Cytological Diagnosis of Hematopoietic tumor

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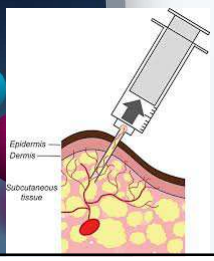
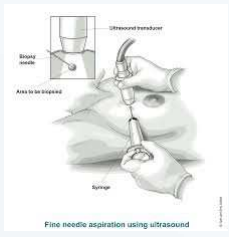
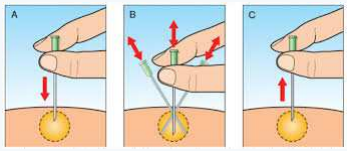
- How can cytology be of value to me in practice?
  - Cytology can be of value in determining a diagnosis, a type of process, and/ or possible differential diagnoses.
  - It may be of benefit for prognosis, treatment planning (including surgical or medical approach), and client education.
  - It may also be of benefit for monitoring the progression of conditions or determining response to treatment.

- How should I collect cytology specimens?
  - Fine needle aspirate
  - Ultra-fine needle sampling without aspiration
  - Scraping
  - Imprint
  - Swab
  - Washing or lavage
  - Aspiration of body fluids



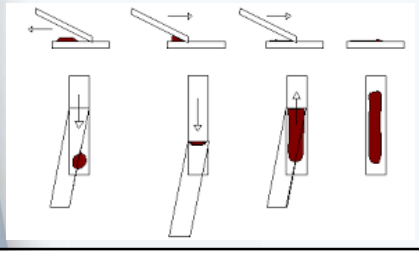




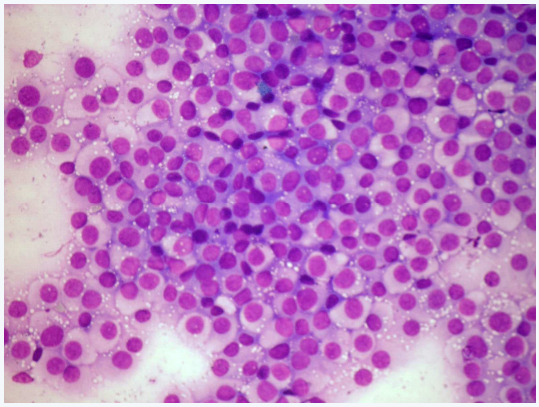
How should I go about evaluating a cytology smear? Is the cellularity sufficient for this type of specimen and method of collection?

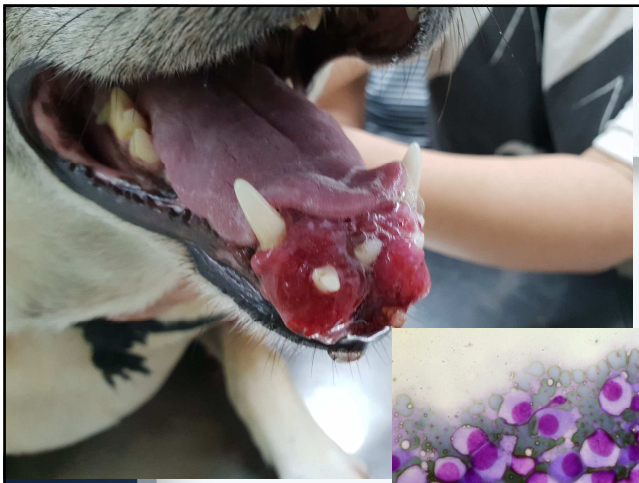
What type of process does this likely represent (i.e. inflammatory, noninflammatory, proliferative, non-neoplastic, neoplastic, benign, or malignant)?

If neoplastic, can the cell type of origin be identified specifically or to a particular group or category?

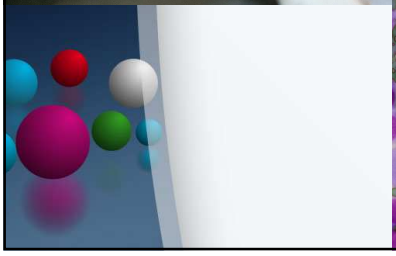


Case 1: A 2-year-old mixed-breed dog presented with a history of a cauliflowerlike mass on the dorsal and ventral side of the penis





Case 2: A 3-year-old mixed-breed, male dog presented with a history of a multilobulated mass on the mandibular symphysis around canine incisor.



