

Canine Hypoadrenocorticism: From Presentation to Maintenance

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Hypoadrenocorticism (ie, Addison's disease) is commonly mistaken for other conditions,¹ but even if you think you're not seeing Addisonian patients, they are still seeing you.² This can be deadly when misdiagnosed, not only because of hypotensive crises but because less recognizable recurrent signs can drain financial and emotional resources. An Addison's diagnosis solves a medical mystery, saves a sick patient, and delivers a promising prognosis.

History & Physical Examination

It often takes several veterinarians to uncover a diagnosis of hypoadrenocorticism.² Given its common constellation of signs (see Table 1), Addison's is often misdiagnosed as GI, renal, or neurologic disease.¹ Although patients of any age, sex, and breed can be affected, suspicion is highest for middle-aged, female dogs from at-risk breeds.¹

LIFE-SAVING TIP

Irregular bradycardias in depressed patients usually indicate life-threatening hyperkalemia.³

Diagnosis

If patients are stable, an ACTH stimulation test should be performed before administration of glucocorticoids.⁴ In urgent situations, intravenous dexamethasone sodium phosphate is least likely to interfere with diagnostic testing.⁴ Basal cortisol can serve as a screening test but does not provide a definitive diagnosis.⁴

Electrolyte abnormalities (eg, hyperkalemia, Na:K ratio <27) are common; however, electrolyte disturbances are not pathognomonic and are not seen in all patients.¹ These usually dehydrated patients are frequently azotemic but may have a disproportionately high BUN:creatinine ratio, often >30 (normal is ≈20).^{3,4} Debilitated patients should have stress leukograms. If they do not, especially if eosinophil counts are >500/uL, cortisol deficiency is suggested.³

Treatment

Without treatment, this disease is life-threatening; with lifelong treatment, prognosis is excellent.⁵

Emergency Stabilization⁵

Addisonian deaths are usually attributed to hypovolemic shock; immediate intravenous administration of isotonic crystalloid fluids is indicated in critical patients. These fluids should *ideally* have no potassium (eg, 0.9% NaCl). However, isotonic crystalloids containing potassium, such as lactated Ringer's or Phyllyte™ solution, are preferred by many criticalists. While the traditional recommendation was to use 0.9% NaCl to increase the sodium concentration rapidly while avoiding increasing potassium, it has now been recognized that an

overly rapid correction of severe hyponatremia can cause severe neurologic sequelae. Fluids immediately improve electrolyte and acid-base imbalances, although fluids alone may not be sufficient to resolve these imbalances. Intravenous dextrose corrects hypoglycemia and is helpful if insulin is needed to correct hyperkalemia. An ECG should be continuously monitored for life-threatening arrhythmias and additional cardiac support provided if needed. Intravenous dexamethasone SP is a fast-acting glucocorticoid and least likely to interfere with ACTH stimulation testing. Patients should be reassessed frequently and other clinical signs addressed with supportive care.⁵

LIFE-SAVING TIP

Severe hyponatremia (<110 mmol/L) needs to be corrected slowly (<10 mmol/L/day) to prevent severe neurologic effects.^{5,6}

After Stabilization

Wait until patients are hydrated, stable, and definitively diagnosed before administering mineralocorticoids.⁷

DOCP + Prednisolone or Prednisone

The FDA-approved treatment of choice for veterinary Addisonian patients is desoxycorticosterone pivalate (DOCP). DOCP is a pure mineralocorticoid hormone that regulates electrolytes and water balance, which are impaired in cases of mineralocorticoid deficiency in Addison's disease. DOCP has limited glucocorticoid activity, allowing the independent dose titration of mineralocorticoid effect. Offering convenience for clients and comfort for patients, ZYCORTAL® Suspension (desoxycorticosterone pivalate [DOCP] injectable suspension)* is formulated and specifically approved for subcutaneous use.⁷ DOCP should be supplemented with a glucocorticoid starting at physiologic doses and then tapered to effect.⁵

Fludrocortisone

Fludrocortisone is given twice daily and has both glucocorticoid and mineralocorticoid activity. Some treated patients can forgo additional glucocorticoids; while another subset of patients will have unacceptable glucocorticoid side effects at therapeutic doses consistent with glucocorticoid oversupplementation (eg, polyuria, polydipsia, polyphagia, muscle

atrophy), and others may require salt supplementation to correct mild hyponatremia⁵. Fludrocortisone's cost may be prohibitive at effective doses, especially for large patients.⁸

