WSC 2021-2022
Conference 7, Case 1.

Tissue from a dog.

MICROSCOPIC DESCRIPTION: Cerebrum: Effacing **(1pt.)** 80% of the neuroparenchyma is a poorly circumscribed, unencapsulated, poorly demarcated, multilobular, infiltrative neoplasm **(1pt.)** The neoplasm is composed of spindle cells **(1pt.)** loosely arranged into long interlacing streams and bundles **(1pt.)** on a fine vascular stroma. **(1pt.)** Neoplastic cells have indistinct cell borders and a moderate amount of vacuolated eosinophilic cytoplasm. **(1pt.)** Nuclei are oval to elongate with coarsely stippled chromatin and 2-3 small blue nucleoli. **(1pt.)** There is moderate anisocytosis and anisokaryosis, **(1pt.)** and mitotic figures average 10 per 2.37mm^2 field. **(1pt.)** There are multiple large, serpiginous and occasionally coalescing areas **(1pt.)**in which there is architectural retention with loss of differential staining (necrosis), with mild multifocal infiltrates of neutrophils, cellular debris, and hemorrhage (1pt), fibrin and edema. **(1pt.)** Vessels in affected areas are also necrotic and often contain occlusive or non-occlusive thrombi and extramural hemorrhage. **(1pt.)** Surrounding these necrotic areas are perpendicularly oriented pseudopalisades of neoplastic cells **(1pt.)** There are numerous multilayered microvascular proliferations **(1pt.)** present in tortuous or glomeruloid arrangements. There is marked gliosis and mild spongiosis of the neuroparenchyma surrounding the neoplasm and widely scattered spheroids. **(1pt.)**

MORPHOLOGIC DIAGNOSIS: Cerebrum: Astrocytoma, high grade. (Astrocytoma grade 4 (glioblastoma multiforme old, but okay.) **(3pt.)**

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

WSC 2021-2022
Conference 7, Case 2.
Tissue from a cat.

MICROSCOPIC DESCRIPTION: Rostral cerebrum **(1pt.)**: Arising from the meninges **(1pt.)**,and compressing **(1pt.)** the adjacent neocortex, there is an unencapsulated, moderately cellular, well-demarcated, nodular neoplasm **(1pt.)**. Neoplastic cells are arranged in short interlacing streams **(1pt.)**, bundles, and whorls **(1pt.)** on a moderate fibrovascular matrix **(1pt.)**. Neoplastic cells are spindled **(1pt.)** with indistinct cell borders and a moderate amount of a finely fibrillar cytoplasm **(1pt.)**. Nuclei are oval with finely clumped chromatin and 1-2 prominent basophilic nuclei. **(1pt.)** Mitotic figures are rare. **(1pt.)** Neoplastic cells have distinct whorling around vessels or granular to spherical aggregates of densely mineralized eosinophilic matrix. **(1pt.)** There are numerous areas of aggregated foamy macrophages, **(1pt.)** large acicular cholesterol clefts **(1pt.),** and less commonly, crystalline mineral. At the advancing front of the neoplasm, the adjacent compressed neuropil is loosely arranged, with mild edema and mild astrocytic gliosis. **(1pt.)**

MORPHOLOGIC DIAGNOSIS: Cerebrum: Meningioma **(4pt.)** (No classification schema for cats yet).

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

WSC 2021-2022 Conference 7
Case 3. Tissue from dog.

MICROSCOPIC DESCRIPTION: Brainstem, colliculi, cerebellum **(2pt.)**: Multifocally, numerous brainstem neurons **(2pt.)**, as well as neurons within all layers of the cerebellum (sparing granule cells) **(1pt.)** contain a single or multiple 10-40 um diameter **(3pt)** round structure with a blue-gray, often lamellated core **(2pt)** surrounded by a 2-4 um wide lightly amphophilic, finely granular peripheral zone **(1pt.)** and further outlined by a 1um thin zone of eosinophilic material (peripheralized axoplasm) (Lafora bodies) **(2pt.)**. Purkinje cells occasionally contain multiple Lafora bodies. **(1pt.)** Lafora bodies are seen both within axons **(1pt.)**and less commonly in the nuclear perikarya. **(1pt.)** There is a mild diffuse increase in microglia in regions in which the preponderance of neurons contain inclusions **(1pt.)kk**) and multifocal areas of mildly spongiotic white matter in the brainstem.

MORPHOLOGIC DIAGNOSIS: Brainstem, cerebellum: Intraneuronal Lafora (polyglucosan) bodies **(1pt.)** numerous, with mild scattered microgliosis **(1pt.)** and spongiosis.

NAME THE CONDITION: Lafora body disease. **(2pt.)**

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

WSC 2021-2022 Conference 7
Case 4. Tissue from a dog.

MICROSCOPIC DESCRIPTION: Multiple sections, cerebrum (at level of caudate nucleus), cerebellum, and brainstem. Within the cerebral gray and white matter **(1pt.)**, but more prominently in the white matter, the neuropil is diffusely infiltrated by an unencapsulated, moderately cellular, poorly demarcated neoplasm **(1pt.)** composed of neoplastic astrocytes **(2pt.)**. Neoplastic cells are arranged singly or in small clusters **(1pt.)** infiltrating the pre-existing neuroparenchyma. Neoplastic cells primarly appear as "naked nuclei" (1pt) or with scant amounts of poorly defined finely granular eosinophiic cytoplasm **(1pt.)** . Nuclei are pleomorphic, with most being elongate but others ovoid, irregular, or round, withfinely stippled hyperchromatic chromatin and a 1-3 visible nucleoli. **(1pt.)** . **(1pt.)** Anisocytosis and anisokaryosis are regionally variable **(1pt.)**, with areas in which there are 2-4 per standardized 400x field. **(1pt.)** In areas of dense infiltration by neoplastic cells within areas of white matter, neoplastic cells are separated by amphophilic granular debris (axonal debris?). **(1pt.)** Neoplastic cells often surround neurons, vessels, or submeningeal areas in small clusters (secondary structures) **(1pt.)** Similar changes are multifocally present in the brainstem; the cerebellum appears to be spared. **(1pt.)** Astrocytes with large nuclei, marginated chromatin, prominent nucleoli, and abundant eosinophilic cytoplasm (gemistocytes) are present in areas of neoplastic invasion.

MORPHOLOGIC DIAGNOSIS: Cerebrum, brainstem: Astrocytoma, infiltrative (diffuse OK), high grade (previously known as gliomatosis cerebri). **(4pt.)**

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