- Describe the cells shown in the photomicrograph

Cytology showed a monomorphic population of discrete round cells; moderate amounts of granular basophilic cytoplasm, & variable numbers of clear distinct intracytoplasmic vacuoles, occasionally arranged along the cytoplasmic boundary.

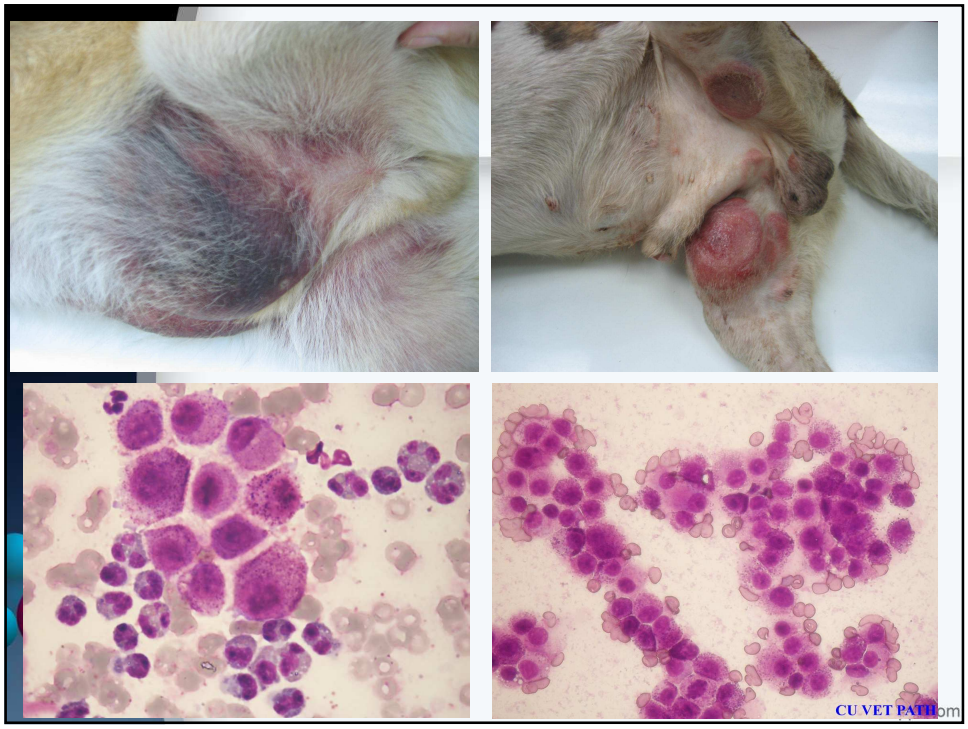
Nuclei are round, central to paracentral, with coarse chromatin and usually a single, prominent, round nucleolus. Both lymphomatoid & plasmacytoid cell types were found

What is your diagnosis based on these cytologic findings?

Dx: Genital Canine Transmissible Venereal tumor (Case 1)

Extragenital Canine Transmissible Venereal tumor (Case 2)

