) and Hewitt and England (2000) who reported that the vaginal mucosa during anoestrus will be flat and dry. Pink coloured mucosa was observed in most of the bitches and rest exhibited red mucosa, which were in accordance with Lindsay (1983) and on contrary to the findings of England (1998) and Hewitt and England (2000).

Vaginal cytology : The alterantions that occur in the vaginal mucosa and the vaginal vault as a result of an increase in serum oestrogen concentration during pro-oestrus and oestrus are reflected in the appearance of exfoliated vaginal epithelial cells.

At pro-oestrus, superificial, intermediate and parabasal cells were observed to be more, moderate and very few respectively as observed by Christie *et al.* (1972). Whereas Vugalia *et al.* (1998) observed more intermediate, moderate superificial and few parabasal cells respectively. Increased peripheral plasma concentrations of oestrogen causing thickening of the vaginal mucosa and an increase in the number of cell layers so, the mucosa thickens, the surface cells change in their size, shape and staining character, becoming larger, irregularly shaped and ultimately anuclear (England, 1998). Neutrophils at this phase were observed to be very few in number, due to oestrogen's effect (Feldman and Nelson, 1996). Presence of abundant red blood cells with dirty background might be due to diapedesis of red blood cells through uterine capillaries due to oestrogens effect (Olsen *et al.*, 1984) and due to cellular debris and mucin threads (Schutte, 1967; Feldman and Nelson, 1996).

Most of the cells were of superficial cells with very vew intermediate and parabasal cells during oestrus as reported by Bugalia *et al.* (1998) might be due to the effect of reducing oestrogen and rising progesterone. Absence of neutrophils and red blood cells with clear background observed in almost all the smears might be due to the decreasing concentration of oestrogen which limited the diapedesis of red blood cells (Schutte, 1967; Olson *et al.*, 1984; Feldman and Nelson, 1996; England, 1998). At dioestrus, the superficial, intermediate and parabasal cells were around 18.17±0.88, 28.67±0.77, 53.16±0.89 per cent respectively which were almost similar to the observations of Bugalia *et al.* (1998). On the contrary, Christie *et al.* (1972) reported higher number of intermediate and very few number of parabasal cells. Neutrophils were moderate in amount which were in accordance with the findings of Schutte (1967), Olsen *et al.* (1984) and Feldman and Nelson (1996). Red blood cells were present in some of the smears, which were similar to the observations of Olsen *et al.* (1984). Some of the smears revealed metoestrus cells characteristic to this phase as observed by Schutte (1967) and Feldman and Nelson (1996). Whereas, at anoestrus, the superficial, intermediate and parabasal cells were present in few, moderate and maximum in numbers respectively, as reported by Bugalia *et al.* (1998). Neutrophils were few in number, as observed by Olsen *et al.* (1984) while the background was dirty or granular in all the smears which was in agreement of Feldman and Nelson (1996) observations.

Six animals were bred at the optimum period confirmed by clinical symptoms revealing small, soft and less vulval oedema with straw coloured serosanguinous discharge, vaginoscopy showing pale, creamy white and angulated mucosal folds with shrinkage, and vaginal cytology with most superficial and very few intermediate and parabasal cells. The bitches were examined for pregnancy by ultrasonography be day 21 and 30 from the day of mating and were diagnosed as pregnant.

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