POSTER 4

Efficacy and Duration of Immunity for Single-Dose GnRH Immunocontraception in Male Cats

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We have previously reported that a single-dose GnRH immunocontraceptive vaccine was successful in suppressing both testosterone and viable sperm counts below detectable levels in two-thirds of treated male cats. That encouraging pilot study was terminated after 6 months.

The purpose of this study was to determine the duration of immunity following a single immunization. A total of 24 adult male cats with normal serum testosterone concentrations and semen characteristics were randomized to receive a placebo vaccine (sham n = 12) or 200 µg of synthetic GnRH coupled to KLH and mixed with a mycobacterial adjuvant (treatment n = 12) intramuscularly. GnRH antibody titer (ELISA), serum testosterone concentration (RIA), semen characteristics (microscopy and flow cytometry), scrotal volume (caliper measurements), and body weight were measured before treatment, monthly for 6 months, and then every other month until fertility was confirmed by successful breeding.

Sham cats maintained normal sperm counts, sperm viability, and testosterone concentrations throughout the study. All sham cats except one successfully sired a litter. Three treated cats failed to respond at all or had only minimal suppression of testosterone. Of the remaining 9 treated cats, the median onset of testosterone becoming undetectable was 2 months (range 2-12), median duration of effect was 16 months (range 7-35 months), and median onset of recovery of testosterone was 18 months (range 8-36). One cat still had undetectable testosterone at the end of the observation period 36 months after treatment. Testosterone deficiency was only weakly correlated with GnRH antibody titer. In general, cats that achieved titers ≥128,000 were infertile, but the testosterone concentration and antibody titer were not linked closely in time. Loss of detectable testosterone was generally followed in 1-2 months by azoospermia, and restoration of normal sperm counts lagged behind recovery of testosterone by 2 months. Semen characteristics, including morphology and viability, were similar in cats prior to treatment and following recovery of fertility.

Median litter size sired by the cats was not significantly different between the sham group (5) and the treated group (4). GnRH immunocontraception showed efficacy in 75% of male cats following a single treatment, but response was highly variable and all but one cat recovered fertility by 3 years post-treatment. Less predictable immunocontraception of males compared to females has been observed in other species as well.