Case 3: A 2-year-old mixed-breed dog presented with a multilobulated hemorrhagic, ulcerative mass at right stifle joint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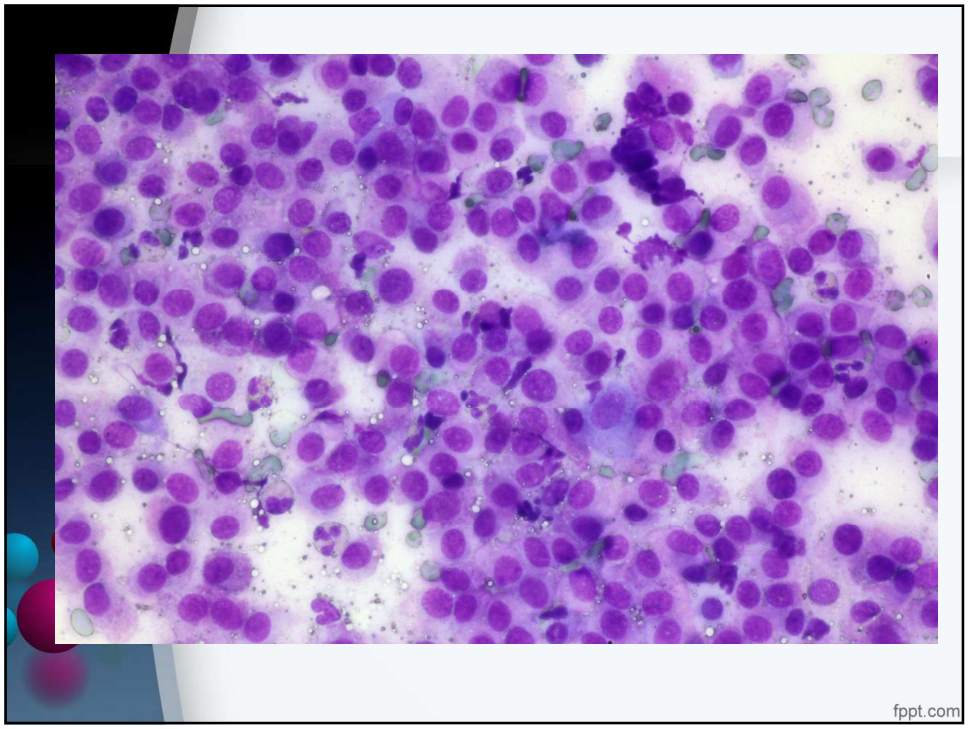
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- Describe the cytologic findings

  There is a clear background with few to moderate extracellular metachromatic (magenta) granules.

  A small group of well-granulated mast cells is noted. Mast cells have moderate amounts of cytoplasm, with distinct borders, filled with metachromatic granules that partially obscure the nuclei. Some cells contained vacuolated cytoplasm due to degranulation.

  Nuclei were large round, centrally to paracentrally located and anisocytosis. Others were eosinophils.

- What is your interpretation?

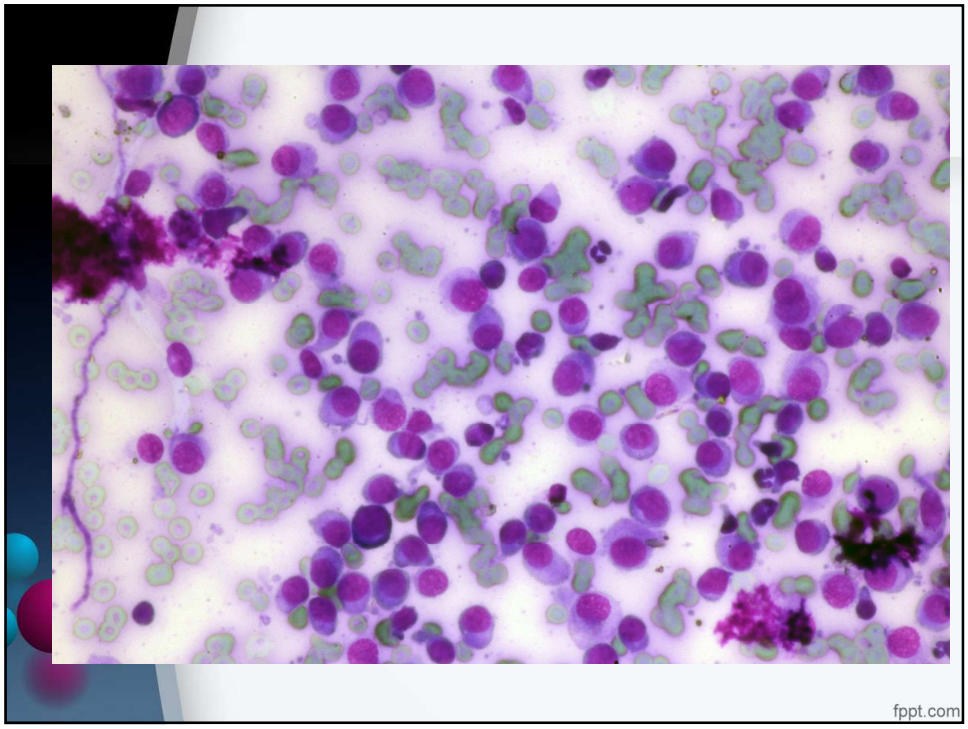
  Mast cell tumor (MCT)

