

Diagnosing and Managing Adrenal Tumors

The Bill and Patty Show



CONFLICT OF INTEREST DISCLOSURE

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Honoraria from Idexx, BI, and Dechra.

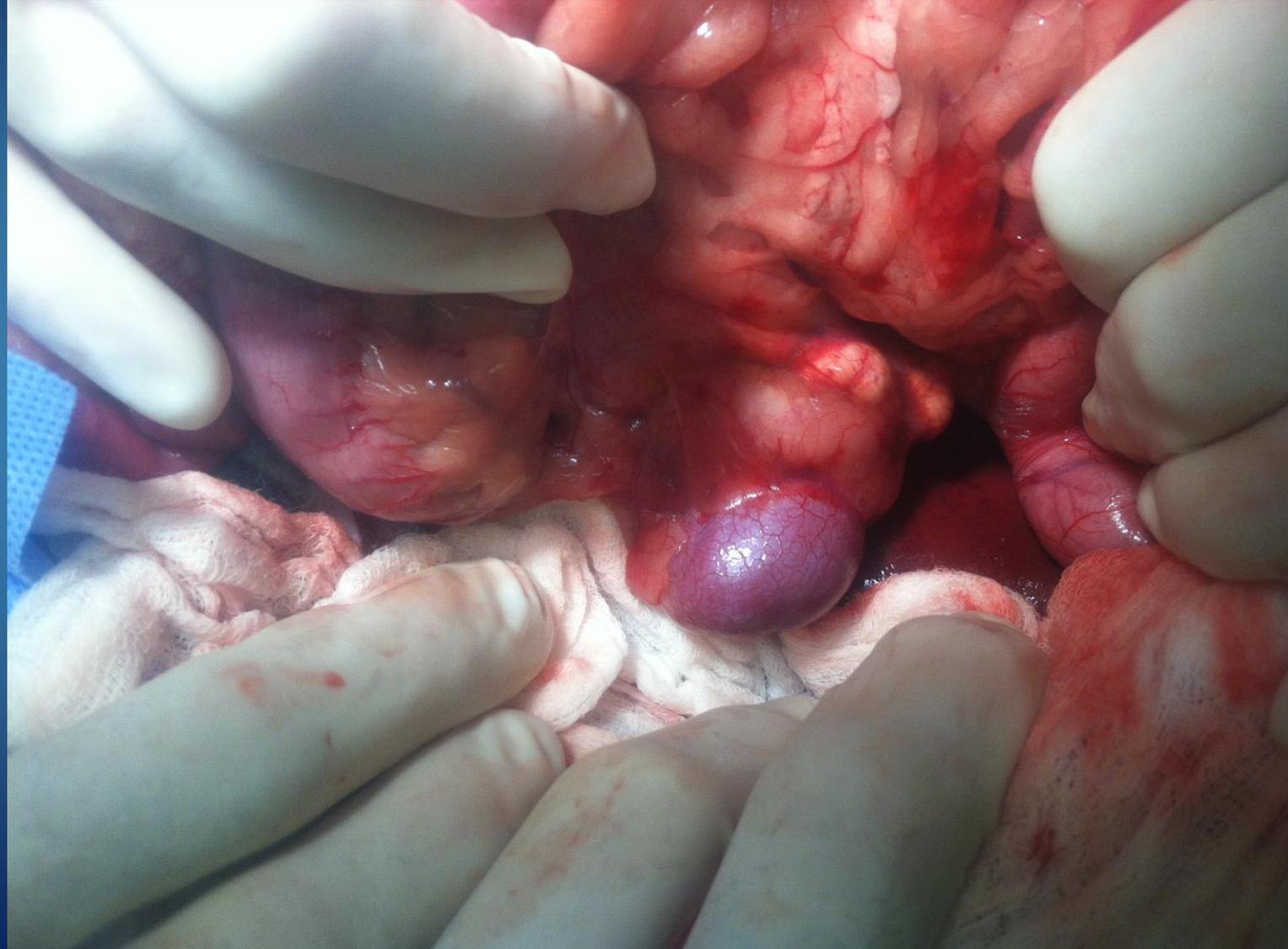
Dr. Saxon is a full-time IDEXX employee.

ADRENAL TUMORS

- Dogs with clinical signs vs. Incidentalomas
- Differentials
- Work up for incidentaloma
- Stabilization
 - Hypertension
 - Hypokalemia
 - Hemoabdomen
- Diagnostics
- Definitive treatment
- Cases

**SO, THE DOG VOMITED 3 TIMES AND I FOUND
AN ADRENAL MASS. WHAT DO I DO???**

INCIDENTALOMAS



Clinical findings in dogs with incidental adrenal gland lesions determined by ultrasonography: 151 cases (2007–2010)

Audrey K. Cook, BVMS; Kathy A. Spaulding, DVM; John F. Edwards, DVM, PhD

- Incidental adrenal gland lesion
 - No reported clinical signs
- 4% of dogs that got U/S
 - (9% on CT)
- Median width: 12 mm (3-60 mm)
 - 80% <20 mm
 - All benign
- 30% >20 mm malignant
 - Of those that had adrenalectomy
- 29% had non-adrenal malignant lesions (unrelated)

Take away:
Size matters
Suspect malignancy if >20 mm.

WHAT COULD THEY BE?

- **Primary Tumor**
 - Adrenocortical adenoma (cortisol, aldosterone, other)
 - Adrenocortical carcinoma (same)
 - Adrenal medullary tumor (norepi, epi...)

