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Ultrasound and Cytological Appearance of the Uterus of Arabian and Barbs Mares During Estrus

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Abstract: Our study aimed to show the normal ultrasound and the cytological apparence of the uterus during the estrus of Arabian and barbs mares. In the 119 mares followed, 110 mares had a uterus of score "3" (orange section image) with uterine smears rich in oval endometrial cells grouped into clusters, with the absence of inflammatory cells. The presence of uterine fluids was limited only to nine infertile mares, out of the, the seven having endometritis were confirmed by uterine cytology with the presence of inflammatory cells.

Key words: Ultrasound · Cytological · Normal · Apparence · Estrus

INTRODUCTION

Knowledge of the normal ultrasound and cytological appearance of the mare's uterus during reproduction follow-up has become essential to differentiate between normal and pathological cases. Uterine ultrasonography has a close relationship with the oestrous stage [1]. The uterine variations depend on the state of uterine edema. The ultrasound image could be interpreted by a scoring system described by Samper [2]: which aimed to give a uterine score of 1 (homogeneous uterus) to 5 (presence of uterine fluids).

The interpretation of the presence of uterine fluids without consensus, where the presence of fluids is normal at the end of oestrus in a resistant mare or abnormal in susceptible mares [3]. The fluid accumulation during estrus above 2 cm in the the sensitive mare iis indicating that this mare will develop post-projectile endometritis [4].

The results of uterine cytology is also cotradictry. the normal smear normal but not the pathological, smears is devoid of inflammatory cells at different times of the estrous cycle [5].

The presence of 5% neutrophils among all the cells is indicative of endometritis like CARD [6].

Following the lack of consensus of the normal echographic and cytological aspect during oestrus in the mare, this study aimed to investigate the physiological aspect of the uterus of purebred Arabian mares and barbs.

MATERIALS AND METHODS

Animals: The current work was carried out at the National Stud Chaouchaoua Tiaret -Algeria- during the breeding season which ran from 15/02/2015 to 30-06-2015,

The stud contains 62 mares "38 Arabian mares, 17 barbs mares, three Arab-barbs, twoThoroughbred English and two Breton", of different ages (from 4 to 27 years). Animals were kept under the same climatic conditions, hygienic , food and sanitary. During the breeding season, the stud farm also received private mares "57 mares with a health certificate (vaccination and deworming).

Ultrasound Examination: Reproductive tract examinations were performed using an ISCAN "DRAMINSKY" brand ultrasound system, equipped with a linear probe with a frequency of 7.5 MHZ (Please add the model and the country of origin). Throughout the season, 1566 ultrasound examinations wee peformed for 119 mares. Examinations were conducted daily to determine the ovarian structures and the uterine conditions. The ovarian examinations was concerned by determining the follicular diameter. Whereas the uterine examinations determined the state of the two hornsand classified the the degree of edema into:

- Score 0; Homogeneous echoes
- Score 1: Beginning of heterogeneity in echotexture with hypoechoic zones.

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- Score 2: Heterogeneity with hypoechoic areas on a part of the uterus
- Score 3; Heterogeneity of echotexture throughout the uterus "orange cut image".
- Score 4: Very large hypoechoic areas.
- Score 5: Presence of fluid in the lumen of the uterus.

Cytological Examination

Principle of the Technique

The Sampling Material: Using a human uterine cytobrush, inserted on an artificial insemination gun, the assembly was then placed in a plastic insemination sheath to stiffen the assembly. The gun was covered with an exploration glove to protect it from vaginal contamination. Carrying out smears by the preparation of the animal where the perineal region was washed with antiseptic soap three times and dried with an absorbent paper.

