ABSTRACTS

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DIFFERENCES IN PROGESTERONE, ESTRADIOL, FSH AND LH PATTERNS IN HEALTHY, AND PROGESTERONE TREATED HYPOLUTEOID PREGNANT BITCHES

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Introduction - In the bitch the main source of progesterone is corpus luteum throughout pregnancy. Inadequate or deficient CL function is a non-infective factor of pregnancy waste in the dog. Luteal dysfunction can cause recurrent abortion or fetal absorption, often occurring after the early pregnancy diagnosis. In contrast of preliminary studies, incidence of non-infective infertility, discrepancies in clinical and endocrine status of heat, non-infective abortion or embryonic death, and premature delivery increased recently. Insufficient luteal function during the second half of pregnancy may result in fetal resorption or abortion [1]. Involved patients are usually presented at the veterinary clinic with clear vaginal discharge around day 30 and/or with a history of previous unsuccessful pregnancies. The pregnant bitch is considered hypoluteoid, when has insufficient serum progesterone level to maintain pregnancy (under 10 ng/ml (31.8 nmol/l) at the 4-5th week that decreases further) [3], and has no infectious or metabolic disease in the background. These patients, which are helped to carry their pregnancies to term with adequate hormonal supplementation, might help us understand the regulation of pregnancy maintenance in the dog. Although FSH and LH are supposed to be important luteotrophic factors during canine pregnancy [2], we do not have data concerning their serum concentrations during impaired luteal function. Estradiol serum concentration as a component of ovarian function might also play important role in hormonal feedback mechanisms.

Materials and methods - In this study 35 pregnant bitches from different breeds were allocated in healthy (n=10) and hypoluteoid pregnant (n=25) groups upon the clinical signs of impending abortion and progesterone levels at the 4-5th week of pregnancy. Hypoluteoid bitches were daily treated with 10 mg natural progesterone in injectable form (Luteosan inj., Werft-Chemie) until day 60. Healthy bitches were not given medication. Blood samples were taken weekly by cephalic venipuncture, separated serum was chilled till assayed. Progesterone (Quanticheck Progesterone, Veterinorg Ltd., Budapest, Hungary), estradiol (E2-EASIA Biosource Europe S.A., Nivelles, Belgium), FSH (Chien FSH ELISA, Biocode-HyceL, Liege, Belgium) and LH (LH Detect ELISA, INRA centre de Tours, Nouzilly, France) assays were done. The means and standard errors of the transformed data were then calculated and subjected to ANOVA and Student’s t-test where appropriate. Significance of differences was set at p = < 0.05. Data were stored and analyzed using SPSS (Statistical Package for Social Science; release 12.0)

Results - Progesterone levels were significantly lower in the group with hypoluteoidism (12.7±6.9 vs. 39.0±1.0 ng/ml) at the 4th week of pregnancy. This difference disappeared the next week due to continuous progesterone treatment of the hypoluteoid dogs. Estradiol concentrations were significantly lower in the group with hypoluteoidism at the 4th, 7th and 8th weeks (52.7±41.9 vs. 386.4±25.7; 23.6±19.5 vs. 145.8±48.0; and 37.3±27.7 vs. 138.9±61.9 nmol/l respectively). The mean estradiol concentrations were not significantly different at the 5th (33.6±28.4 vs. 319.3±113.7) and 6th (41.55±31.45 vs. 127.0±62.4) weeks in the treated and in the control group, partially because of the wide standard deviations. At the 9th week there was no difference between the groups (control group 40.3±30.1 vs. group with hypoluteoidism 30.9±5.56) due to the physiological decrease in estradiol concentration at the end of pregnancy that lowered the estradiol concentrations of the control group but did not
induce further dramatic decrease in the hypoluteoid group. FSH and LH levels were not different at the level of significance.

Conclusions - The simultaneously decreased progesterone and estradiol levels with unchanged FSH and LH levels in hypoluteoid bitches support the hypothesis that hypoluteoidism is a primary ovarian dysfunction, and is not influenced by higher neurohormonal effects.

References