- **Metastasis**
 - Lymphoma
 - SCC
 - Melanoma
 - **ANYTHING**

How do you figure it out? Approach:

- Confirm presence (U/S or CT)
- Identify
 - Hormonally active, or not?
 - Metastatic lesion, or not?
 - 21% of metastatic neoplasias in dogs and 15% in cats affect adrenals
 - Invasive, or not?
- Treat
 - Medical
 - Surgery
 - Observation

FUNCTIONAL: WHICH HORMONES?

- Cortisol
 - AT
 - PDH
- Catecholamines (norepinephrine, epinephrine)
- Aldosterone (cat)
- Sex hormone/cortisol precursor?

NON-FUNCTIONAL: WHAT COULD THEY BE?

- Hormonally silent adenoma, carcinoma, or hyperplasia
- Metastasis
- Hematoma/adenoma/granuloma/abscess
- Lipoma

Hormone Production

FUNCTIONAL

- Cortisol – adrenal cortex
 - AT
 - PDH
- Aldo – adrenal cortex
 - PHA (cat)
- Norepi/epi – adrenal medulla
 - Pheo
- Sex hormone/cortisol precursor?

NON-FUNCTIONAL

- Hormonally silent adenoma, carcinoma, or hyperplasia
- Metastasis
- Hematoma/granuloma/abscess
- Lipoma

FUNCTIONAL OR NON: CLUES FROM...

- History, physical exam
 - PU/PD, panting, collapse, GI signs,
 - Skin/fur changes
 - **HYPERTENSION (pheo/aldosterone) – ocular signs**
- Clinicopathologic changes
 - USG? ALP? ALT? K+?
- (Imaging?)
 - Size
 - Invasiveness
 - Thoracic mets

Ultrasound/CT

- **Metastasis**
 - Primary tumor identified?
- **Size**
 - Larger = more likely carcinoma
 - Study dependent: >2 cm, >5 cm
- **Invasive**
 - More likely carcinoma, decreased survival
 - Invasion may be missed, especially on U/S

THEN WHAT?

- Depends on clinical picture, labs, imaging results
- If it's a dog
 - Cushing's testing
 - Urine metanephrine:creatinine ratio
- If it's a cat
 - Aldosterone concentration
- If pet non clinical, mass <2-5 cm, noninvasive
 - Re-image 1-3 months initially?

SHOULD I STICK A NEEDLE IN IT?

SAFETY FINE-NEEDLE ASPIRATION OF ADRENAL LESIONS IN DOGS: 50 CASES

PEY ET AL, JVIM, 2020

- Retrospective—survey sent to boarded radiologists
- 40 did aspirates on adrenals, 98 did not
- 50 dogs, 58 lesions (23 pheos) were aspirated
- 4 complications
 - 3 hemorrhage (1 moderate)
 - 1 death from ARDS (dog also had lar par)
- Cytology conclusive in 73%
- 8 dogs → histopath
 - Cytology confirmed in 5
 - Identified cortex but miscalled adenoma/carcinoma

SO HOW DO YOU TREAT INCIDENTALOMAS?

- Depends on identity and invasiveness
- Remove carcinomas, pheos, and other hormonally active
 - Unless metastasis
- Invasion important
- Identity unknown?
 - >2 cm—more likely malignant; remove
 - May give phenoxybenzamine if concerned about pheo
 - **May give dex intra-op and do ACTH stim post-op if suspect carcinoma**
 - <2 cm, non-invasive
 - Monitor q1-3 months initially?

SO HOW DO YOU TREAT INCIDENTALOMAS?

- Identity known
 - Surgery (cure)
 - Cushing's, PHA, pheo, other carcinomas (unless mets)
 - Medical management if surgery not an option
 - Invasive, metastasis, unsuitable surgical candidate, \$\$\$
- Identity unknown?
 - >2 cm—more likely malignant; remove
 - May give phenoxybenzamine if concerned about pheo
 - May give dex intra-op and do ACTH stim post-op if suspect carcinoma
 - <2 cm, non-invasive
 - Monitor q1-3 months initially?

**I'M NOT DOING THAT SURGERY!
SHOULD I DO ANYTHING PENDING REFERRAL?**

PRE-SURGICAL MANAGEMENT

- Optimize condition based on clinical / lab findings
- Control blood-pressure
 - Cushing's – ACEi, amlodipine (dog), amlodipine, telmisartan (cat)
 - PHA – amlodipine
 - Pheo – phenoxybenzamine for 7-14 d before surgery!!!
- Treat hypokalemia (PHA)
 - K gluconate

HYPERTENSION: RENAL OR ENDOCRINE DISEASE IN $\geq 80\%$.

- **Cat**

CKD, hyperthyroidism, primary hyperaldosteronism, glomerulopathy, pheochromocytoma

Cats:

Amlodipine:

<200 mm Hg 0.625 mg SID

≥ 200 mm Hg 1.25 mg SID

Telmisartan:

2 mg/kg once daily

- **Dog**

CKD, AKI, Cushing's, diabetes mellitus, glomerulopathy, pheochromocytoma, hypothyroidism (rare)

Dogs:

Benazepril:

0.25-0.5 mg/kg SID

Amlodipine:

0.125-0.25 mg/kg SID

Telmisartan:

1-2 mg/kg SID

WHAT IF SURGERY ISN'T AN OPTION...?