✓ MCTs are cytological categorized into; low & high grade

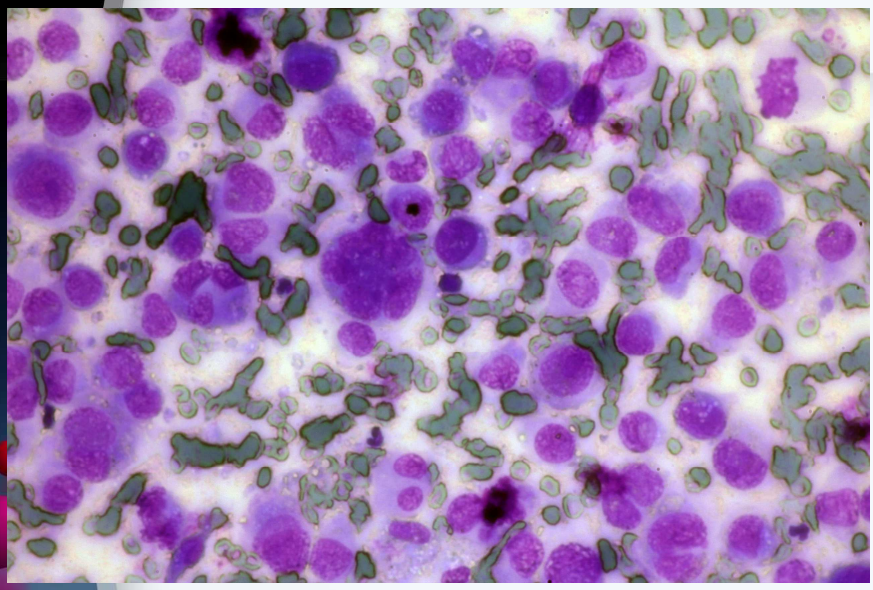
✓ MCTs are considered high grade if poor granulation is identified or if there are two of the following cytologic features: presence of any mitotic figures, anisokaryosis >50%, bi/multinucleation, or nuclear pleomorphism.

Case 4 A 8-year-old male shih tzu presented with fast growing, multiple raised dome- shaped nodules on the inguinal skin The nodule was varied in size, 1-2 cm, red, firm & well-circumscribed.

Case 5 A 1-year-old male beagle was referred for evaluation of a fast growing, nodule on the cervical The nodule was 1x1 cm, firm & well-circumscribed.



Case 6 A 10-year-old male beagle presented with fast growing, diffuse raised papules, erythematous macules and patches on the inguinal skin.



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Describe the findings:
The aspirate harvested a monomorphic population of round discrete cells in RBCs background. These cells have moderate amounts of lightly basophilic cytoplasm; nuclei are round, central to paracentrally located, with a finely stippled chromatin pattern. Nucleoli are absent or poorly visible, small, and round. Anisocytosis and anisokaryosis are mild (case 4, 5). Evidence of malignancy; binucleated cells, multinucleated cells with severe anisocytosis were noted (case 6).

- What is your interpretation?
  Cutaneous histiocytoma (Case 4, 5)
  Malignant cutaneous histiocytoma (Case 6)
  This originates from Langerhans cells, which are epithelial dendritic cells with an antigen-presenting function
  Histiocytoma are expected to be positive for E-cadherin, CD1a, CD11a/CD11c/CD18, CD44, CD45, and MHC class II.

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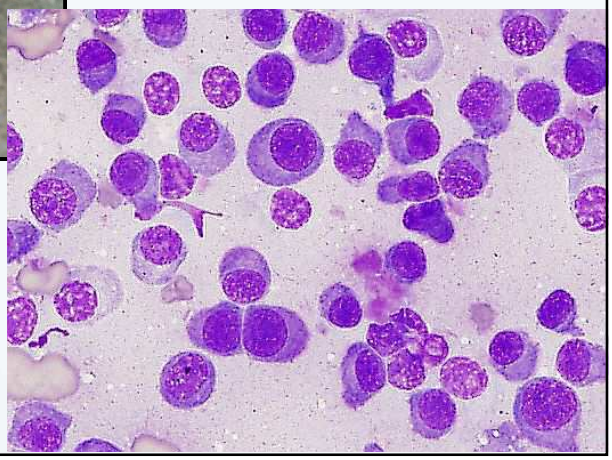
Case 7 A 6-year-old male French bulldog presented with slowly growing small cutaneous nodule on the right interdigit region



