Finn Pathologists
The Veterinary Laboratory

Terms & Definitions

Definitions:

- Hypertrophy - *increased size/function.*
- Hyperplasia - *increased cell numbers.*
- Neoplasia - *independent growth and multiplication.*
- Metaplasia - *change in mature cell type - a reversible process - often an adaptive replacement.*
- Dysplasia - *irregular, atypical, proliferative cell response - reversible.*
- Anaplasia - *lack of differentiation.*
- Chromatin pattern - *microscopic appearance of nuclear chromatin - coarser chromatin usually indicates malignancy.*

Consider the number of cells obtained and the cell quality.
Poor cell preservation reduces accuracy of any interpretation!

Identify the cell types present and divide them into groups based on their morphology.

- Structural components of the tissue:
  Epithelial
  Mesenchymal (spindle cell vs. round)
  Melanocyte
- Identify any cells not normally present within the tissue being examined into:
  Inflammatory / repair
  Neoplastic
- If any neoplastic cells are present, what cell line are they most like? Remember that it is not often possible to identify the origin of anaplastic cells on the basis of morphology.

Cell types:

Epithelial
Mesenchymal

Round cell
Melanocyte

Cellular changes associated with neoplasia:

1. Marked variation in cell size and shape
2. Marked variation in nuclear size and shape
3. Nuclear atypia
4. Coarse chromatin
5. Abnormal mitoses
6. Nuclear moulding

Cells associated with inflammation and healing:
Neutrophils, eosinophils, macrophages/histocytes, lymphocytes, plasma cells, multinucleate giant cells.

Cells associated with repair / healing:
Inflammatory cells, fibroblasts, myofibroblasts and endothelial cells.

Combine all of the information to arrive at a specific or tentative diagnosis and then perform further tests or prescribe treatment.

References:
Cowell RL and Tyler RD (1989) Diagnostic cytology of the dog and cat. American Veterinary Publishers, Inc. Goleta, California USA.