

Single Cortisol versus ACTH Stimulation?



Might I?

Addison's Screening

Addison's, justifiably labeled the great pretender, is seen much more on our radar in current day veterinary practice. As such, we are interested in a sensitive affordable screening test in patients, e.g, exhibiting chronic GI signs, mild hypoalbuminemia of unknown cause, vague clinical signs or weakness, muscle cramps or tremors, hypoglycemia, megaesophagus, mild lymphocytosis, persistently low cholesterol and the list goes on.

1. A baseline cortisol is an excellent SCREENING test for Addison's disease. The sensitivity is referenced as 99.4%. Another possible screening test is the urine cortisol to creatinine ratio.

2. A baseline cortisol is NEVER a means of diagnosing Addison's. One will always need an ACTH stimulation to diagnose Addison's.

Addisonian Crisis



If you highly suspect an **acute adrenal crisis** then you should plan on performing an **ACTH stimulation** so that treatment can be started as soon as possible. If a patient seems hemodynamically unstable and glucocorticoid administration cannot be delayed, dexamethasone can be administered. Dexamethasone has no cross reactivity with most cortisol assays. It will, however, lead to a decreased cortisol response (by about 35%) from after a few hours to up to 3 days. Differentiation between dogs with non- adrenal illness and Addison's should, however, still be possible in most cases as a complete flat line is not expected.

3. A baseline cortisol CANNOT help determine glucocorticoid requirements for an Addisonian patient. A correctly diagnosed Addisonian patient with a flatline ACTH stimulation is always expected to have a baseline cortisol below 27 nmol/L. There is a cross reaction with the cortisol assay when a patient has received oral prednisone on the day of measurement but this does not have a correlation with dose or requirements. Glucocorticoid requirements are patient dependent. The goal after initial stabilization is to decrease the prednisone dose to .05-0.1 mg/kg daily with additional adjustments for each individual patient during times of stress. "Stress" for each individual will be different be it a car ride, visitors, vacation, kennel, pet sitters, grooming or other concurrent illness. For maintenance therapy, monitoring electrolytes at day 10-14 and day 28 can help with mineralocorticoid adjustments when using DOCP together with prednisone. If the patient is on Florinef then there is the possibility that the patient may not always need concurrent prednisone. Florinef has some glucocorticoid activity unlike DOCP.

Testing for Cushing's



4. A baseline cortisol is NOT a means of “screening” or diagnosing Canine Cushing’s Syndrome. In most situations the LDDST is the preferred first choice over an ACTH stimulation in canine patients with a high suspicion of disease. Note your clinical index of suspicion for Cushing’s is key to the interpretation of adrenal function tests. If you don’t think the patient has Cushing’s it is likely best not to test or “screen”.

Treating Cushing's

5. A single cortisol in the form of a PRE-PILL cortisol can be potentially for monitoring patients on Trilostane in select patients. Dogs that are highly stressed in hospital are not good candidates for pre-pill monitoring. Dechra UK has an algorithm that can provide added information. **Note:** if the patient is unwell then there is a high likelihood that an ACTH stimulation will be needed. In tight budget situations, a single post ACTH stimulation cortisol is an option but the pre and post provide a more thorough assessment as Trilostane absorption and peak effect can vary on occasion.

Additional References:

Sieber-Ruckstuhl, Nadja S (2022). [Hypoadrenocorticism: management and monitoring](#). In: ESVE Summer School of Veterinary Endocrinology, Bologna, 3 July 2022 - 9 July 2022, ESVE.