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Changes in serum progesterone concentrations during pregnancy in Cavalier King Charles Spaniels and Bernese Mountain Dogs
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Progesterone (P4) concentrations during canine pregnancy follow a specific pattern and it has been hypothesised that breed-specific differences might exist.1 The aim was to investigate P4 changes during pregnancy in Cavalier King Charles Spaniels (CKCS, n=6) and Bernese mountain dogs (BMD, n=6) with a normal reproductive history. All dogs were followed during their estrus cycle, and ovulation was assumed to have occurred following an increase of P4 between 4-10 ng/ml. After confirmation of pregnancy, blood samples were taken in regular intervals from day 23-29 to day 60-64 post ovulation (p. ov.). P4 was determined by Fluorescence enzyme immunoassay (FEIA) using the AIA-360 (TOSOH, Tessenderlo, Belgium). As repeated P4 samplings were performed at individual time points, results were summarized in respective time windows: D23-29, D30-34, D35-39, D40-44, D45-49, D50-54, D55-59, D60-64. Due to normal distribution of results, data were presented as mean ± standard deviation (SD) individually for both breeds (BMD/CKCS). To test for significant differences in P4 over time, ANOVA for repeated measures was applied, followed by the Tukey-test (if ANOVA: P < 0.05). Additionally, results of each time window were compared between breeds using the unpaired t-test (two tail, equal SDs). For all statistical analysis, Microsoft Excel (Windows XP; Microsoft) and GRAPHPAD3 (GraphPad Software, Inc., San Diego, CA, USA) were used. Values were considered to be statistically significant at P < 0.05. BMD delivered 6.2 ± 2.6 puppies (range 3-9) 63.4 ± 1.5 days p. ov. (excluding data from one BMD with elective c-section) and CKCS delivered 3.3 ±1.9 puppies (range: 1-5) 63.5 ± 1.1 days p. ov.. Respective mean concentrations were D23-29: 19.2 ± 4.3 / 22.2 ± 3.9 ng/ml (BMD/CKCS), D30-34: 15.6 ± 2.3 / 17.7 ± 5.8 ng/ml, D35-39: 12.5 ± 2.8 / 14.1 ± 3.4 ng/ml, D40-44: 8.9 ± 1.4 / 11.8 ± 3.7 ng/ml, D45-49: 7.7 ± 1.6 / 8.9 ± 1.9 ng/ml, D50-54: 6.0 ± 1.3 / 8.7 ± 7.1 ng/ml, D55-59: 4.7 ± 1.2 / 5.3 ± 2.8 ng/ml, D 60-64: 3.69±1.86 / 2.62±0.42 ng/ml. ANOVA indicated significant differences over time within each breed when considered individually (P < 0.0001 each), but not between breeds although mean P4 were slightly lower in BMD until D 55-59. The present data clearly confirm the previously described P4 pattern during canine pregnancy with highest P4 concentrations obtained in the first interval (D23-29) and a subsequent decrease of P4,1-3 however without the prepartum drop.3 The lack of a significant rapid prepartum P4 drop might be related to methodological issues (time of last collection in regards to parturition). No significant differences in P4 were found between CKCS and BMD. Further studies are required to confirm the results on a larger population of both breeds, but also other large-sized breeds to test for the hypothesis if BMD might have lower P4 concentrations and smaller litter size compared to other large breeds with larger litter size.