Describe the findings:

The aspirate harvested a monomorphic population of round cells in a clear to mildly granular background, with rare RBCs. The round cells have moderate amounts of blue cytoplasm, occasionally showing a clear perinuclear halo, and discrete cytoplasmic borders.

Nuclei are round, eccentrically located, with coarsely clumped chromatin pattern, and some nuclei can be seen to contain small round nucleoli. Anisocytosis and anisokaryosis are moderate; rare binucleated cells are seen.

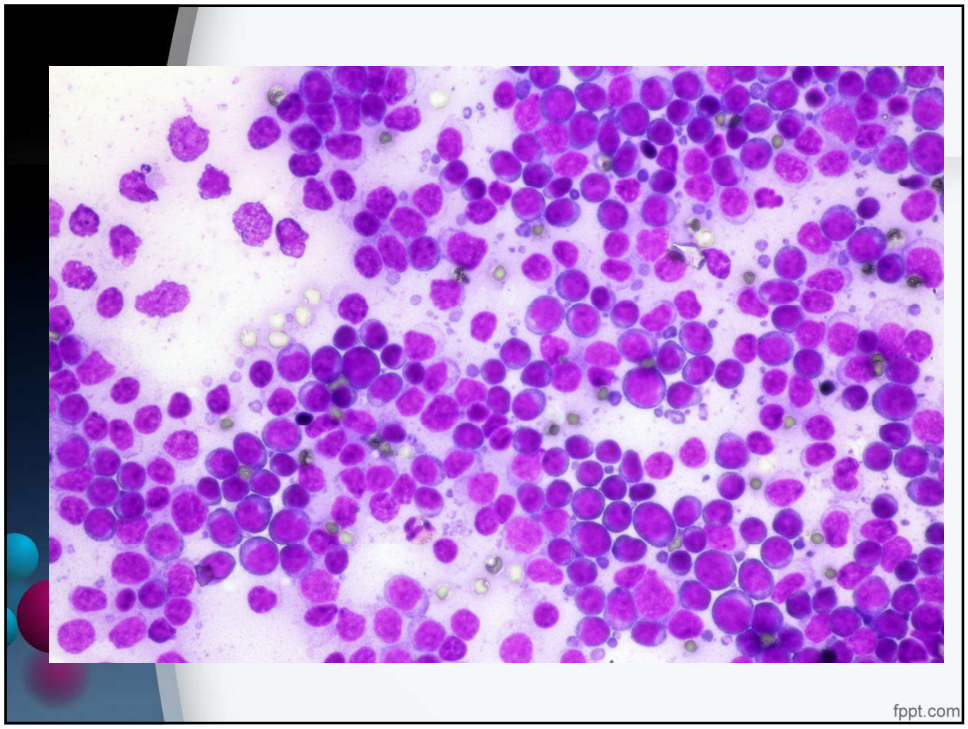
- What is your interpretation?

Plasmacytoma.

This is a benign plasma cell tumor of the skin observed in dogs and, only rarely, in cats.

Plasma cells express markers typical of B lymphoid cells, CD79a, lambda chain, & MUM1

An 8-year-old female Schnauzer presented with inguinal swelling, enlarged superficial inguinal lymph nodes and hematology revealed leukocytosis and lymphocytosis.



Describe the cells:
The background is clear with frequent lymphoglandular bodies and a few bare nuclei.
There is a main population of pleomorphic, small & medium lymphoid cells. These have scarce, deeply blue cytoplasm and a clear perinuclear halo.
Nuclei are round, large in size (diameter 1-2 RBCs), slightly angular or elongated, small, and eccentrically located, with condensed chromatin and indistinct nucleoli.

- What is your interpretation?
  Low-grade lymphoma
  Lymphoma: low vs high grade
  T-cell vs B-cell lineage
  Histologic feature