

Treatment Option Considerations for Hyperadrenocorticism in Dogs

Clinical Endocrinology Service/College of Veterinary Medicine/University of Tennessee

Where positive results of increased adrenal activity are present, consider the need for:

- 1) **Ultrasound and/or Endogenous ACTH.** Procedures to rule out primary adrenal tumor presence.
- 2) **Melatonin.** Often used as a first treatment, especially if alopecia is present, since it is cheap, has few side effects and is available in health food stores or via nutrient suppliers on the internet. Typically, a *dose of 3 mg* is given q12hrs (BID) for dogs <30 lbs; a *dose of 6 mg* is given q12hrs (BID) for dogs > 30 lbs. See Plumb's Handbook. Regular melatonin is usually used rather than rapid release or extended release products. Melatonin has anti-gonadotropic activity, and it inhibits aromatase enzyme in tissues (*decreases androstenedione and testosterone conversion into estradiol*) and 21-hydroxylase enzyme (*lowers cortisol level*). Allow at least 4 months for treatment to be effective. Response time is variable among dogs. Monitor treatment effectiveness by improvement in clinical signs, biochemistries or by repeat of steroid profile.
- 3) **Melatonin Implants.** (WWW.MELATEK.NET). Sizes are 8, 12 and 18 mg for <25, 25-50 and >50 lb dogs, respectively. Effects last 3-4 months.
NOTE: Melatonin and flax hull product with lignans are often used together when estradiol is increased. Melatonin and lignans may also decrease other steroids such as cortisol and androstenedione (see Melatonin-lignan article on our website).
- 4) **Lignan.** Lignan has phytoestrogenic activity, and competes with estradiol for tissue estrogen receptors, with less biological effect. Lignan also inhibits aromatase enzyme (*lowers estradiol*). Available as FLAX HULL (SDG) lignan or HMR lignan. Suggested doses: SDG lignan; one milligram/lb B. Wt./day. HMR lignan; 10-40 mg/day for small to large dogs. Lignan is available at health food stores and from various internet sites. Information available on our website under Forms/Documents then click on Lignans Information.
- 5) **Maintenance dose of Lysodren™.** Often useful in combination with melatonin and lignan to help lower sex steroid levels other than estradiol, along with suppressive effect on cortisol level. This option skips the Lysodren loading dose phase and starts with maintenance therapy **NOTE: MONITOR CORTISOL LEVELS AS FOR TYPICAL CUSHING'S TREATMENT.**
- 6) **Lysodren™, traditional treatment for Cushing's disease.** Very effective in lowering cortisol, progesterone, androstenedione and 17-hydroxyprogesterone levels. *NOTE: Estradiol may be synthesized by tissues other than the adrenals therefore it is not always suppressed by Lysodren™. A baseline estradiol level 1 month post-Lysodren will determine efficacy.*
- 7) **Trilostane.** Available in the U.S. as Vetoryl™ from Dechra Veterinary Products.
NOTE: Frequently, 17-hydroxyprogesterone and other adrenal sex steroids are increased in dogs on trilostane therapy. For 17-hydroxyprogesterone, it is not known if there may be some assay cross-reactivity with pregnenolones.
FURTHER NOTE: Care should be used in switching from trilostane to Lysodren™. Allow adequate time for either drug's effects on the adrenals to subside before switching treatments. (E.g., one month off drug; normal or increased stimulation-cortisol levels).
- 8) **Ketoconazole.** Cushing's disease treatment. Effective for increased cortisol. Consider 6 to 12 mg/kg, BID. See article on ketoconazole treatment in JAVMA, 233(12):1896, 2008.
- 9) **Selegiline (Anipryl™).** A less used alternative Cushing's disease treatment. See Plumb's Handbook.

WARNING: Products used as hormone replacement therapy by owner may result in high serum levels of estradiol, progestins, and/or testosterone, as well as nipple, mammary gland, vulva, and/or clitoris enlargement, small testicles in dog.

For further information on our Service (e.g., submission, shipping, protocols, review articles) see our website (www.vet.utk.edu/diagnostic/endocrinology). Revised 1-27-16.