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Pleural effusion from a cat

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13-year-old, female spayed, DSH cat

✓ Presented to rDVM for decreased appetite and breathing difficulty
✓ The cat was obese and diabetic
✓ Well controlled with 4.5 units of insulin twice a day
Physical examination

✓ Increased and harsh lung sounds
✓ Moderate abdominal respiratory component
✓ Pleural effusion seen on thoracic radiographs
✓ 125 mL removed from the left side; 60 mL from the right side
✓ An aliquot of the pleural fluid was submitted to the Clinical Pathology Laboratory, CVM, Auburn University
## Pleural fluid analysis

<table>
<thead>
<tr>
<th>Test</th>
<th>Patient’s values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>white</td>
</tr>
<tr>
<td>Transparency</td>
<td>opaque</td>
</tr>
<tr>
<td>Nucleated cells (/μL)</td>
<td>9,460</td>
</tr>
<tr>
<td>RBC (/μL)</td>
<td>20,000</td>
</tr>
<tr>
<td>Total protein (g/dL)</td>
<td>6.6</td>
</tr>
<tr>
<td>Specific gravity</td>
<td>1.038</td>
</tr>
</tbody>
</table>
Pleural fluid: direct smear

~ 80% lymphocytes
Final interpretation

Chylous effusion

Additional tests:

✓ Triglyceride concentration in the fluid: 2,128 mg/dL

✓ Cholesterol concentration in the fluid: 126 mg/dL
Chylous effusions

Thoracic organs

Jugular veins

Vena cava

Thoracic duct

Cisterna chyli

Intestine
Mechanisms and causes of chylos effusions

- Direct damage uncommon in animals

- Decreased lymph outflow at the lymphaticovenous anastomosis
  - Increased hydraulic pressure in lymphatic vessels

- Infectious/Inflammation
- Lymphangiectasia
- Venous thrombosis
- Lung lobe torsion
- Diaphragmatic hernia
- Neoplasia
- Cardiac disease (right heart failure, constrictive pericarditis, cardiomyopathy)
- Idiopathic

More frequent
Chylomicrons: scattering of light

✓ Milky appearance
✓ Falsely increased total protein concentrations (refractometer)

Total protein 6.6 g/dL
Specific gravity 1.038
Chylous effusion: short duration vs long standing
Chylous effusion: diagnosis

Diagnosis:

✓ Triglyceride concentration in the fluid > 100 mg/dL
✓ Triglyceride concentration in the fluid > than in serum
✓ Cholesterol-triglyceride concentration ratio in the fluid < 1

In this patient: right-sided heart mass
Medical Treatment

- First choice for idiopathic (may resolve over time)
- Decrease the formation of chyle
  - low-fat diets
  - dietary supplementation with medium chain triglycerides
  - rutin
  - corticosteroids
  - diuretics
- Remove the effusion from the thorax
  - relieve respiratory distress
  - avoid restrictive fibrosing pleuritis and pericarditis
Surgical Treatment

☑ Recommended when medical tx is unsuccessful or impractical
☑ Both ligation of thoracic duct and branches + pericardiectomy
Acknowledgements

Clin Path Lab ladies