Hemoabdomen:
Is it always a surgical disease?

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Introduction

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BE READY!
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• Have a designated emergency area
• Have it stocked with
  • IV catheters
  • IV fluids
  • Monitoring equipment
  • Oxygen (?)
Examination

- Pale MM
- Prolonged CRT
- Abnormal pulses
- Tachycardia
- Tachypnea
- Distended abdomen
- Abnormal mentation

Treatment / Diagnosis

MDB / EDB

- MBD / Big 4 / EDB
- FANCY TOYS?

Differentiating?

- Sepsis?
- Cardiogenic?
your EDB comes back...

- Hct: 45%
- TS: 4.8 g/dl
- Glucose: 108 mg/dl
- BUN 50-80 mg/dl
- Lactate 5.6 mmol/L

FAST Scan

FAST stands for
- Focused
- Assessment
- with Sonography
- for Trauma

The abdomen including the retroperitoneal space is scanned at four sites
1) Diaphragmatic-hepatic view
2) Cystocolic view
3) Splenorenal view
4) Hepatorenal view

Learning point- 1

Sensitivity Blind vs U/S

- Blind: 5-25 ml/kg of effusion *
- FAST scan 4ml/kg

* Crowe, 1984
Learning point - 2

4 Quadrant Abdominocentesis

X-Rays

Still no luck?
abdominocentesis

Effusion confusion?

- A cytological evaluation is important!
- Additional diagnostics on the fluid can also be performed:

Not a hemoabdomen?

- Measurement of potassium and creatinine if urinary bladder rupture is suspected
  - AFK+:PBK+ ratio > 1.4
  - and
  - AFCr:PBCr ratio > 2:1

Not a hemoabdomen?

- Bilirubin if gall bladder rupture is possible. Anything > in the abdomen is a concerning, but clinically it is often 2X that of the peripheral blood.
Not a hemoabdomen?

- Septic Abdomen
- Glucose - 20mg/dl < serum
- Lactate - 2.0mmol/L > serum

Classifications

- Coagulopathic
- Nontraumatic (spontaneous)
- Traumatic

Coagulopathy

- Rodenticide vs. other (owners Coumadin for example)
  - 2 year old dog that went missing for 4 days?
- Anticoagulant rodenticides are among the most common toxins ingested by dogs and are responsible for significant morbidity and mortality in dogs.

Rodenticides - MOA

Induce a profound coagulopathy secondary to the antagonism of hepatic vitamin K epoxide reductase.
Rodenticides – 1 of 2

These patients are often presented in 1 of 2 ways.

Learning point- 3

- PT vs PTT
- The actual value
  - Consumptive
  - Vs
  - Coagulopathic (primary)

Coagulopathy

- Although surface bleeding) may occur

- Bleeding into body cavities is more common.

Cullen’s sign
Rodenticides - Treatment

- Fluids
- Vit K
- FFP
- RBC

Not coagulopathic?

Spontaneous

- Some dogs may have a slightly more chronic history with intermittent bouts of weakness followed by recovery

Diagnostic Imaging?
**Ultrasound**

Personal experience with an abdominal ultrasound and interpretation for clients:

1) Solitary mass (spleen, liver, etc) that can be identified.
2) Multiple masses present (possibly not just on one organ).
3) No masses/lesions have been identified.

**Hemangiosarcoma**

- Survival times?
  - Surgery?
  - Surgery and Chemotherapy
  - No treatment?

**Ultrasound???

Does every patient need an ultrasound?

**Hemangiosarcoma**

- Surgical evaluation vs Medical Evaluation
Hemangiosarcoma

Traumatic Hemoabdomen

SORRY NO DATA FOUND

Evidence for cutting or not traumatic hemoabdomens

1) Traumatic hemoperitoneum in 28 cases: a retrospective review
   C M Mongil, K J Drobatz, J C Hendricks
   University of Pennsylvania, Philadelphia

2) Evaluation of vehicular trauma in dogs: 239 cases
   (January-December 2001).
   Elizabeth M Streeter, Elizabeth A Rozanski, Armelle de Laforcade-Buress, Lisa M Freeman, John E Rush
   Cummings School of Veterinary Medicine, Tufts University, North Grafton, MA
Many traumatic hemoabdomen cases can be managed with non-surgical measures.

Some of the variables that I look at in order to help me make management decisions are:

- Blood pressure
- Heart rate
- PCV and TP
- Lactate

Measuring intra-abdominal pressure
Urinary catheter
Pressures above 25cm H$_2$O are associated with decreased organ perfusion.
Evidence for cutting or not traumatic hemoabdomens

- Splenic rupture?
- Liver rupture
- Avulsed renal artery
- Other major artery


CONCLUSIONS: Nonoperative management is safe for hemodynamically stable patients with blunt hepatic injury, regardless of injury severity. There are fewer abdominal complications and less transfusions when compared with a matched cohort of operated patients.”

NON-Traumatic Hemoabdomen

Before rushing to surgery...

- Other diagnostics to consider once the patient is stable include:
  - A complete blood count
  - Chemistry screen
  - Coagulation screen
  - Blood type (and cross match if the patient has had a previous transfusion)
  - Urinalysis
Important Diagnostic

Blood typing?

- First time?
- Dea 1.1- on hand?
- Natural antibodies?
- Auto-transfusion?

Cats?

- Common? Rare?
- Diagnosis?
- Prognosis?
**Small vs large**

Do small breed dogs have a better prognosis?  
Different differentials?

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**Volume Replacement**

- Initial resuscitation often accompanies diagnosis
- Once diagnosed, this helps guide continued volume resuscitation.
- Options:
  - Whole blood vs. component therapy
  - Synthetic colloids, crystalloids (isotonic vs. hypertonic)

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**Shock!**

- Crystalloids or colloids - often the initial fluids for volume replacement.
- “Shock” dose of crystalloids in the dog is 90ml/kg and the 40–60 ml/kg in the cat.
- “Shock” dose of colloids in the dog is 5-10ml/kg and the 3-5 ml/kg in the cat.

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Shock!

- Reassessment of perfusion after administering the fluid bolus / volume
- What to do when the parameters improved?
- No improvement?
Abdominal Wrap

- Abdominal counter pressure (abdominal wrap) may help with hemostasis and control hemorrhage.
- Contraindications?

Slow and steady...

- Slow removal - craniodorsal aspect to start.
- This incremental approach can be continued until the wrap is completely removed.

Hypotensive Resuscitation

- Delayed hypotensive resuscitation has been recommended in people with traumatic hemoabdomen.

Cage Rest!

- Strict cage rest for 2–3 days and observed closely
- Prevent measures that can disrupt a tenuously "clinging" blood clot.
Summary

- Overall approach to the emergency patient with clinically significant abdominal hemorrhage includes:
  - Triage assessment
  - Confirming abdominal hemorrhage
  - Initial volume resuscitation
  - Measuring appropriate clinicopathologic parameters (PCV, TS, lactate, complete blood count, chemistry screen, coagulation profile, blood type, crossmatch, etc.).
  - Determining the TYPE / cause of hemoabdomen.
  - Surgery should be performed if medical stabilization is not achieved or surgical biopsy is necessary to confirm the diagnosis.

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Questions?

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