

Case 1. Tissue from a rat.

**MICROSCOPIC DESCRIPTION:** Cross section of diencephalon at hippocampus **(1 pt.)**. Bilaterally, the tympanic bulla is bilaterally infiltrated with large numbers of viable and degenerate neutrophils. **(1 pt.)** On one side, there is an abscess **(1 pt.)** which fills the tympanic bulla (it looks as if the head is cut somewhat tangentially) composed of a central area of basophilic and eosinophilic cellular debris, surrounded by a dense band of basophilic cellular debris and degenerate neutrophils, in turn surrounded by large numbers of polygonal macrophages filled with large amounts of cellular debris, admixed with low to moderate lymphocytes and plasma cells and scant circumferential bands of collagen **(1 pt for the description.)**. The lining epithelium is largely effaced, and that which remains is hyperplastic and transmigrated by large numbers of lymphocytes and neutrophils. **(1 pt.)** The underlying submucosal connective tissue contains numerous lymphocytes, plasma cells, and histiocytes, admixed with few neutrophils and cellular debris. **(1 pt.)** On the contralateral side, there is a large accumulation of keratin **(1 pt.)** and infiltration by large numbers of degenerate neutrophils and cellular debris. The epithelium is multifocally ulcerated and underlying submucosal tissue and glands are also infiltrated by neutrophils and contain large numbers of lymphocytes, plasma cells, and fewer macrophages and neutrophils. **(1 pt.)** The epithelium of the external ear canal is multifocally ulcerated and the underlying submucosa is expanded by granulation tissue which contains moderate numbers of neutrophils and cellular debris. **(1 pt.)** The bone of the tympanic bulla on both sides is multifocally scalloped and discontinuous (remodeling). **(1 pt.)** The inflammatory infiltrate on both sides expands and multifocally effaces the soft tissue and skeletal muscle on the lateral sides of the oropharynx. **(1 pt.)** Unilaterally, the inflammatory infiltrate extends into the parietal lobe **(1 pt.)** of the brain, which if forms a 3mm abscess **(1 pt.)** which compresses the overlying hippocampus and adjacent thalamus with a central necrotic center, band of dense neutrophils and cellular debris, and an outermost band of large numbers of spindled to polygonal macrophages and Gitter cells with fewer lymphocytes. The surrounding neuropil is spongiotic, gliotic and contain rare dilated axons (spheroids). **(1 pt.)** Vessels are cuffed by low to moderate numbers of lymphocytes and histiocytes. There is mild marrow hyperplasia within the bones of the skull.

**MORPHOLOGIC DIAGNOSIS:** 1. Ear, left and right: Otitis media, suppurative, diffuse, severe, with unilateral abscess formation. **(2 pt.)**

2. Brain, parietal lobe and hippocampus: Abscess, focally extensive. **(1 pt.)**

**NAME A LIKELY CAUSE:** *Mycoplasma pulmonis*, *Staphylococcus aureus*, *Pasteurella pneumotropicae*, *Streptococcus pneumonia* all OK. **(2 pt.)**

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

WSC 2015-2015, Conference 17

Case 2. Tissue from a mouse.

(An interesting descriptive case, but no points awarded for figuring out this puzzle. The ultimate diagnosis is a bit of a trick, and I am not sure if it is even fair to expect a diagnosis based on histologic findings.)

**MICROSCOPIC DESCRIPTION:** Mesentery and skeletal muscle (presumptive abdominal cavity) **(1 pt.)**: Expanding and effacing the abdominal cavity **(1 pt.)** is a severe mixed inflammatory lesion which is centered on haphazardly arranged plates of mature collagen **(2 pt.)** and developing unmineralized bone **(1 pt.)** which is surrounded by abundant eosinophilic necrotic cellular debris **(1 pt.)**. Peripheral to this are moderate to large numbers of macrophages **(1 pt.)** and neutrophils **(1 pt.)**, (often degenerate) admixed with fewer multinucleated macrophages **(1 pt.)** and abundant both basophilic and eosinophilic cellular debris. The inflammatory mass is partially surrounded by a thick band of spindle cells **(2 pt.)** resembling smooth muscle which is infiltrated by moderate numbers of lymphocytes **(1 pt.)** and plasma cells **(1 pt.)**, and fewer often aggregated macrophages and neutrophils, and this inflammation extends into the adjacent mesentery **(1 pt.)** Within the smooth muscle, there is a cystic lumen **(1 pt.)** which is filled with moderate numbers of degenerate neutrophils and cellular debris, lined by a prominent cuboidal epithelium **(1 pt.)**, and multifocally eroded.

