

## HISTOMORPHOLOGICAL DESCRIPTION--TECHNIQUE

POLA--1990  
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(Modification of 1973 outline by Garrett S. Dill, Jr., DVM and James B. Moe, DVM, PhD)

### NEOPLASMS

#### I. General.

Describe from "big to little."

Describe neoplasm first--then briefly describe other changes.

Use concise, specific terms. Avoid nonspecific words such as "associated with."

State size whenever possible--is very powerful descriptor.

#### II. Organ. (Be brief. If unsure of organ, succinctly describe it and then give an interpretation.)

##### A. Subgross (1 sentence).

1. Must state location, shape, size.

2. Usually state if encapsulated or not and how well demarcated.

3. Use "expansile" or "fingering into" as needed.

##### B. Pattern(s) of cells within the mass and type of stroma (1 sentence).

1. Sheets, lobules, streams, bundles, cords, islands, nests, cysts, acini, whorls, palisades.

2. Modify pattern description with adjectives such as closely packed, loosely arranged, widely spaced.

3. Stroma described as fibrous, fibrovascular, avascular stroma, and so forth.

##### C. Cytologic features (1-2 sentences).

1. Compactness of cells (loosely arranged, closely packed, widely separated).

2. Shape (round, spindled, oval, cuboidal, columnar, polygonal, pleomorphic).
  3. Size (microns when appropriate).
  4. Cell borders (distinctiveness).
  5. Cytoplasm.
    - a. Amount (scant, moderate amount, abundant).
    - b. Color (eosinophilic, acidophilic, basophilic, amphophilic, pink, blue). (Modify with faint, bright, deep.)
    - c. Character (homogeneous, fibrillar, granular).
  6. Nucleus.
    - a. Shape (round, oval, elongate).
    - b. Location in cell (central, paracentral, eccentric).
    - c. Chromatin staining (hyperchromatic, euchromatic, hypochromatic).
    - d. Chromatin distribution (vesicular, finely clumped, clumped, coarsely clumped, finely stippled, reticular, marginated, chromatinic rim).
  7. Nucleolus.
    - a. Number.
    - b. Shape.
    - c. Color.
    - d. Distribution in nucleus.
- D. Unique features (1 sentence).
1. Multinucleated cells.
  2. Variation in cells.
  3. Matrix between cells.
- E. Mitotic activity (1 sentence).
1. Mitoses are \_\_\_/\_\_\_ hpf.
  2. Mitoses range from \_\_\_ to \_\_\_/\_\_\_ hpf, averaging \_\_\_/\_\_\_ hpf.

- 3. Bizarre mitoses.
- F. Evidence of malignancy (1 sentence).
  - Vascular invasion.
  - Capsular invasion.
  - Necrosis (type when appropriate).
  - Hemorrhage.
- G. Miscellaneous observations not associated directly with neoplasm (1 sentence).
  - Inflammation.
  - Ulceration.
  - Hemorrhage.
  - Mineralization.

### NON-NEOPLASTIC LESIONS

- I. Organ. (One word. If unsure of organ succinctly describe it and then give an interpretation.)
- II. Basic goal is to describe "what it is," "where it is," and "how bad it is."
- III. Location, distribution and size (1 sentence).
  - A. Of most important changes first.
  - B. Use numbers when you can.
- IV. Cellular components (1 sentence).
  - A. List all cell types seen in order of prevalence (relative numbers to each other).
 

Example: Predominantly PMNs with lesser numbers of macrophages, some lymphocytes, a few plasma cells, occasional eosinophils, and rarely a Langhans cell.
  - B. Describe cells directly, don't say "cellular infiltrate characterized by" or "mononuclear cell infiltrate."
- V. Etiology (1 sentence).
  - A. Location.
  - B. Size and shape of agent and other unique features.
  - C. Interpretation (bacilli, cocci, protozoa, fungi, nematode, trematode).
  - D. Inclusion bodies (INIB, ICIB, eosinophilic, basophilic, round, size).

