Part II
(cushing’s disease is hard to diagnose)
Cushing’s Disease Is Easy To Treat

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Overview

- Why test?
- When to test?
- How to test?
- Will you treat?
- How to treat?

Will you treat?

- Owner willing to treat?
- Surgical vs. Medical
- Medical options
  - Anti-adrenal therapy

Clinical signs

- Dogs with HAC generally feel and act well
- Spectrum of signs – mild to severe
- Polydipsia and Polyuria (PU/PD)
  - COMMON
  - almost all dogs with HAC
- Appetite is normal or increased
- Panting, restlessness, anxiety
Clinical signs

- ‘Cushingoid’ body type – severe, chronic disease
  - Pendulous and distended abdomen
  - Muscle wasting
  - Thin coat
  - Dermatologic lesions
    - Thin skin
    - Comedones

Associated Clinical Abnormalities

Chronic, recurrent infections
- Urinary, respiratory, oral, skin

Neurologic signs
- Serious signs caused by macroadenoma in 10-15% PDH cases.
  - Anorexia, behavioral changes, disorientation, blindness

Musculoskeletal problems
- Poor body condition, muscle loss, cruciate rupture, myopathy

Cardiovascular Effects
- Hypertension

Reproductive signs
- Androgen-dependent perianal adenoma in neutered dogs (including females)
- Decrease in testicular androgen production in males
- Anestrus in females

Treatment of HAC

- Hyperadrenocorticism is a clinical syndrome.
- Quality of life is affected - not life threatening

Acceptable to delay treatment:
- Mild signs
- Limited ability to follow-up
- Minimal risk of complications

- Treatment is not benign
- Expense of treatment may be a factor
  - Possible to ‘overtreat’ if not monitored closely
  - Progression of pituitary tumor (Nelson’s syndrome)
  - Acute adrenal failure
  - Possibility for surgical complications, including death
**Definitive Treatment**

**Hypophysectomy**
- Removal/destruction of adenoma
- Surgical hypophysectomy is increasingly reported
- Difficult surgery
- Significant complications

**Adrenalectomy**
- Surgical removal of adrenal tumor is preferred
- Requires surgical expertise
- Intra- and post-operative complications
**Management of the Clinically Inapparent Adrenal Mass (“Incidentaloma”)**

**Routine Management**

- Adrenalectomy
  - Preferred treatment for ADH
  - Pre-op imaging
    - Assess metastasis
    - Local invasion
  - May require pre-surgical stabilization
  - Peri- and post-operative complications
    - Hemorrhage
    - Thromboembolism
    - Adrenal insufficiency

**Adrenalectomy**

- Prognosis
  - Good if tumor is benign and easily removed
  - Malignant tumors = less favorable prognosis

- Non-surgical tumors
  - Limited medical options
  - Suppress adrenal function
Pituitary Dependent HAC (PDH)

Medical Management
- Anti-adrenal therapy
- Pituitary therapy

Radiation
- Reserved for macroadenoma
- Slows tumor growth
- Less effect on abn. hormone production

Trilostane (Vetoryl®)
Inhibits synthesis of adrenal cortical steroids

- Reversible inhibitor of 3β hydroxysteroid dehydrogenase
- Efficacious in most dogs.
- Avoid compounded products
- Minimal adverse effects
  - Transient vomiting, diarrhea and lethargy
  - Rarely, hypoadrenocorticism may develop
  - Acute fatal reactions - Adrenal necrosis? Mechanism?

Trilostane (Vetoryl®)

Efficacy compatible with mitotane.

Controversy regarding:
- Dose and frequency
  - 2-4 mg/kg/day (divided BID)
- Method and frequency of follow-up
  - Clinical signs
  - ACTH stimulation – begin 4-hr post pill
Other Medical Treatments

Lysodren (mitotane; o\(^{-}\)-p\(^{-}\)-DDD)
- Adrenocorticotylic that acts by destruction of functional adrenal tissue
- Occasionally used as alternative to trilostane

Other options
Ketoconazole
- Reversible inhibition of adrenal steroidogenesis (primarily glucocorticoids)
Anipryl\(^{\text{R}}\) (selegiline, L-deprenyl) - approved for treatment of canine PDH
- Monoamine oxidase inhibitor (MAO) – reduces ACTH production

HAC Prognosis

PDH
- Mean 2.5 years after Dx
- No studies compare treated vs. untreated dogs

ADH-
- Benign adrenal tumors good prognosis
- Malignant tumors have a guarded to grave prognosis

QUESTIONS