WSC 2009-2010, Conference 11, Case 1.

Tissue from a dog.

MICROSCOPIC DESCRIPTION: Bone. Within the medullary cavity, extending through the endosteum into the pre-existing cortex **(1 pt.)**, there is a moderately cellular, poorly demarcated, unencapsulated, infiltrative neoplasm **(2 pt.)**. The neoplasm is composed of nests **(1 pt.)**, packets, and occasional tubules **(1 pt.)** of polygonal cells supported by a dense fibrous stroma **(1 pt.)**. Neoplastic cells are polygonal **(1 pt.)** with indistinct cell borders and brightly eosinophilic granular cytoplasm **(1 pt.)** (note – this is likely a function of decalcification). Nuclei are irregularly round with one to two distinct blue nucleoli **(1 pt.)** and mitotic figures average one to two per 40x field **(1 pt.)**. There is abundant single-cell necrosis and large cystic areas within the neoplasm which contain abundant hemorrhage **(1 pt.)**. Separating the neoplastic cells within the medullary cavity there is abundant haphazardly arranged fibrous connective tissue and woven bone. The overlying cortical bone is markedly thinned (osteopenia) **(1 pt.)**. Both the endosteum and the periosteum **(1 pt.)**are markedly and asymmetrically thickened by abundant woven bone **(1 pt.)**which is oriented perpendicularly to the normal cortex and has scalloped edges, is lined by flattened osteoblasts **(1 pt.)**, and rare osteoclasts are present in Howship's lacunae. There is mild to moderate myofiber atrophy and fibrosis within the skeletal muscle overlying the periosteal new bone **(1 pt.)**.

MICROSCOPIC DIAGNOSIS: Bone: Carcinoma, metastatic, with marked endosteal and periosteal new bone growth **(3 pt.)**

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

WSC 2009-2010. Conference 11, Case 2

Tissue from a rat.

MICROSCOPIC DESCRIPTION: Femur: Extending outward from the femoral neck (diaphysis), **(1 pt.)** there is a 5mmx5mm well-vascularized proliferation of fibroblasts **(2 pt.)** arranged in long streams and bundles which are separated by a homogenous osteoid matrix **(2 pt.)**. As the fibroblasts increase in proximity to the pre-existing cortex, the cellular density becomes less, and the matrix becomes more dense **(1 pt.)**, orients perpendicularly **(1 pt.)** to the original cortex, and blends with periosteal new bone **(1 pt.)**. In one area of the mass, there is a well-differentiated island **(1 pt.)** of bone and fibrocartilage with marrow spaces **(1 pt.)**. Multifocally, the diaphyseal cortex is interrupted **(1 pt.)** by florid proliferation of woven bone **(1 pt.)** which contains marrow spaces **(1 pt.)**; a similar proliferation of bone and cartilage within the trochanteric fossa **(1 pt.)**, and osteophytes **(1 pt.)** are present on the greater trochanter and femoral head. Occasionally the fibroblast proliferation entraps mildly to moderately atrophic myocytes **(1 pt.)**.

MORPHOLOGIC DIAGNOSIS: Femur: Atypical fibrocyte proliferation with osseous metaplasia and periosteal new bone growth. **(3 pt.)**

O/C – **(1 pt.)**

WSC 2009-2010, Conference 11, Case 3.

Tissue from a dog.

MICROSCOPIC DESCRIPTION: Bone (presumptive). Effacing the preexisting bone, there is a poorly demarcated, unencapsulated, infiltrative, densely cellular neoplasm **(2 pt.)**. The neoplasm is composed of spindle cells **(1 pt.)**arranged in short streams and bundles **(1 pt.)**on a fibrous to myxomatous matrix **(1 pt.)**. Neoplastic cells are spindled to rarely polygonal, with moderate amounts of a granular basophilic cytoplasm **(1 pt.)**, often with a prominent nuclear hoff. There is moderate anisokaryosis **(1 pt.)**; nuclei range from hyperchromatic to large and round with 1-2 prominent basophilic nucleoli **(1 pt.)**. Nuclei average 1/hpf with rare bizarre mitoses noted **(1 pt.)**. Throughout the neoplasm, spindle cells are separated, surrounded and entrapped by variable combinations and concentrations of osteoid **(1 pt.)** , chondroid matrix **(1 pt.)**, and trabeculae of woven bone **(1 pt.)**, which are often mineralized. The neoplasm effaces pre-existent cortex **(1 pt.)**, which is marked only by trabeculae of new bone **(1 pt.)** and a profound proliferative periosteal reaction **(1 pt.)**. There is marked atrophy and fibrosis of adjacent skeletal muscle **(1 pt.)**.

MORPHOLOGIC DIAGNOSIS: Bone: Osteosarcoma. **(3pt.)**

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

WSC 2009-2010, Conference 11, Case 4.

Tissue from a deer.

MICROSCOPIC DESCRIPTION: Skeletal muscle: Between approximately 5 and 50% **(1 pt.)** of myofibers within various muscle bundles exhibit one or more of the following changes: hyalinization, **(1 pt.)** swelling **(2 pt.)**, fragmentation **(1 pt.)**, vacuolation **(1 pt.)**, mineralization **(1 pt.)**, hypertrophy of satellite nuclei **(1 pt.)**, internalization of satellite nuclei **(1 pt.),** and infiltration of the sarcolemma by macrophages **(1 pt.)** and rare neutrophils **(1 pt.)**. In some muscle bundles, there is expansion of the perimysium and epimysium by small amounts of edema **(1 pt.)**.

MORPHOLOGIC DIAGNOSIS**:** Skeletal muscle: Degeneration and necrosis, multifocal, moderate, with mineralization. **(4 pt.)**

Name 3 possible causes: Capture myopathy, *Cassia* or other toxic plant, Vit/E selenium imbalance, ionophore toxicity **(4 pt.)**

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