ABSTRACTS

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Availability of computer assisted real time ultrasonography for in-vivo and in-vitro monitoring ovarian structures in dogs

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OBJECTIVES AND METHODS: Ultrasonography provides valuable diagnostic information and widely used in small animal practice. The efficiency of B-mode, real-time ultrasonography to monitor ovarian structures is not well documented in dogs in contrast to cows (1,2), ewe (3) and goats (4). Thus, the objective of this study was to evaluate efficiency of B-mode, real-time ultrasonography equipped with a 6.6 MHz convex-array transabdominal transducer to monitor ovarian structures in dogs in-vivo and in-vitro. Ovaries of 36 mongrel dogs, between 1 and 3 years old and 18 and 27 kg of body weight, were scanned for the presence and identification of the ovarian structures both before and after ovariectomy. In-vivo and in-vitro images were compared by an image analyses software package (ImageJ 1.42q; NIH, USA) for area, mean, standard deviation and pixel range. Furthermore, serum progesterone concentrations were determined via RIA to confirm the stage of the sexual cycle. The dogs were classified either in follicular (5-30.0 ng/ml) or in the luteal phase (>30.0 ng/ml) based on the serum progesterone concentrations.

RESULTS: Accurate classification rates of dogs into two stages (follicular or luteal) according to the images obtained from ovaries were 41.4 (7/17) and 42.1% (8/19), respectively. The scanning plane of ovaries (in-vivo or in-vitro) significantly altered the image characteristics (P<0.05). Area, mean, standard deviation and range values (mean±SEM) for in-vivo and in-vitro captured images were 6776.9±618.9 vs. 6015.1±432.3, 82.8±4.6 vs. 128.1±4.2 (P<0.05), 18.9±0.72 vs. 23.5±1.2 (P<0.05), 98.9±2.8 vs. 111.9±5.5 (P<0.05) in follicular and 4455.0±553.9 vs. 4488.2±609.8, 84.9±3.8 vs. 141.3±4.0 (P<0.05), 16.3±0.5 vs. 19.0±1.2 and 87.6±2.5 vs. 93.1±5.0 in luteal phase, respectively.

CONCLUSION: This data indicates that identification of ovarian structures and phase of the sexual cycle by means of B-mode, real-time ultrasonography connected to transabdominal transducers is elusive in most cases, even in in-vitro obtained images. Moreover, computer assisted image analyzing systems are highly advisable to integrate into the methodology, especially during the follicular phase of the cycle.