ER & ICU Pot Pourri
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Objectives
• Discuss published information
  – Journal Club
• Take away new information
  – Clinically relevant
  – Easy to incorporate into practice

Why is this important?
• Information overload exists
  – Remain current
  – Deliver better patient care
• Clinically relevant papers
• Various journals

Brady et al: Objective
• To determine whether plasma from a heparinized hematocrit tube placed on a urine dipstick would accurately reflect (positive or negative) urine ketone results in diabetic dogs and cats.


Brady et al: Design

- Prospective
- 37 dogs and 43 cats
  - private practice
  - client owned
- History or signs of hyperglycemia, glucosuria, diabetes mellitus
- Paired samples
  - Plasma dipstick compared to urine dipstick
  - Color chart by manufacturer
  - 2 observers

Brady et al: Results

- 4/80 animals discordant results
- Dogs:
  - 97% efficient
  - 96% sensitive
  - 100% specific
- Cats:
  - 93% efficient
  - 100% sensitive
  - 83% specific

Brady et al: Conclusions

- Plasma from hematocrit tubes can be clinically useful for detecting the presence or absence of ketonuria/ketosis in diabetic dogs and cats.

Smarick et al: Objective

- To determine incidence of and possible risk factors for catheter-associated UTIs among dogs in the ICU
- To compare results of bacterial culture of urine to catheter tip

Smarick et al: Design

- Prospective
- Aseptic standard protocol for urinary catheter placement and maintenance
- Daily urine cultures
- As available catheter tip cultures
- Sensitivity testing on isolates
Smarick et al: Results

- 4/39 developed UTI (10.3%)
- 85 dog-days
- 5 UTIs/100 dog-days
- Probability testing:
  - 94.9% day 1
  - 63.3% day 4

Smarick et al: Results

- Bacteria were susceptible
- Risk factors: minimal
- Culture tips
  - 8 positive (2 with & 6 without a UTI)
  - 25% pos. predictive value

Smarick et al: Conclusions

- Low risk for catheter-associated UTIs
- Catheter tip cultures not helpful
- Lower incidence than 2 previous studies
  - Reason for placement
  - Length of stay
  - Strict definition of UTI
- Sex has no role in UTI development

Drellich: Objective

- Review article
- How to
- Pathology
- Consequences
- Recommendations

IAP: How to

- Place and secure a Foley catheter into the urinary bladder
- Empty bladder
- Instill 1ml/kg saline
- Measure using manometer
  - just like CVP
IAP: Pathology

- Renal blood flow ↓ → oliguria
- Celiac and super. mes. art. blood flow ↓
- Hemorrhagic diarrhea
- Lactate
- Dysrhythmias
- Ventilatory impairment
- Cardiac output and stroke volume ↓

IAP: Recommendations

<table>
<thead>
<tr>
<th>Intraabdominal Pressure (cmH₂O)</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-20</td>
<td>Pursue underlying cause</td>
</tr>
<tr>
<td>20-35</td>
<td>Volume resuscitate and +/- decompress</td>
</tr>
<tr>
<td>&gt; 35</td>
<td>Surgery or abdominocentesis</td>
</tr>
</tbody>
</table>

Drellich: Conclusions

- Valuable monitoring parameter
- Controlled clinical studies needed

Silverstein et al: Objective

- To determine the continuous changes in blood volume in response to fluid administration using an in-line hematocrit monitor
Silverstein et al: Design

- Prospective
- 5 treatments, >1 week washout
- Physiologic measurements
- Changes in blood volume recorded
- Average blood volume vs. time, AUC

Silverstein et al: Conclusions

- Use any fluid to increase blood volume
- Hypertonic saline least effective at 30 min
- Study needed in ill population

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Platelet aggregation (5 min)</th>
<th>30 minutes</th>
<th>240 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.9% saline (1:3)</td>
<td>52 ± 1.5 HRP</td>
<td>50 ± 1.5 HRP/PEG</td>
<td>52 ± 1.5</td>
</tr>
<tr>
<td>10% saline (1:9)</td>
<td>52 ± 1.5 HRP</td>
<td>50 ± 1.5 HRP/PEG</td>
<td>52 ± 1.5</td>
</tr>
<tr>
<td>Hextend®</td>
<td>52 ± 1.5 HRP</td>
<td>50 ± 1.5 HRP/PEG</td>
<td>52 ± 1.5</td>
</tr>
<tr>
<td>Hetastarch®</td>
<td>52 ± 1.5 HRP</td>
<td>50 ± 1.5 HRP/PEG</td>
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</tr>
</tbody>
</table>

Weirenga et al: Objective

- To evaluate the effect of 2 hydroxyethyl starch preparations on canine platelet function

Weirenga et al: Design

- *In vitro* laboratory study
- 10 healthy dogs
- Hextend®, Hetastarch® & saline
  - 1:3 dilution ~ 30ml/kg dose
  - 1:9 dilution ~ 10ml/kg dose
- Measure closure times (PFA-100®)

In vitro comparison of the effects of two forms of hydroxyethyl starch solutions on platelet function in dogs

Janelle R. Weirenga, DVM, Karl E. Jander, DVM, Steve C. Iodkins, DVM, MS; Fem Tullis, VMD, PhD

Weirenga et al: Results

![Graph showing closure times for different solutions at 1:3 dilution.]

Weirenga et al: Conclusions

- All 3 solutions prolong closure times at 1:3 dilution
- HES were not different at any dilution
  - No difference on platelet function found
- Hextend different than saline at 1:3
  - More than a dilutional effect

Hot off the presses…

- That was in vivo; how about in vivo?

Hofmeister et al: Objective

- To document the knowledge base of veterinary students, interns, specialists, and general practitioners regarding pulse oximetry
- To identify the common uses of pulse oximetry in veterinary practices

Hofmeister et al: Design

- Questionnaire
  - Knowledge/understanding of pulse ox.
- Residents and board-certified
  - ACVA & ACVECC (control)
- General practitioners at CE seminars
- Students in anesthesiology rotation

Research and Education Reports

Evaluating Veterinarians’ and Veterinary Students’ Knowledge and Clinical Use of Pulse Oximetry

[Details about the research and education report, including authors and publication information.]

Hofmeister et al: Results

- Residents/specialists – 69%
- Senior students – 46%
- General practitioners – 34%

Hofmeister et al: Results

- Percent who said they received training
  - Senior students = 21%
  - General practitioners = 15%
  - They scored better than non-trained
- GPs did not use it on anesthetized critical patients

Hofmeister et al: Conclusions

- Veterinarians have poor understanding:
  - how the pulse oximeter works
  - the information it provides
  - how best to apply its info to patients
- Not used for the most benefit
- Better training needed