WSC 2018-2019 Conference 6.

Case 1. Tissue from a rat.

MICROSCOPIC DESCRIPTION: Coronal section of cerebrum with hippocampus and thalamus **(1pt)**: Within the deep cortex and subcortical white matter, there is an unencapsulated, poorly demarcated, poorly circumscribed, but infiltrative neoplasm **(2pt)**. Neoplastic cells are arranged in moderately cellular sheets **(1pt)** with occasional perivascular clustering or pseudorosette formation **(2pt)**. There is marked anisocytosis and anisokaryosis **(2pt)** with some cells resembling astrocytes **(1pt)** (polygonal **(1pt)** with moderate amounts of granular eosinophilic cytoplasm **(1pt)**) and others having round or deeply cleaved nuclei more reminiscent of oligodendroglial origin (1pt). Neoplastic cells are admixed with fewer activated microglia **(1pt)** with small amounts of eosinophilic cytoplasm **(1pt)** and triangular hyperchromatic nuclei **(1pt)**) Mitotic figures average two per 10 400 X fields (2.37-mm^2) **(1pt)** and are rarely atypical. **(1pt)** There is multifocal apoptosis of individual cells **(1pt)**. Clear vacuoles are randomly scattered throughout the neoplasm. Within the surrounding white matter tracts, there is mild hypertrophy of oligodendroglia and mild gliosis at the junction with adjacent grey matter.

MORPHOLOGIC DIAGNOSIS: Cerebrum: Glioma (difficult to go further without immuno). **(2pt)**

O/C: (1pt)

WSC 2018-2019. Conference 6

Case 2. Tissue from a dog.

MICROSCOPIC DESCRIPTION: Coronal section, cerebellum and medulla **(1pt.)**: Within the deep cerebellar white matter and medulla,**(1pt.)**, compressing and partially obstructing the fourth ventricle **(1pt.)** and crossing the midline there is a nodular, well demarcated, unencapsulated, moderately cellular, minimally infiltrative neoplasm **(1pt.)** The neoplasm is composed of two cell populations **(1pt.)**. The first population are spindle or less commonly stellate cells which are arranged in broad streams and separated by abundant loose fibrillar eosinophilic to amphophilic myxoid stroma. These neoplastic cells have indistinct cell borders with a moderate amount of fibrillar eosinophilic cytoplasm. Nuclei are oval to spindled with finely clumped chromatin and 1-2 indistinct nucleoli. Scattered throughout this population individually and in small clusters is a second, less numerous population of round to polygonal cells with a small amount of eosinophilic granular cytoplasm and larger round nucleoli with finely clumped chromatin and one to two small nucleoli. Mitoses are rare in both populations. There are low numbers of microcysts filled with myxoid material scattered through the neoplasm. Capillaries throughout the neoplasm are prominent with hypertrophied endothelial cells. Rare enlarged, brightly eosinophilic fibrils (Rosenthal fibers) or cells with brightly eosinophilic cytoplasmic granules (eosinophilic granular bodies) are present. At the infiltrating edge of the neoplasm, neurons are entrapped and there is a mild-to-moderate increase in microglial cells and a lesser increase in astrocytes. There is mild vacuolation of white matter adjacent to the neoplasm.

MORPHOLOGIC DIAGNOSIS: Brainstem, adjacent to 4th ventricle: Pilocytic astrocytoma. New CBTC diagnosis: Astrocytoma, noninfiltrative, low-grade.

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

WSC 20182019. Conference 6

Case 3. Tissue from a cat

MICROSCOPIC DESCRIPTION: Cerebellum: There is diffuse mild thinning of the cerebellar folia **(2pt)**. All layers of the cerebellar cortex are diffusely affected with mild thinning of the molecular layer **(1pt)** and diffuse moderate nuclear loss within the granular layer **(2pt)**. There is extensive segmental loss of Purkinje cells **(2pt)**. Remaining Purkinje cells are often moderately enlarged due toswollen and vacuolated cytoplasm. **(2pt)** Multifocally, areas previously occupied by Purkinje cells contain a network of glial fibers "empty baskets" **(1pt),** and moderately increased numbers of astrocyte processes (Bergmann's astrocytes) at the level previously occupied by Purkinje cells, with prominent processes running perpendicularly to the meninges **(2pt).** There are numerous vacuoles present within the Purkinje cell layer. **(1pt)**

MORPHOLOGIC DIAGNOSIS: Cerebellum: Purkinje cell degeneration **(1pt)** and loss **(1pt)**, diffuse, severe, with marked granular cell loss **(1pt)** and Bergmann gliosis.

NAME THE CONDITION: Cerebellar abiotrophy (cerebellar cortical degeneration) **(3pt)**

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

WSC 2018-2019. Conference 6

Case 4. Tissue from a calf.

MICROSCOPIC DESCRIPTION: Cerebellum: Purkinje **(2pt)** cells have marked cytoplasmic swelling **(2pt)** secondary to numerous discrete clear intracytoplasmic vacuoles **(2pt)** which are often concentrated in the area of the axon hillock **(2pt)**. The granular cell layer is mildly expanded in width **(2pt)**, and the cytoplasm of granule cells contains similar **(2pt)** intracytoplasmic vacuoles. The external germinal layer is still present within this section. **(2pt)**

MORPHOLOGIC DIAGNOSIS: Cerebellum, Purkinje and granule cells: Cytoplasmic vacuolation, diffuse, marked. **(2pt)**

CAUSE: Astragalus, Swainsona, or other plants resulting in acquired lysosomal storage diseases. (Congenital deficiencies of alpha- or beta-mannosidase as well as a-1,4-glucosidase acceptable as well) **(3pt)**

O/C – **(1pt.)**