Hyperadrenocorticism (Cushing’s Disease)

Animals exposed to excess cortisol develop the classic set of signs known as Cushing’s disease. This PowerPage provides a review of the signs, tests, and treatments of hyperadrenocorticism with some supplemental information on equine Cushing’s. It is highly unlikely that you will see questions about Cushing’s in any species other than dogs and horses on a board exam, although it can occur infrequently.

Background
1) Cushing’s disease is caused by excessive circulating cortisol.
   - Cortisol is produced by the **adrenal gland(s)**

2) Spontaneous disease is caused by either a **pituitary** or an **adrenal mass**. Identical signs can be caused iatrogenically in dogs that are on oral or topical steroids.
   - Most cases are pituitary-dependent
   - The pituitary secretes ACTH, which signals the adrenals to continue to produce cortisol
   - If a pituitary mass is present causing excess ACTH release, the negative feedback from adrenal cortisol is ineffective; cortisol secretion thus continues and leads to Cushing’s

Clinical Signs
Symptoms of Cushing’s disease include the following:
- Increased **urinating and drinking** (Polyuria and polydipsia or PU/PD)
- **Pot belly** appearance
- **Hair loss**
- Calcino**sis cutis**
- Excessive **panting**
- May have concurrent hypertension

Laboratory Findings
Laboratory findings:
- Markedly elevated **alkaline phosphatase**
- +/- proteinuria
- Dilute urine (isosthenuria/hyposthenuria)
- Prone to urinary tract infections (urine culture and sensitivity is recommended routinely in these patients because they may have a subclinical UTI.)

Diagnosis and Treatment
Testing is with the **ACTH stimulation test** or the **Low-Dose Dexamethasone Suppression Test**
- The latter may help to differentiate a pituitary cause from an adrenal cause
- There are other tests which may be helpful (Urine Cortisol:Creatinine Ratio, Endogenous ACTH, High-dose Dex. Suppression Test, Abdominal Ultrasound)
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Treatment of choice is currently **trilostane** (Vetoryl)
- Works by inhibiting steroid synthesis and usually does not cause permanent change in the adrenal gland (but is possible)

Other treatment is **mitotane** (Lysodren)
- Destroys part of the adrenal cortex to prevent cortisol production
- Lysodren may cause more side effects and causes permanent changes that could lead to hypoadrenocorticism

**Treatment is only recommended in dogs that have clinical disease** which warrants therapy, not just because they have an abnormal screening stimulation test

**Equine Cushing’s**
Horses with Cushing’s may have **Hirsutism** (an abnormal long and way haircoat)
- May also have some symptoms discussed for dogs above

**Reference:**
Ettinger, Feldman. Veterinary Internal Medicine, 3rd ed. pp 1419-1429, 1460-1499