

DIAGNOSIS OF HYPERADRENOCORTICISM IN DOGS

The main objectives are:

- Deepen knowledge of Cushing's syndrome in dogs.
- Understand the effects of glucocorticoids systemically and relate them to the manifestations of the disease.
- Understand the difficulty of diagnosis by endocrine tests.
- Discover the reason why an animal can express clinical signs and the endocrine tests results fall within the normal range.
- Investigate what kind of alternative noninvasive tests could be carried out in the future.

Presumptive diagnosis

History, physical examination and clinical signs

Table 1. Clinical signs in dogs with hyperadrenocorticism.

Polydipsia/polyuria (80-91)
Abdominal enlargement (67-73)
Endocrine alopecia (60-74)
Polyphagia (46-57)
Hepatomegaly (51-67)
Panting (30)
Weakness (14-57)

Laboratory test findings

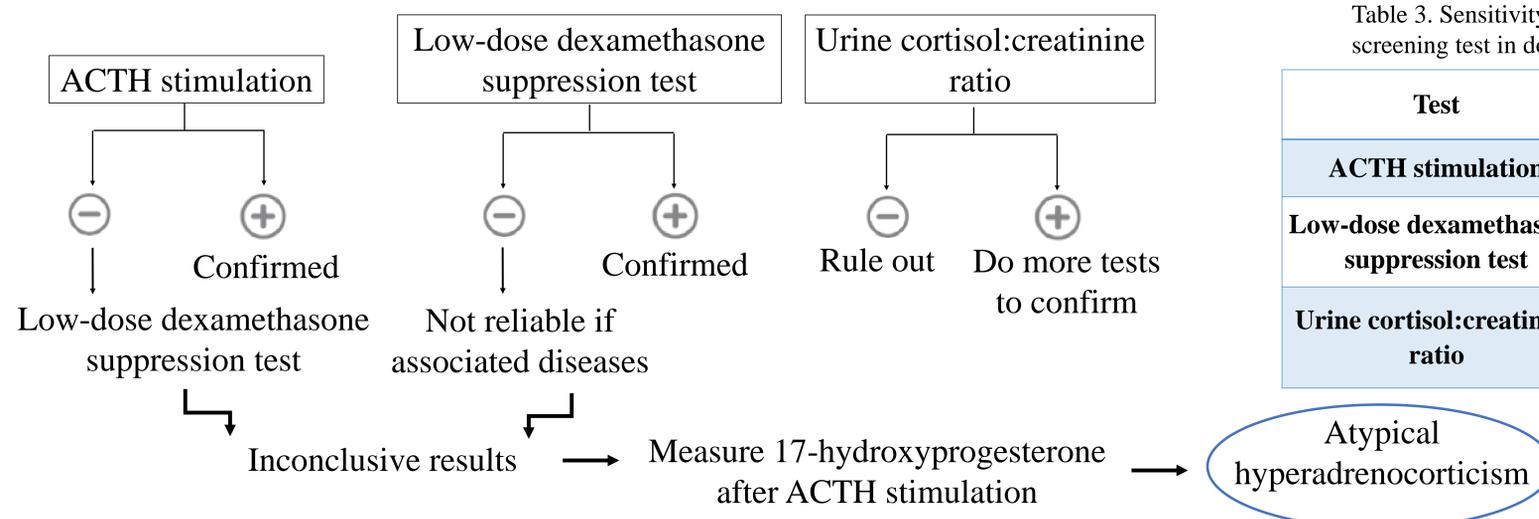
Table 2. Frequently encountered clinicopathologic abnormalities in dogs with hyperadrenocorticism.

CBC	Chemistry	Urinalysis
Eosinopenia	Increased ALP (85-95)	Low urine specific gravity (80)
Lymphopenia	Increased ALT (50-80)	Glycosuria (10)
Monocytosis	Lipemia (50-90)	Proteinuria (60-80)
Neutrophilia	Hyperglycemia (30-40)	Urinary tract infection (40-50)
	Decreased BUN (30-50)	

Screening tests

Table 3. Sensitivity, specificity and diagnostic accuracy of endocrine screening test in dogs for the diagnosis of hyperadrenocorticism.

Test	Sensitivity (%)	Specificity (%)	Diagnostic accuracy (%)
ACTH stimulation	30-95	59-93	84
Low-dose dexamethasone suppression test	85-100	5-73	58
Urine cortisol:creatinine ratio	76-99	20-85	37



Noninvasive techniques for determining cortisol

Table 4. Advantages and disadvantages of the noninvasive techniques found related to measurements of cortisol concentrations in dogs with spontaneous hyperadrenocorticism.

	Hair	Saliva	Feces
Advantages	It's an index of long-term cortisol secretion	Dogs with confirmed hyperadrenocorticism have significantly higher salivary cortisol concentrations than healthy dogs	Fecal glucocorticoid metabolites reflect the adrenocortical activity quite well
	Requires a sample material easy to collect (250mg)		Feces samples are easy to collect by owners
	91% sensitivity and 61% specificity		
Disadvantages	Incomplete information on hair physiology	Large sample volume is required (300µL)	Only 28% of the cortisol metabolites are excreted
	Pilosebaceous unit is a functionally complex system	Blood contamination, hemolysis, macromolecules, pH, and the material used are factors that can affect cortisol concentration	Few studies are documented

CONCLUSIONS:

- ✓ The possibility that a patient has hyperadrenocorticism is based on the history, physical examination, clinical signs and laboratory test findings. After the presumptive diagnosis has been made, endocrine tests should be performed. Unfortunately, none of the diagnostic tests used are totally reliable and both false-positive and false-negative results are common.
- ✓ 17-hydroxyprogesterone response to administration of exogenous ACTH may be a useful method for confirming hyperadrenocorticism in atypical cases that have features suggestive of the disease but normal ACTH and low-dose dexamethasone suppression test results.
- ✓ Cortisol determination in hair is considered the most specific and sensitive analytical approach, even taking interspecific differences in hair growth and composition. On the other hand, measuring cortisol in saliva is not an alternative to determination of cortisol levels in dogs because of problems encountered with collection of saliva and the high sample volume needed. Finally, few studies of cortisol determination in feces have been documented due to the low concentration of cortisol metabolites in dogs' excretions.

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