Peripheral monocytosis in a dog

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Case introduction

Signalment: 6.5-year-old, Yorkshire Terrier, female spayed

History: 1 week of decreasing appetite that progressed to complete anorexia

Physical examination:
• Lethargic
• Mildly febrile (102.8° F)
• Enlarged left mandibular lymph node
• Pale mucous membranes
Case introduction

Hemogram results:

- Leukocytosis 28.9 K/uL (RI 6-17 K/uL)
  - Marked neutropenia 0.3 K/uL (RI 3-11.5 K/uL)
  - Marked monocytosis 24.9 K/uL (RI 0.1-0.8 K/uL)

- Macrocytic hypochromic marked anemia. Hct 19% (RI 37-55%)

- Marked thrombocytopenia 26 K/uL (RI 164-510 K/uL)

Chemistry profile:

- Mild hypoglycemia
- Mild hypoproteinemia with marked hypoalbuminemia
- Moderate increased liver enzymes (ALT, ALP)
- Mild hyperbilirubinemia
Cytological findings- Blood film review
Immunophenotyping - Flow cytometry

- Less than 3% leukocytes express CD34
- 76% of leukocytes express CD14
- 86% of leukocytes express CD11C
**Immunocytochemistry stain**

- **Positive:**
  - BLA.36

- **Negative:**
  - CD14
  - MPO
  - CD79a

BLA.36 ICC stain. 100X.
Cytochemistry stain

Chloroacetate esterase. 100X

Leukocyte alkaline phosphatase. 100X.

Naphthyl butyrate esterase. 100X.

Negative:
- Peroxidase
- Sudan Black B

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Core bone marrow biopsy
Immunohistochemistry stains

Rare cells positive for CD3

About 30-40% of cells positive for lysozyme
## Summarize cytochemistry and immunophenotyping

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<th>Flow cytometry</th>
<th>ICC</th>
<th>Cytochemistry</th>
<th>Immunohistochemistry (Bone marrow)</th>
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<td>Lysozyme</td>
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Findings support mature monocyte lineage
Differentials:

• Myelodysplastic disease

• Chronic monocytic leukemia
  – Less than 30% blasts in the bone marrow
  – Dysplasia that is absent or not prominent
  – Increased peripheral monocytic count
Chronic myeloid leukemia (CML)

- Uncommon in dogs
- Common clinical signs include lethargy, inappetence, leukocytosis, anemia, pyrexia, splenomegaly and thrombocytopenia.

- Dogs with myeloid leukemia, similar mutation has been identified. “Raleigh chromosome”

- Human with CML, Philadelphia chromosome translocation, is found. Causing BCL-ABL fusion protein → causes increased tyrosin kinase production

- Treatment with tyrosine kinase inhibitors might lead to decrease proliferation of the neoplastic cells.
Case outcome:

• Owners elected euthanasia two weeks post presentation, as no improvement was seen

• Genetic mutations were not evaluated
Acknowledgements

- Flow cytometry lab- Kansas State University- Dr. Wilkerson
- Dr. Rose E. Raskin
- Clinical pathology lab- Kansas State university
- Histopathology lab- Kansas State University- Dr. Jamie Hanningson
- Dr. Peter F. Moore.
Questions?