DEGREES OF SEVERITY

Minimal  
Mild  
Moderate  
Marked  
Severe

## HISTOMORPHOLOGICAL DESCRIPTION--EXAMPLES

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SLIDE #1806399: Tissue from a canine.

### MICROSCOPIC DESCRIPTION (17 points):

Mammary gland/skin with adnexa. Within the dermis and subcutis is an oval, 1.9 x 0.8 cm, well-demarcated, partially-encapsulated hypercellular mass partially located within a deep ectatic duct. It consists of closely-spaced variably-sized lobules separated by modest dense fibrous tissue or epithelial-lined clefts continuous with the deep duct; the lobules are subdivided into irregularly-shaped, variably-sized acini and tubules (some with papillary structures) lined by 1-10 layers of cells. The cells mostly are large columnar (some are polygonal), usually have indistinct cell borders, and contain abundant eosinophilic fibrillar to granular cytoplasm with oval to elongate nuclei having finely clumped/stippled and thinly marginated chromatin and 1-4 round often-eccentric small nucleoli. Mitoses are 0-5/hpf, averaging 2/hpf. Acini/tubules contain abundant pink secretion with some sloughed cells, coagulation necrosis, cell debris, PMNs and squamous metaplasia (also in duct). The stroma contains small areas of myoepithelial-cell-proliferation and small aggregates of lymphocytes and plasma cells (the latter are also in the capsule). In the superficial dermis are some areas of PMNs, lymphocytes, plasma cells, and macrophages and there are several small epidermal/follicular cysts.

### MORPHOLOGICAL DIAGNOSIS(ES) (3 points):

Adenoma, complex, tubulopapillary, intraductal, mammary gland, canine.

SLIDE #1647279: Tissue from a monkey.

MICROSCOPIC DESCRIPTION (16 points):

Lung. Randomly, some bronchioles are ectatic (up to 4X) and have walls thickened (up to 3X) by increased fibrous tissue and smooth muscle and by numerous macrophages and PMNs, many plasma cells, some lymphocytes, occasional eosinophils, and rare Langhans cells, which together also extend radially into adjacent septa and alveoli that are often compressed circumferentially; most bronchiolar epithelium is either denuded, flattened, hyperplastic (2-5 layers) or rarely undergoing squamous metaplasia and is often covered by a variably thick layer of PMNs with some sloughed epithelial cells and macrophages. Several of these bronchioles contain a round (350-400  $\mu$ ) to oval parasite with appendages, a chitinous exoskeleton, coelom, brain, gut, and striated muscle (mite). Many peribronchiolar macrophages, and random aggregates of them elsewhere, contain abundant yellow-brown variably coarse granules and birefringent spicules (mite pigment). Around many airways, and randomly elsewhere, are lymphoid nodules, mild congestion and hemorrhage, scattered PMNs and foamy macrophages, and mild alveolar distention or collapse. The pleura multifocally has some flattened villiform fibrous tags (containing a few chronic inflammatory cells) lined by hypertrophied/hyperplastic mesothelial cells.

MORPHOLOGICAL DIAGNOSIS(ES) (3 points):

Bronchiolitis, granulomatous, multifocal, moderate, with moderate bronchiolectasis, smooth muscle hypertrophy and intraluminal mites.

Pleuritis, chronic, multifocal, mild, lung.

CAUSE(S) (1 point):

Pneumonyssus simicola

SLIDE #1933070: Tissue from a canine (circled tissue).

