ROLE OF LH IN THE PATHOPHYSIOLOGY OF URINARY INCONTINENCE IN OVARIECTOMIZED BITCHES

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The purpose of this study was to elucidate the role of luteinizing hormone (LH) in the development of urinary incontinence in ovariectomized (OVX) bitches. It was hypothesized that 1) OVX continent bitches would have lower LH concentrations than OVX incontinent bitches, and 2) decreasing LH concentrations in incontinent bitches by immunizing against GnRH would return continence. In experiment 1, 27 continent bitches and 16 incontinent bitches of medium (30-49 lbs) and large (50-100 lbs) breeds were recruited. A blood sample was collected from each dog and plasma LH was measured using a canine-specific ELISA (LH-Detect®, Repropharm). Comparisons between continent and incontinent bitches were analyzed using PROC TTEST in SAS® (Version 9.2, SAS Institute Inc.). In experiment 2, 14 OVX incontinent bitches taking phenylpropanolamine (PPA; Proin®, PRN Pharmacal) to control incontinence were recruited. Nine bitches were vaccinated against GnRH (Canine Gonadotropin Releasing Factor Immunotherapeutic®, Pfizer Animal Health) twice at 4-week intervals, while five received a placebo injection at the same intervals. Blood samples were collected before each vaccination (weeks 0 and 4), and weeks 6, 8, 10, 12, 16, 20, and 24. Vaccinated bitches discontinued PPA at week 6. Plasma LH was measured as in experiment 1, and comparisons between vaccinated and placebo incontinent bitches were analyzed using PROC MIXED in SAS®. In contrast to our hypothesis, OVX continent bitches had significantly higher LH concentrations (expressed as mean±SEM; 7.85±1.05 ng/mL) compared to OVX incontinent bitches (4.78±0.51 ng/mL) (p=0.04). Furthermore, LH concentrations were higher in medium-sized bitches compared to large-sized bitches. While there was a significant difference between medium continent (10.34±1.40 ng/mL) and incontinent bitches (5.22±0.72 ng/mL) (p=0.02), there was no difference between large continent (4.71±1.07 ng/mL) and incontinent bitches (4.32±0.73 ng/mL). Finally, all incontinent bitches vaccinated against GnRH experienced a decrease in LH concentrations to basal levels (p=0.0004). Four of the nine dogs (44%) maintained continence after PPA was discontinued. The fact that some bitches maintained continence as a result of decreased LH concentrations indicate that LH may have a role in the pathophysiology of urinary incontinence. However, the relationship remains unclear because continent bitches interestingly had overall higher LH concentrations than incontinent bitches.
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