

## SNAP cortisol test

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**While hyperadrenocorticism is not an uncommon incidental finding in patients presenting to our emergency clinic, hypoadrenocorticism is a lot less common. Or, possibly, more frequently underdiagnosed.**

Textbook clinical presentations combined with haematology and biochemical changes can make diagnosis straightforward, but not all patients will present with all the classic signs.



The SNAP cortisol test is a quantitative ELISA test that measures the level of serum cortisol in dogs.

To complicate things further, hypoadrenocorticism is the great mimicker of diseases; it is often

impossible to arrive at a definitive diagnosis without knowing the cortisol levels.

The SNAP cortisol test allows clinicians to determine cortisol levels in-house – a blessing to those of us who work out-of-hours – but is not without its limitations.

## Suspicious signs

Patients with hypoadrenocorticism often present with vague and non-specific clinical signs, but certain clinicopathological changes help raise the suspicion:

- a decrease in sodium-to-potassium ratio (below 1:27)
- azotaemia
- an inappropriately low urinary specific gravity, despite evidence of dehydration or hypovolaemia
- a leukogram unfitting to the degree of illness of the patient (a “reverse stress leukogram”- neutropenia, lymphocytosis, eosinophilia)
- anaemia
- hypoglycaemia
- hypercalcaemia

Although most Addisonian patients will not present with all these signs – especially those in the early stages of disease or those with atypical Addisonian disease (glucocorticoid insufficiency only) – any patients showing any of these haematology and biochemical changes should have hypoadrenocorticism ruled out as part of the diagnostic plan.

## Imperfect ELISA

The SNAP cortisol test has been advertised as an in-house assay to aid the diagnosis, treatment and management of both hyperadrenocorticism and hypoadrenocorticism, although the quality of the result is not perfect. This quantitative ELISA test measures the level of serum cortisol in dogs.

In one study<sup>1</sup>, the SNAP cortisol test appears to have a good correlation with an external laboratory chemiluminescent assay test; however, in 12.8% of cases (5 of 39 patients), the SNAP test result could have led to a different clinical decision regarding the management of the patient.

Since long-term Cushing's management relies on reliable, repeatable cortisol level detection, this high level of discrepancy is unacceptable, especially when more accurate alternatives are available at external laboratories.

## Still useful

Despite this, it is still very useful helping to assess for the presence or absence of hypoadrenocorticism, especially in an emergency setting.

I use the SNAP cortisol to measure the resting cortisol level. If it is below 2ug/dL or in inconclusive range (between 2ug/L and 6ug/L), but the clinical picture suggests hypoadrenocorticism, I would perform an adrenocorticotrophic hormone (ACTH) stimulation test and send samples to an external laboratory. If it is well above the inconclusive range, I would not perform an ACTH stimulation test.

In summary, I think the SNAP cortisol test can be useful in helping assess for hypoadrenocorticism, but would still recommend performing an ACTH stimulation test and running the samples externally.

However, use it with caution for hyperadrenocorticism diagnosis and its long-term management – especially when more accurate and economical alternatives are available.

## References

1. Kintzer PP and Turgeon L (2005). Comparison of an in-house cortisol test kit with a reference laboratory chemiluminescent assay, *Journal of Veterinary Internal Medicine* **19**(3): 422.