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Uterine hemodynamic, vascularization and blood pressure along the estrous cycle in bitches
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The characterization of bitch’s reproductive physiology is of great importance for the improvement and development of reproductive techniques, as well as for controlling important reproductive diseases, such as pyometra and metritis. In this respect, uterine two-dimensional ultrasound studies are well defined in bitches. However, changes in uterine hemodynamic and vascularization are not yet elucidated during different stages of the estrous cycle. Thus, the aim of this study was to characterize hemodynamically the uterine changes in cycling bitches along each phase of estrous cycle. For this purpose, healthy Golden Retriever bitches (n=10), aged between 1 and 6 years, were analyzed through abdominal ultrasonography during anestrus, proestrus, estrus e diestrus. Doppler uterine ultrasound was performed in lateral recumbence at the level of uterine corpus, with convex transducer 5.5 MHz. Doppler assessment was performed twice at each phase of the estrous cycle, i.e., at the onset and end of the proestrus and estrus; and at the middle and end of the diestrus and anestrus. Estrous cycle phases were diagnosed by reproductive history, vaginoscopy and vaginal cytology. Uterine artery was evaluated by pulsed-wave Doppler and the blood flow velocity waves forms (PS, ED e TAMAX) and hemodynamic parameters (RI, PI, S/D) were calculated electronically by the equipment. The uterine diameter was evaluated by conventional mode-B, and the qualitative assessment of uterine vascularization was assessed by colour Doppler. Also, blood pressure (systolic, diastolic and mean arterial pressure) was measured by petMAP® classic equipment. Data were compared by ANOVA and LSD test (p≤0.05). PI values were lower during proestrus (3.28±0.49) compared to anestrus (6.14±0.98), indicating lower uterine artery pulsatility in response to the vasodilator action of estrogen during proestrus. TAMAX was higher during diestrus (16.13±3.45) compared to anestrus (9.05±1.20), indicating higher blood flow due to vascularity increase caused by progesterone[1]. Uterine diameter was higher during proestrus (1.11±0.14) and estrus (1.04±0.04), also as a response to estrogen. Systolic pressure was higher during estrus (171.90±8.77) compared to diestrus (148.89±3.45), but not different from anestrus and proestrus (163.29±4.63 and 157.06±11.23, respectively), while mean arterial pressure was higher during anestrus (126.67±4.6) compared to diestrus (107.78±3.53), but not different from proestrus (122.28±9.91) and estrus (117.86±8.22). In conclusion, the pulsed-wave and colour Doppler ultrasound is a non-invasive method for examining uterine vascularization[2,3], and can be considered as a complementary exam for the diagnosis of each estrous cycle in bitches.

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