**MORPHOLOGIC DIAGNOSIS:** Ectopic intraabdominal pregnancy. **(3 pt.)**

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

WSC 2015-2015, Conference 17

Case 3. Tissue from a mouse.

**MICROSCOPIC DESCRIPTION:** Salivary gland, with haired skin, subcutis, and lymph node: Within the dermis, elevating the overlying epidermis and compressing the adjacent skeletal muscle **(1 pt.)**, there is a cystic, multilobulated **(1 pt.)**, unencapsulated, well-demarcated, expansile **(1 pt.)** neoplasm. Neoplastic cells are arranged in tight bundles **(1 pt.)** and streams in a storiform **(1 pt.)** pattern on a moderate fibrous matrix. Neoplastic cells are spindled **(1 pt.)** to polygonal **(1 pt.)** with a moderate amount of a finely granular eosinophilic cytoplasm and indistinct cell borders. **(1 pt.)** Nuclei are irregularly round to elongated, with coarsely stippled chromatin, and 2-4 small basophilic nucleoli. **(1 pt.)** Mitotic figures average 2/400x field. **(1 pt.)** Neoplastic cells assume a columnar appearance, and palisade along cystic spaces. **(1 pt.)** There are multifocal areas of lytic necrosis throughout the neoplasm as well as areas of dropout with replacement with small to moderate amounts of granular eosinophilic and basophilic cellular debris. **(1 pt.)** Centrally, there is a large pseudocyst **(1 pt.)** within the neoplasm, and smaller pseudocysts which contain various combinations and concentrations of viable and degenerate neutrophils, macrophages, cellular debris and hemorrhage. There are aggregates of low numbers of lymphocytes and fewer plasma cells at the periphery of the neoplasm. **(1 pt.)** There are markedly atrophic salivary epithelial cells **(1 pt.)** without zymogen granules scattered throughout the neoplasm adjacent to the neoplasm.

**MORPHOLOGIC DIAGNOSIS:** Salivary gland: Myoepithelioma. **(4 pt.)**

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

WSC 2015-2015, Conference 17

Case 4. Tissue from a monkey.

**MICROSCOPIC DESCRIPTION:** Cross-section of cerebrum (telencephalon): Within the submeningeal grey matter, extending into underlying white matter, **(1 pt. for location)** there is a focal area of necrosis **(1 pt.)**, consisting of innumerable degenerate neutrophils **(1 pt.)** admixed with large amounts of cellular debris, fibrin, and hemorrhage. Adjacent neuropil is markedly spongiotic (and artifactually fragmented), infiltrated by moderate numbers of largely degenerate neutrophils and cellular debris, and astrocytes processes are swollen (edema) **(1 pt.)**. Vessels within this are often contain fibrinocellular thrombi **(1 pt.)** containing numerous degenerate neutrophils. Vessel walls are expanded by cellular debris, brightly eosinophilic protein, hemorrhage, edema, and degenerate neutrophils and hemorrhage is present within the adjacent neuropil (leukocytoclastic vasculitis) **(2 pt.)**. Multifocally, the meninges **(1 pt.)** and occasionally Virchow-Robin spaces **(1 pt.)** are mild to moderately expanded by polymerized fibrin **(1 pt.)**, hemorrhage, and moderate numbers of degenerate neutrophils and cellular debris. Multifocally, vessels walls contain numerous 4-6um septate fungal hyphae **(2 pt.)** with parallel walls and dichotomous branching, **(1 pt. for description)** and similar fungal hyphae are distributed throughout the necrotic neuropil.

**MORPHOLOGIC DIAGNOSIS:** Cerebrum: Meningoencephalitis, necrotizing and fibrinosuppurative, multifocal to coalescing, severe, with necrotizing vasculitis, edema, and numerous fungal hyphae **(4pt.)**

**CAUSE:** *Aspergillus fumigatus* **(2pt.)**

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