

WSC 2012-2013, Conference 17

Case 1. Tissue from an ox.

MICROSCOPIC DESCRIPTION: Long bone: The diaphyseal or metaphyseal **(1 pt)** medullary cavity is filled **(1 pt)** by a network of randomly anastomosing **(1 pt)**, variably thick trabeculae of primarily woven bone **(1 pt)** with numerous reversal lines, which often contain retained cartilaginous cores **(1 pt)** (primary spongiosa) **(2 pt)**. The edges of the trabeculae are scalloped **(1 pt)**; however, Howship's lacunae are empty **(1 pt)**. The cortex is diffusely and circumferentially thinned **(1pt – see note below)** with thin non-anastomosing trabeculae of woven bone oriented perpendicularly to the cortex **(1 pt)**. Within this area, the trabeculae are separated by small amounts of loosely arranged collagen and few marrow elements **(1 pt)**. The periosteum is mildly and asymmetrically thickened. The marrow is within normal limits.

MORPHOLOGIC DIAGNOSIS: Long bone: Persistent primary spongiosa with cartilage retention and osteoclastopenia **(3 pt)**

NAME THE CONDITION: Osteopetrosis **(2 pt)**

NAME A LIKELY BREED: Angus, Hereford, Simmental, Holstein **(1 pt)**

NAME A MUTATED GENE: **SLC4A2** (and osteoclast anion exchanger protein) **(1 pt)**

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

Note: Only primary spongiosa contains cartilage cores; secondary spongiosa does not.

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Case 2. Tissue from a rhesus monkey.

MICROSCOPIC DESCRIPTION: Lung: Within the section, there are two 5mm nodules of a well-demarcated, moderately cellular, unencapsulated, infiltrative neoplasm (**2 pt**). Neoplastic cells are arranged in short streams and bundles (**2 pt**) on a fine eosinophilic collagenous matrix (**1 pt**). Neoplastic cells have distinct cell borders with a moderate amount of a finely granular eosinophilic cytoplasm (**1 pt**). Nuclei are irregularly round to oval with finely stippled chromatin and 1-3 small basophilic nucleoli (**2 pt**). Nuclei are moderately anisokaryotic (**1 pt**), and multinucleated cells are common (**1 pt**). Mitoses average 5-10/400x field (**1 pt**). Multifocally, and primarily within one of the two nodules, neoplastic cells are separated and surrounded by a hyaline, brightly eosinophilic matrix (**1 pt**) (osteoid) (**2 pt**). There are rare smaller multinucleated osteoclasts within the neoplastic nodule with the osteoid in it (**1 pt**). Neoplastic cells infiltrate the adjacent parenchyma by extension along the adjacent alveolar septa (lepidic growth) (**1 pt**). Surrounding the nodules, adjacent alveoli contain small amounts of edema fluid and low numbers of hemosiderin-laden macrophages.

MORPHOLOGIC DIAGNOSIS: Lung: Osteosarcoma, metastatic. (**3 pt**)

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

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Case 3. Tissue from a dog.

MICROSCOPIC DESCRIPTION: Long bone: Within the medullary cavity, effacing the trabecular bone and marrow elements **(1 pt)**, there is an unencapsulated, moderately cellular, poorly demarcated, infiltrative neoplasm **(2 pt)**. Neoplastic cells are arranged in small nests and acini **(2 pt)**, on a dense fibrous stroma **(1 pt)**. Neoplastic cells have indistinct cell borders with a moderate amount of finely granular cytoplasm. **(1 pt)** Nuclei are irregularly round to oval with finely stippled chromatin and 1-2 small basophilic nucleoli **(1 pt)**. Mitotic figures are 1-2/hpf **(1 pt)**. There are large areas of hemorrhage and fibrin deposition throughout the neoplasm **(1 pt)**. There is a proliferation of woven bone arising from the endosteum **(1 pt)**, and there are small fragments of pre-existent necrotic bone **(1 pt)** scattered throughout the neoplasm. The neoplasm infiltrates the adjacent lamellar bone of the cortex, filling Haversian canals **(2 pt)**. Overlying the area of infiltration, there is marked proliferation of trabeculae of woven bone projecting outward from the cortex underneath a thickened and hypercellular periosteum **(1 pt)**. The periosteum contains multifocal areas of hemorrhage and polymerized fibrin **(1 pt)**.

MORPHOLOGIC DIAGNOSIS: Long bone: Adenocarcinoma, poorly demarcated. **(3 pt)**

O/C: (1pt)

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Case 4. Tissue from a dog.

MICROSCOPIC DESCRIPTION: Joint. The joint capsule is diffusely and markedly proliferative (**2 pt**) and thrown into prominent villar folds (**2 pt**). Synovial villi are heavily vascularized, lined by hypertrophic synovium, and are contain moderate numbers of lymphocytes and plasma cells (**2 pt**). Arising within villi are variably-sized nodules of hyaline cartilage (**2 pt**) which rarely exhibit ossification (**1 pt**), reminiscent of endochondral ossification. Within the cartilaginous nodules, chondrocytes are arranged in irregularly spaced chondrones (**1 pt**), and cartilaginous matrix is occasionally necrotic and mineralized within the center of some nodules.. In some cases, the nodules are free in the joint space (**1 pt**), where they are admixed with fibrin and hemorrhage (**1 pt**). The outer edge of the joint capsule is thickened by moderate fibrosis, and multifocally, synovial villi contain large aggregates of mature collagen (**1 pt**).

MORPHOLOGIC DIAGNOSIS: Joint capsule: Synovitis, proliferative and lymphocytic, chronic, diffuse, severe, with multifocal cartilaginous proliferation (**4 pt**)

NAME THE CONDITION: Synovial chondromatosis (**2 pt**)

O/C: (1pt)