Technique of the Sample: The instrument is introduced through the vulva and guided vaginally to the external orifice of the cervix, the instrument was pushed to the body of the uterus and then pierced a glove. The cytobrush was pressed against the body wall in circular motions for at least 30 seconds. Finally, the cytobrush was removed in the glove before removing the instrument to avoid vaginal contamination of the sample. Immediately after removal, smears are made by rolling the cytobrush on a microscope glass slide. Three to four slides were prepared according to the richness of the cytobrush by the mucus. Then the slides were fixed immediately by a spray cytofixator and then stained by Papanicolaou staining.

RESULTS AND DISCUSSION

Among the 119 mares followed, 110 mares had a uterus of score 3 "image in orange section" during estrus. Nine mares had a uterine score 5 "presence of fluids in the lumen of the uterus".

- On the cytological level, the richness of the smears by the endometrial cells grouped in clusters and of oval form. With the total absence of inflammatory cells in the normal state.
- The nine mares who had a uterine score 5, were infertile, seven mares among them had endometritis confirmed by the presence of inflammatory celly after conducting their cytological examination.

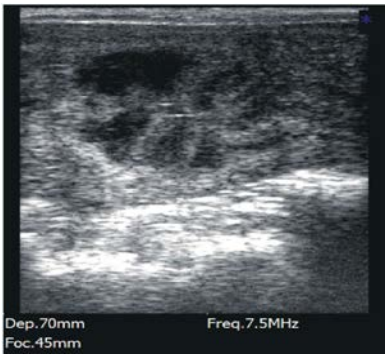

Fig. 1: Ulrasound image of a normal uterine horn In estrus « score 3 »

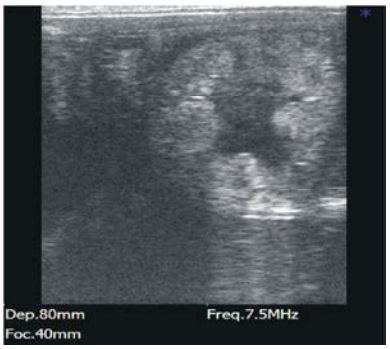

Fig. 2: Ultrasound image of a uterine horn With (Endometritis). « score 5 »

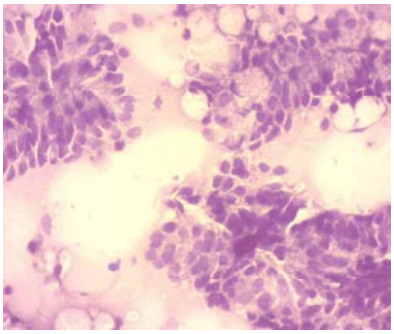

Fig. 3: Uterine cytology during oestrus in the mare (× 40) «Papanicolaou staining »

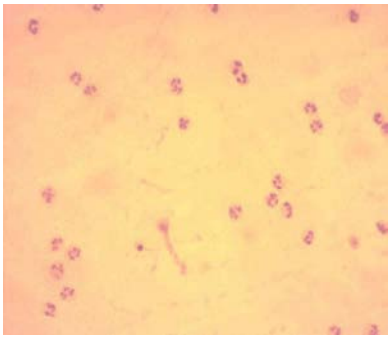

Fig. 4: Utérine cytologie of endometritis in the mare (× 40) « Papanicolaou staining»

DISCUSSION

According to the current results; Arab thoroughbreds and barbs with the presence of liquid was correlated only to infertile mares, which was also reported by Betsch [3]. The Arabian thoroughbreds and barbs had smears devoid of normal inflammatory cells, there is no consensus regarding the normal level of inflammatory cells in the normal state, but our results are consistent with those reported by Aguilar [5] who showed that there was no neutrophils at different times of the cycle, or very little 0.4%. According to Knudsen [7], Neutrophils could be present in healthy mares only during the first postpartum oestrus, or during the week following breeding or insemination [8].

CONCLUSION

This study shows the importance of associating with echographic and cytological examinations the reproductive status of mares. Any presence of uterine fluids regardless of its diameter with the presence of inflammatory cells regardless of its number in an infertile mare, endometritis can be confirmed

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