No fludrocortisone products have an FDA label for veterinary use.⁹ Patients on fludrocortisone can be switched to

ZYCORTAL[®] Suspension without a wash-out period.⁷

Long-Term Maintenance

Normal electrolyte balance and clinical resolution are the goals of therapy.⁵ Patients should be rechecked 10 and 25 days after a dose change and treatment adjusted based on clinical signs and

electrolyte concentrations.⁷ To prevent decompensation, owners should increase glucocorticoid dose by at least double when patients experience stress. Educating and building strong partnerships with owners helps emphasize the importance of lifelong treatment, avoid deadly emergencies, and offer the patient a long and happy life.

TABLE 1

SIGNS OF HYPOADRENOCORTICISM¹

	>50% of cases	25%–50% of cases	<25% of cases
History	Lethargy, weakness Inappetence Vomiting, regurgitation	Weight loss Diarrhea PU/PD Shaking, shivering, tremors	Blood in vomit, stool Ataxia Seizures Collapse Abdominal pain
Examination	Depression Weakness Thin body condition	Dehydration Shock, collapse Bradycardia Hypothermia	Weak pulses Hematochezia, melena Abdominal pain

TABLE 2

SUSPICION OF ADDISON'S DISEASE^{1,3,7}

Decreases Suspicion	Increases Suspicion
Minimal response to past steroid or fluid therapy	<ul style="list-style-type: none"> ▶ Presenting again with similar signs ▶ Past episodes resolved with fluids or steroid therapy
Obese	Weight loss
Bright, alert	Depressed, lethargic
Normal electrolyte concentrations	High K ⁺ , Low Na ⁺ , Na:K <27
Stress leukogram (neutrophilia, lymphopenia, eosinopenia)	Lack of stress leukogram (neutropenia, lymphocytosis, eosinophilia)

*As with all drugs, side effects may occur when using ZYCORTAL Suspension. In field studies the most common side effects reported were polyuria, polydipsia, depression/lethargy, inappropriate urination, alopecia, decreased appetite/anorexia, panting, vomiting, diarrhea, shaking/trembling, polyphagia, urinary tract infection, urinary tract incontinence and restlessness. ZYCORTAL Suspension should be used with caution in dogs with congestive heart disease, edema, severe renal disease or primary hepatic failure. Dogs presenting in Addisonian crisis must be rehydrated with appropriate intravenous therapy before starting treatment with ZYCORTAL Suspension. Refer to the prescribing information for complete details or visit www.dechra-us.com.

REFERENCES

1. Klein S, Peterson ME. Canine hypoadrenocorticism: part I. *Can Vet J*. 2010;51(1):63-69.
2. Cook A. Endocrine challenges: hypoadrenocorticism. Oral presentation at: 2016 American Animal Hospital Association Conference; March 2016; Austin, TX.
3. Cook, A. Diagnosis and treatment of hypoadrenocorticism - module 1: diagnosis [webinar]. *Dechra Academy*. 15:37. <https://academy.dechra.com/mod/page/view.php?id=315>. Accessed September 13, 2017.
4. Herrera M, Nelson RW. Common gastrointestinal signs equal challenging diagnosis? *Clinician's Brief*. 2008;10:24-26. <https://www.cliniciansbrief.com/sites/default/files/attachments/myd%20addison%203.pdf>
5. Klein S, Peterson ME. Canine hypoadrenocorticism: part II. *Can Vet J*. 2010;51(2):179-184.
6. Vera, CP, Bissett S. Hyponatremia. *Clinician's Brief*. 2010;2:49-53.
7. Dechra. Seeing the same dog with the same issue? There could be a different conclusion [informative brochure]. March 2016.
8. Lathan P, Tyler JW. Canine hypoadrenocorticism: diagnosis and treatment. *Compend Contin Educ Pract Vet*. 2005;27:120-131.
9. Plumb DP. Fludrocortisone acetate. *Plumb's Veterinary Drugs*. Updated Jan 2014. <https://www.plumbsveterinarydrugs.com/#/monograph/ZHnHy2XoR2/>. Accessed September 13 2017.

For more information on references, please visit www.dechra-us.com