Bi-cavitary effusion in a cat

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Auburn University
Case # 56
• **16 yr-old F/S DSH Manx Cat**

• **Presented:** June 7\(^{th}\) 2011
  – Labored breathing, lethargy, and anorexia
  – Up to date on vaccinations, heartworm and flea prevention

• **Previous Diagnostics:**
  – Multiple CBCs at referring veterinarian

• **Physical Exam:**
  – Unkempt hair coat and dehydrated
  – Respiration rate 50/min
  – Grade II/VI heart murmur
  – Possible abdominal mass

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Diagnostic Imaging

• Echocardiogram
  – No significant cardiac abnormalities
  – Moderate amount of pleural fluid

• Abdominal Ultrasound
  – Mild amount of abdominal effusion
  – Multiple abdominal masses
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<tbody>
<tr>
<td>Hct (%)</td>
<td>47.1</td>
<td>44</td>
<td>30 - 45</td>
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<tr>
<td>Platelets (/uL)</td>
<td>346,000</td>
<td>290,000</td>
<td>175,000 – 600,000</td>
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<td>WBC (/uL)</td>
<td>71,960</td>
<td>68,350</td>
<td>5,500 – 19,500</td>
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<tr>
<td>Neutrophils (/uL)</td>
<td>22,300</td>
<td>25,710</td>
<td>2,500 - 12,500</td>
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<tr>
<td>Lymphocytes (/uL)</td>
<td>1,070</td>
<td>750</td>
<td>400 – 6,800</td>
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<tr>
<td>Monocytes (/uL)</td>
<td>3,370</td>
<td>2,700</td>
<td>150 – 1,700</td>
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<tr>
<td>Eosinophils (/uL)</td>
<td>45,130</td>
<td>38,770</td>
<td>100 - 790</td>
</tr>
<tr>
<td>Basophils (/uL)</td>
<td>1,500</td>
<td>430</td>
<td>0 – 100</td>
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WBC morphology from 5/20/11: Most of the eosinophils have mature nuclei. A few band eosinophils are also seen.
Pleural Effusion
• **Interpretation:**
  Marked eosinophilic inflammation with presence of macrophages

• **Diagnosis:**
  Probable hypereosinophilic syndrome (HES) or eosinophilic leukemia
Eosinophilia

- Prevalence
  - Based on geographic location
- More common in cats
- Often transient
- Persistent and marked eosinophilia is uncommon
  - Present for $\geq$ 6 months
  - Cell counts $\geq$ 1,500 cells/μL
Classification of Eosinophilic Disorders

• **Primary (clonal)**
  – Eosinophilic leukemia
  – Hypereosinophilic syndrome

• **Secondary (reactive)**
  – Reaction to an allergen
  – Systemic parasitic diseases
  – Drugs
  – Paraneoplastic

• **Lymphocyte variant hypereosinophilia**
Primary Eosinophilia

• Hypereosinophilic syndrome (HES)
  – Eosinophilia ≥ 1,500/uL
  – Persisting for ≥ 6 months
  – Clinical signs indicating organ involvement

• Eosinophilic leukemia
  – Persistent eosinophilia with more bands and metamyelocytes
  – Occasional dysgranulopoiesis
  – Evidence of BM involvement
Primary Eosinophilia – People (WHO 2008)

1. Myeloid and lymphoid neoplasms with eosinophils & presence of chromosomal abnormality
   - FIP1L1 - PDGFRA fusion gene
   - ETV6 – PDGFRB fusion gene or rearrangement of PDGFRB
   - FGFR1 rearrangement

2. Chronic eosinophilic leukemia, not otherwise specified

3. Idiopathic hypereosinophilic syndrome (HES)


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<table>
<thead>
<tr>
<th>Clinical Feature</th>
<th>HES</th>
<th>Eosinophilic Leukemia</th>
<th>Our Patient</th>
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</thead>
<tbody>
<tr>
<td>Blasts in peripheral blood</td>
<td>• Rarely reported</td>
<td>• Typically bands and metamyelocytes are present</td>
<td>• Mostly mature</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• Few band eosinophils</td>
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<tr>
<td>Morphologic abnormalities</td>
<td>No</td>
<td>• Occasional dysgranulopoeisis</td>
<td>• None seen</td>
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<tr>
<td>High M:E ratio</td>
<td>• Sometimes (Range- 1:1 -3.7:1)</td>
<td>• Yes; &gt;10:1 (Range - 13:1-22:1)</td>
<td>• N/A</td>
</tr>
<tr>
<td>Degree of peripheral eosinophilia</td>
<td>• 3,200 - 130,000/uL</td>
<td>• ≥ 1,500/uL</td>
<td>• 38,000 to 45,000/uL</td>
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<td>Anemia</td>
<td>• Yes, mild (Mean 34%)</td>
<td>• Yes, mild to moderate (Mean 25.4%)</td>
<td>• None</td>
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<tr>
<td>Other CBC abnormalities</td>
<td>• Not typical</td>
<td>• +/- thrombocytopenia</td>
<td>• Mild neutrophilia</td>
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Conclusion & Additional Diagnostic Tests

• Additional diagnostic tests:
  – Screening for causes of secondary eosinophilia
  – Bone marrow evaluation

• Prognosis for both eosinophilic leukemia and HES is grave (<6 months survival)

• Conclusion: Patient was euthanized due to respiratory distress 2 weeks after presentation
Questions??

Thank you

• Dr. Lindsay Boozer and Cindy at Cobb Veterinary Internal Medicine Specialists
• Auburn University ClinPath Staff
• All AU Residents
• Drs. Welles and Christopherson

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