

Case 1. Tissue from a horse.

**MICROSCOPIC DESCRIPTION:** Kidney: Approximately 90% of the section is effaced by sheets of epithelioid macrophages (**2 pt**) admixed with low to moderate numbers of eosinophils (**1 pt**), multinucleated macrophages of the foreign body- and Langhans' types (**1 pt**), lymphocytes, plasma cells (**1 pt**), fewer neutrophils, and cellular debris enmeshed in abundant mature fibrous connective tissue (**1 pt**). Numerous poorly formed granulomas (**2pt**) ranging up to 200um in diameter are scattered throughout this area of granulomatous inflammation. The granulomas are centered on multiple tangential and cross sections of adult rhabditoid nematodes (**1 pt**) that are 10-25 um in diameter with a smooth cuticle, platymyarian-meromyarian musculature, an esophagus with terminal bulb, and numerous deeply basophilic 2-3 um internal structures within the pseudocoelom (**1 pt**). Smaller larvae measuring 8-10um with a thin cuticle are also present within some granulomas. Surrounding these viable and degenerating nematodes in a centrifugal fashion are several layers of epithelioid macrophages, multinucleated macrophages as previously described, lymphocytes, plasma cells, and a thin rim of fibrous connected tissue (**1 pt**). There is a transition between the normal kidney tissue at the edge of the section and that in which the architecture is totally effaced – in this area there are scattered granulomas as previously described as well as interstitial fibrosis, tubular ectasia with protein casts, multifocal tubular atrophy and periglomerular and perivascular fibrosis. (**1 pt**)

**MORPHOLOGIC DIAGNOSIS:** Kidney: Nephritis, granulomatous, chronic, focally extensive, severe, with adult and larval nematodes. (**3 pt**)

**CAUSE:** *Halicephalobus gingivalis* (**2 pt**)

**NAME TWO OTHER ORGANS WHERE YOU MAY FIND A SIMILAR LESION:** Oral or nasal cavity, brain (**2 pt**)

**Organization and clarity:** (**1 pt**)

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Case 2. Tissue from a cat.

**MICROSCOPIC DESCRIPTION:** Haired skin, multiple sections: Within the dermis, extending down through and effacing the panniculus carnosus (**1 pt**) and into the subcutaneous fat (**1 pt**), there are multifocal to coalescing areas of pyogranulomatous (**2 pt**) inflammation and lytic necrosis (**1pt**). In necrotic areas, viable and degenerate neutrophils predominate, and are admixed with lesser numbers of epithelioid macrophages (**1 pt**) with abundant granular to foamy eosinophilic cytoplasm (**1pt**), and abundant cellular debris. The remainder of the tissue contains sheets of epithelioid macrophages, with lesser numbers of lymphocytes (**1 pt**) and plasma cells (**1 pt**), throughout which aggregates of viable neutrophils (**1 pt**) are scattered, often centered on round clear spaces (**2 pt**).

**MORPHOLOGIC DIAGNOSIS:** Haired skin: PDermatitis and panniculitis, pyogranulomatous and necrotizing, focally extensive, severe. (**3 pt**)

**NAME THE DISEASE:** Atypical mycobacteriosis (**2 pt**)

**CAUSE:** *Mycobacterium fortuitum*, *M. lepraemurium* (other atypical mycobacteria OK but not *M. avium*) (**2 pt**)

O/C: (**1pt**)

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Case 3. Tissue from a goat.

**MICROSCOPIC DESCRIPTION:** Rumen **(1 pt)**: Transmurally effacing the ulcerated wall of the rumen **(1 pt)**, there is a moderately cellular, well-demarcated, unencapsulated, infiltrative mesenchymal neoplasm. **(2 pt)** Neoplastic cells are arranged in long streams and bundles **(1 pt)** on a moderate fibrovascular matrix. **(1 pt)** The neoplastic cells are spindled and elongate, with indistinct cell borders and a moderate amount of a finely fibrillar eosinophilic cytoplasm **(2 pt)**. Nuclei are centrally placed, oval to elongate, with finely stippled chromatin and 1-3 small basophilic nucleoli **(2 pt)**. There is mild anisokaryosis, and mitotic figures are rare **(2 pt)**. There is multifocal necrosis **(1 pt)** of the neoplasm both at the mucosal and serosal surface, with infiltration of moderate numbers of neutrophils admixed with necrotic cellular debris and mineral. There are aggregates of lymphocytes scattered through the neoplasm **(1 pt)**. The neoplasm infiltrates the capsule of the spleen **(1 pt)**, and an adhesion between it and the spleen is present at one edge of the section.

**MORPHOLOGIC DIAGNOSIS:** Rumen: Leiomyosarcoma (gastrointestinal stromal tumor – OK) **(5 pt)**

O/C: **(1pt)**

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Case 4. Tissue from a wild turkey.

**MICROSCOPIC DESCRIPTION:** Oral cavity and tongue **(1pt)**: A focally extensive area of mucosal epithelium is thickened (hyperplastic) **(1pt)** up to three times normal thickness, forming broad papillary projections into the underlying submucosa. Within this area, many epithelial cells are swollen **(1pt)** by a combination of cytosolic lucency **(1pt)** (ballooning degeneration) **(1pt)** as well as discrete clear vacuoles. Keratinocytes are frequently expanded by a 15-30 um eosinophilic intracytoplasmic inclusion **(1pt)** (Bollinger body) **(1pt)**. Within the center of the proliferative area, there is full thickness mucosal necrosis **(1pt)** and infiltration by large numbers of heterophils **(1pt)** (often in aggregates) and fewer histiocytes admixed with abundant cellular and karyorrhectic debris. Overlying the ulcer, there is a large coagulum of necrotic epithelial cells admixed with innumerable degenerate inflammatory cells, bacterial colonies, fibrin, hemorrhage, and abundant cellular and karyorrhectic debris **(1pt)**. A similar coagulum is present over the corresponding area of lingual mucosa; however cytopathic changes are not evident within the epithelial cells in the mucosa or coagulum. The underlying submucosa is expanded by numerous small vessels, low to moderate numbers of heterophils and histiocytes and loosely arranged collagen **(1pt)**, which fingers into the underlying mildly atrophic skeletal muscle. Within the undying skeletal muscle, there are rare 75-100um protozoal cysts with a thick basophilic cyst wall and numerous 3-6 elliptical zoites (sarcocyst). **(1pt)**

**MORPHOLOGIC DIAGNOSIS:** Oral cavity: Stomatitis, necrotizing and proliferative, focally extensive, severe, with ballooning degeneration, and eosinophilic intracytoplasmic viral inclusion bodies. **(4pt)**

**CAUSE:** Avian poxvirus **(3pt)**

**O/C:** **(1pt)**