MICROSCOPIC DESCRIPTION (17 points):

Hairy skin. Immediately subjacent to the elevated epidermis, extending deep into the subcutis, is a dome-shaped ellipsoidal 1.0 x 0.5 cm unencapsulated poorly-demarcated cellular mass. It consists of a sheet of widely-separated loosely-arranged cells coursing between and separating preexistent stroma. The cells are irregularly round to polygonal, 15-20  $\mu$ , with distinct cell borders, and have abundant or scant eosinophilic fibrillar often-vacuolated cytoplasm and contain large round-to-oval-to-oblong nuclei that often are indented, cleaved, or wrinkled and which contain evenly dispersed finely-stippled chromatin and usually one small nucleolus. Rare bi- and trinucleate cells are present. Mitoses are rare, < 1/10 hpf. Between these cells are manyfold (10-20X) lymphocytes with some macrophages and a few plasma cells. Many macrophages are large and vacuolated and contain phagocytosed cells/cell debris. The deep subcutis contains abundant scattered macrophages and PMNs and the epidermis is focally ulcerated and necrotic and replaced by a thick dense serofibrinous exudate with abundant enmeshed PMNs, cell debris, and RBCs.

MORPHOLOGICAL DIAGNOSIS(ES) (3 points):

Canine cutaneous histiocytoma, skin canine.

SLIDE #1515859: Tissue from a sea lion.

MICROSCOPIC DESCRIPTION (16 points):

Liver. Randomly, there are some irregularly-round variably-sized (up to 2 mm) fairly well-demarcated foci of varying combinations of primarily macrophages (often enlarged with clear cytoplasm), many PMNs (often degenerate/necrotic), some plasma cells and lymphocytes, and occasional indistinct multinucleated (2-5) foreign-body giant cells. Adjacent hepatocytes often are slightly compressed circumferentially. Within some foci are one or several round, 15-60  $\mu$ , structures with 1-2  $\mu$  double-contoured clear walls usually filled with basophilic fibrillar vacuolated material (spherules); several contain many small round 2-4  $\mu$  endospores. Portal areas diffusely contain mildly increased fibrous tissue (some hyalinized) with some lymphocytes and plasma cells and a few macrophages. Randomly, many central veins are rimmed by 5-20  $\mu$  of hyalinized fibrous tissue. Abundant finely granular green/brown pigment (bile) diffusely is within hepatocytes and globules of it are in many Kupffer cells. Small aggregates of hepatocytes have moderate fatty infiltration, sometimes with a blue color (mineral?).

MORPHOLOGICAL DIAGNOSIS(ES) (3 points):

Hepatitis, granulomatous, multifocal, mild, with fungal spherules, liver, sea lion.

CAUSE(S) (1 point):

Coccidioides immitis

SLIDE #81-978-9: Tissue from a monkey.

MICROSCOPIC DESCRIPTION (17 points):

Kidney. Most glomeruli have one or more of the following: slight to moderate hypercellularity; increased tuft size obliterating Bowman's space; synechiation; hypertrophied/hyperplastic parietal epithelium; increased mesangial matrix; dense small hyalinized tufts; thickened Bowman's membrane; periglomerular sclerosis; and small tufts with enlarged Bowman's spaces which sometimes contain pink vacuolated homogeneous material. The cortex uniformly contains numerous random, irregular interconnecting streaks, cords and islands of predominantly eosinophils with some lymphocytes and macrophages and occasional plasma cells; tubules in these areas have been obliterated or are shrunken and collapsed, and many have vacuolated epithelial cells, thickened basement membranes, surrounding fibrosis, and occasionally there are foci of multilayered (3-4) basophilic tubular epithelial cells (interpreted as regeneration). Many other tubules are variably dilated, have variably flattened epithelial cells, and contain varying amounts of variably pink homogeneous material which is often vacuolated and sometimes admixed with PMNs and sloughed epithelial cells. A few scattered eosinophils, plasma cells and lymphocytes are in the pelvic connective tissue.

MORPHOLOGICAL DIAGNOSIS(ES) (3 points):

Glomerulonephritis, mesangioproliferative, chronic, diffuse, moderate, with moderate glomerulosclerosis, kidney.

Nephritis, interstitial, eosinophilic, subacute to chronic, multifocal, moderate, kidney.