DEXAMETHASONE SUPPRESSION TEST (LOW DOSE)

Indications

Diagnostic test for the differentiation of normal dogs from those with hyperadrenocorticism.

Please note:

In most situations this is regarded as the test of choice in the dog. The exceptions are:

- Testing for adrenocortical reserve in dogs on therapy for hyperadrenocorticism (under Vetoryl therapy).
- Where there has been prolonged (greater than 2 weeks) administration of oral prednisolone, testing should be delayed for at least 2-4 weeks after the withdrawal of therapy to allow normalisation of the pituitary-adrenal axis.
- Prior subcutaneous injection of betamethasone or dexamethasone, delmadinone (Tardak) or progestagens such as proligestone (Delvosterone) may also significantly affect test results.

In the above cases an ACTH Stimulation test should be performed first.

Testing of animals with diabetes mellitus for concurrent hyperadrenocorticism can be a difficult diagnostic approach. In these cases both the ACTH stimulation test as well as the low dose dexamethasone suppression test have been reported to reveal false positive results. In most cases a combination of both tests in addition to an ultrasonographic examination of the adrenal glands are necessary for a diagnostic work-up. Please contact the lab to discuss the diagnostic approach to such cases (option 1, then option 2).

Protocol

Volumes for injection are small for this test, and in some cases, especially small dogs, it can be helpful to make a 1:10 dilution of dexamethasone before administration

- Collect 1-2 ml blood in plain/gel tube.
- Immediately inject dexamethasone (0.01 mg/kg) intravenously.
- Collect second blood sample after 4 hours post injection.
- Collect third blood sample after 8 hours post injection.
- Label tubes with name and time of sample.
- Submit tubes with separated serum and request form to the laboratory.
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**Interpretation**: The eight-hour sample is assessed initially. A cortisol concentration < 40nmol/L rules out hypercortisolism. In these cases the results of the 0 and 4 hour samples are meaningless. A cortisol concentration > 40nmol/L at 8hrs is consistent with hypercortisolism and further differentiation between pituitary and adrenal causes is recommended. A reduction in cortisol to less than 50% of baseline at 4 or 8 hours or a cortisol concentration < 40nmol/L at 4 h are diagnostic for PDH and no further evaluation is required. However, AT and 50 – 60% of PDH cases do not suppress and require further evaluation (Table 11).

**Accuracy**: Reported sensitivities range from 90 – 95%, suggesting LDDS to be a more sensitive test than ACTH Stimulation Test. 5 – 10% of cases will still be negative when first evaluated however and may require re-testing after few months. Specificity may be poor however (51%) in dogs with non-adrenal disease and particularly diabetes mellitus and renal failure. Positive test results must always be viewed in the light of the history and clinical signs.

**Table 11: Patterns of results on LDDS**

<table>
<thead>
<tr>
<th>BASAL CORTISOL</th>
<th>CORTISOL - 4 HOURS POST-DEX</th>
<th>CORTISOL 8 HOURS POST-DEX</th>
<th>INTERPRETATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any</td>
<td>Any</td>
<td>&lt;40 nmol/l</td>
<td>Negative for hyperadrenocorticism</td>
</tr>
<tr>
<td>Normal</td>
<td>&lt;50% basal or &lt;40 nmol/l</td>
<td>&gt;40 nmol/l</td>
<td>Pituitary dependent hyperadrenocorticism (occasionally false positives with stress)</td>
</tr>
<tr>
<td>Normal</td>
<td>&gt;50% basal or &gt; 40 nmol/L</td>
<td>But &lt; 50% of basal</td>
<td>Pituitary or adrenal dependent hyperadrenocorticism</td>
</tr>
</tbody>
</table>